

KENDALL SQUARE STREETSCAPES

LANDSCAPE VISION DOCUMENT

APRIL 2018
APPENDIX A



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LANDSCAPE VISION

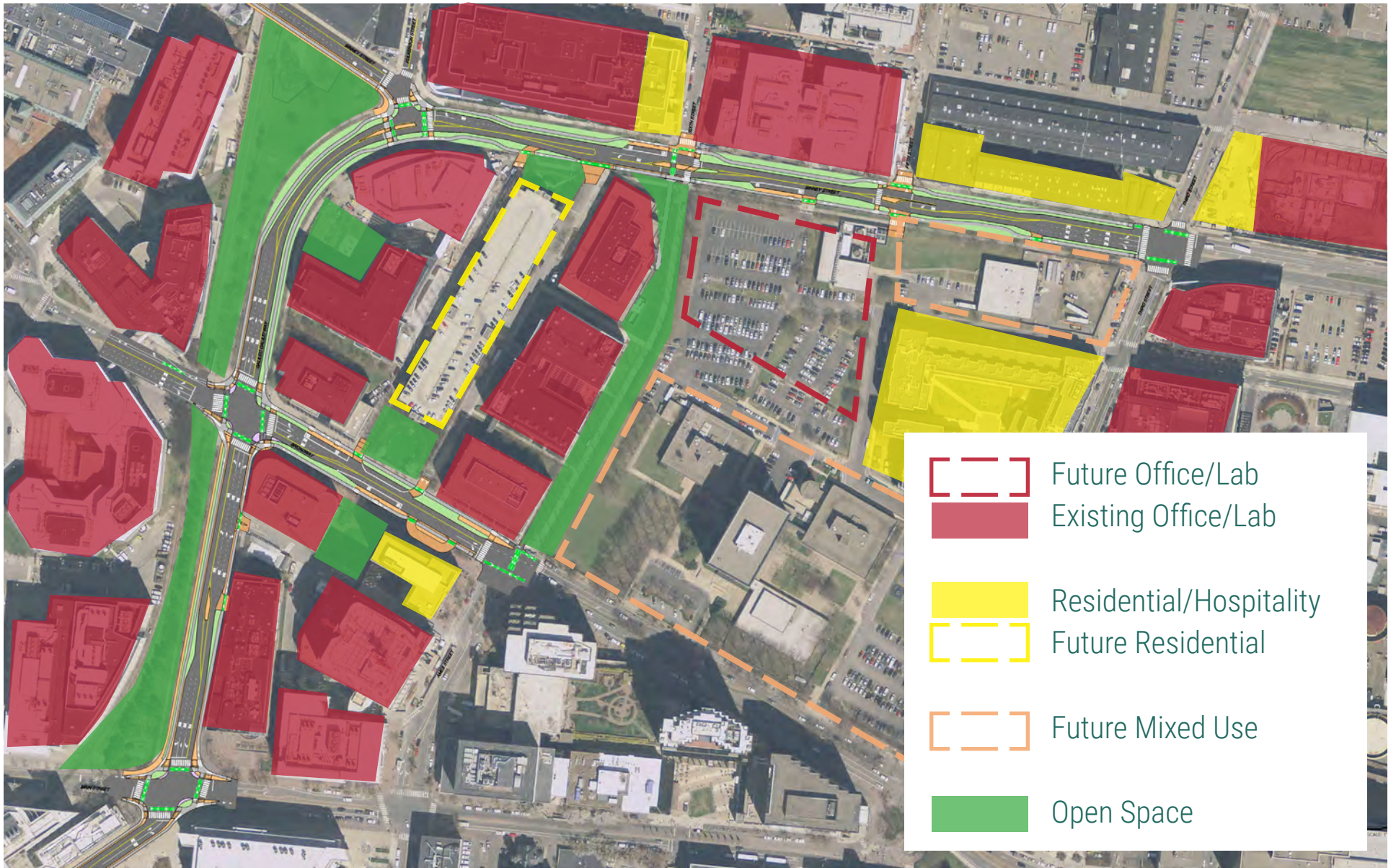
The Landscape Vision for Kendall Square has been coordinated through a planning effort to recommend a consistent palette of landscape materials and plantings, furnishings, lighting, sustainable features and paving materials. The plan document establishes a **recognizable identity** to ensure the streetscape is **cohesive**.

Streetscape activity nodes are opportunities to **engage the public and enrich the outdoor experience of Kendall Square** to be inviting and welcoming. A consistent streetscape will help to convey the public nature of these spaces, where a variety of different types of uses, and unique experiences can occur. Public and private open spaces shall be designed and function to complement and integrate into the overall Kendall Square open space network over time as redevelopment plans occur.

The following pages are a summary of the Landscape Vision for Kendall Square, including a brief site analysis and the layers that will create the framework for an improved streetscape.

SITE ANALYSIS

SURROUNDING LAND USES



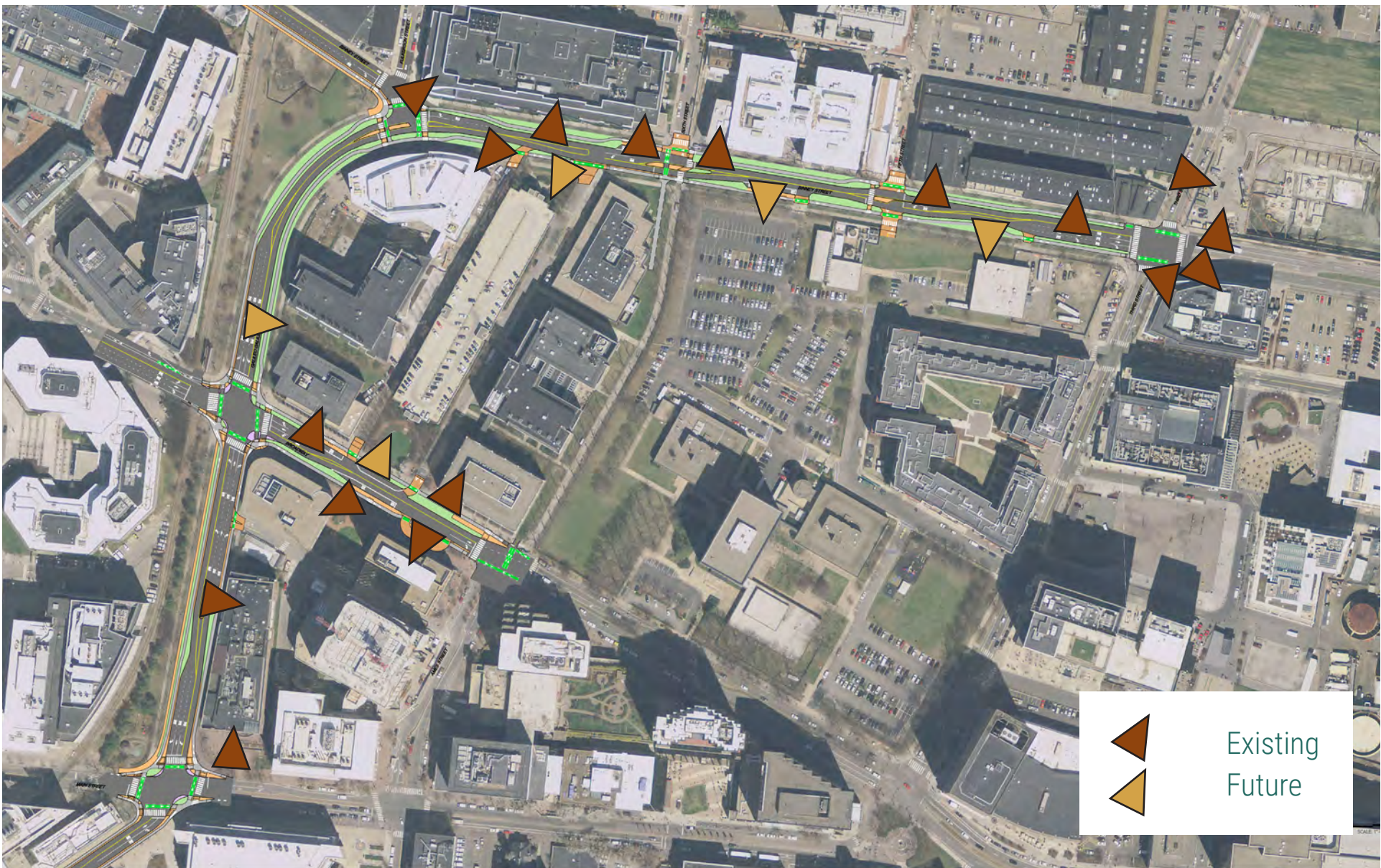
SITE ANALYSIS

PEDESTRIAN MOVEMENTS



SITE ANALYSIS

GROUND FLOOR ACTIVITY



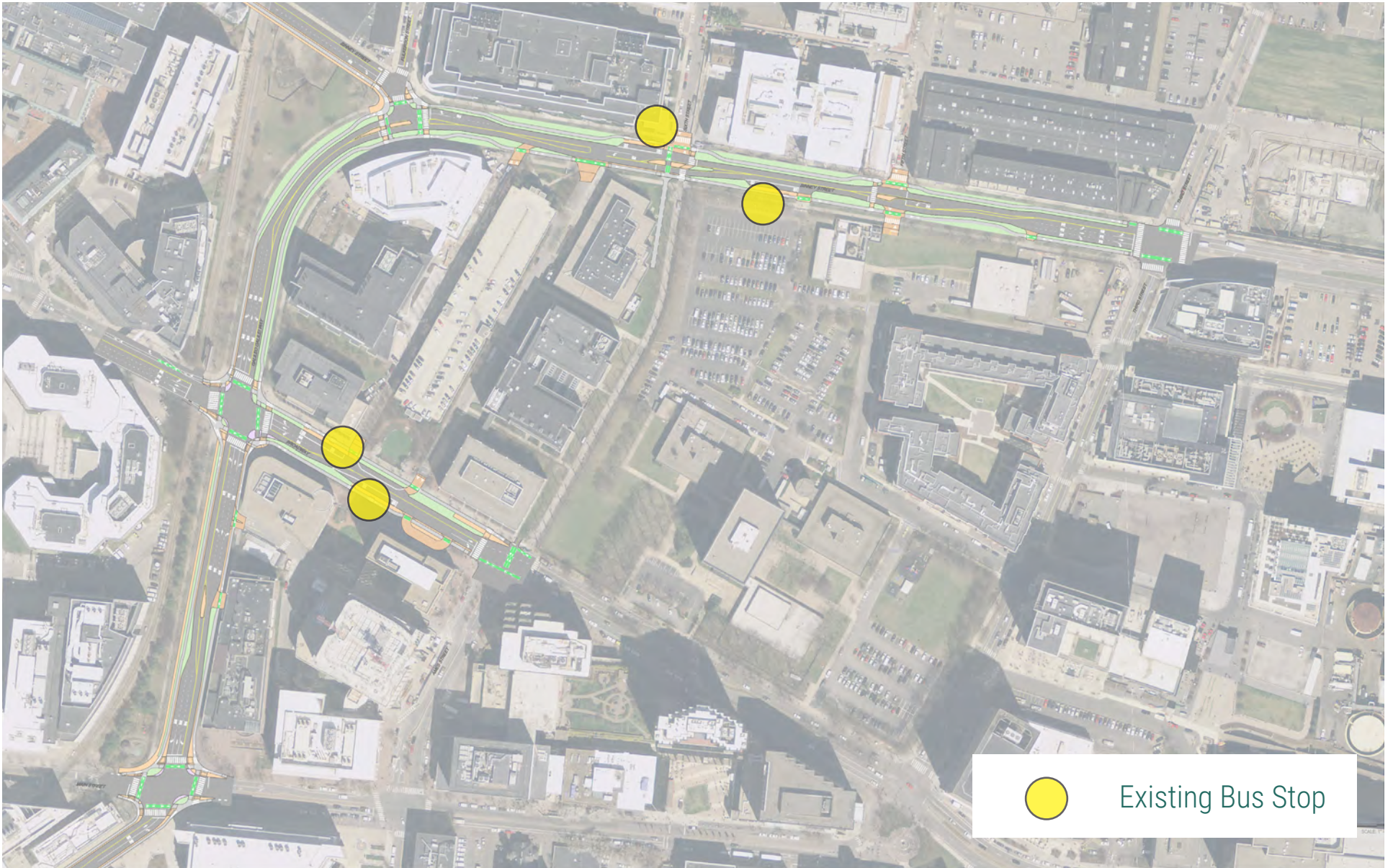
A LAYERED APPROACH

- TRANSPORTATION 1.
- STREETSCAPE ACTIVATION 2.
- GREEN INFRASTRUCTURE 3.
- TREE CANOPY 4.



LANDSCAPE LAYERS

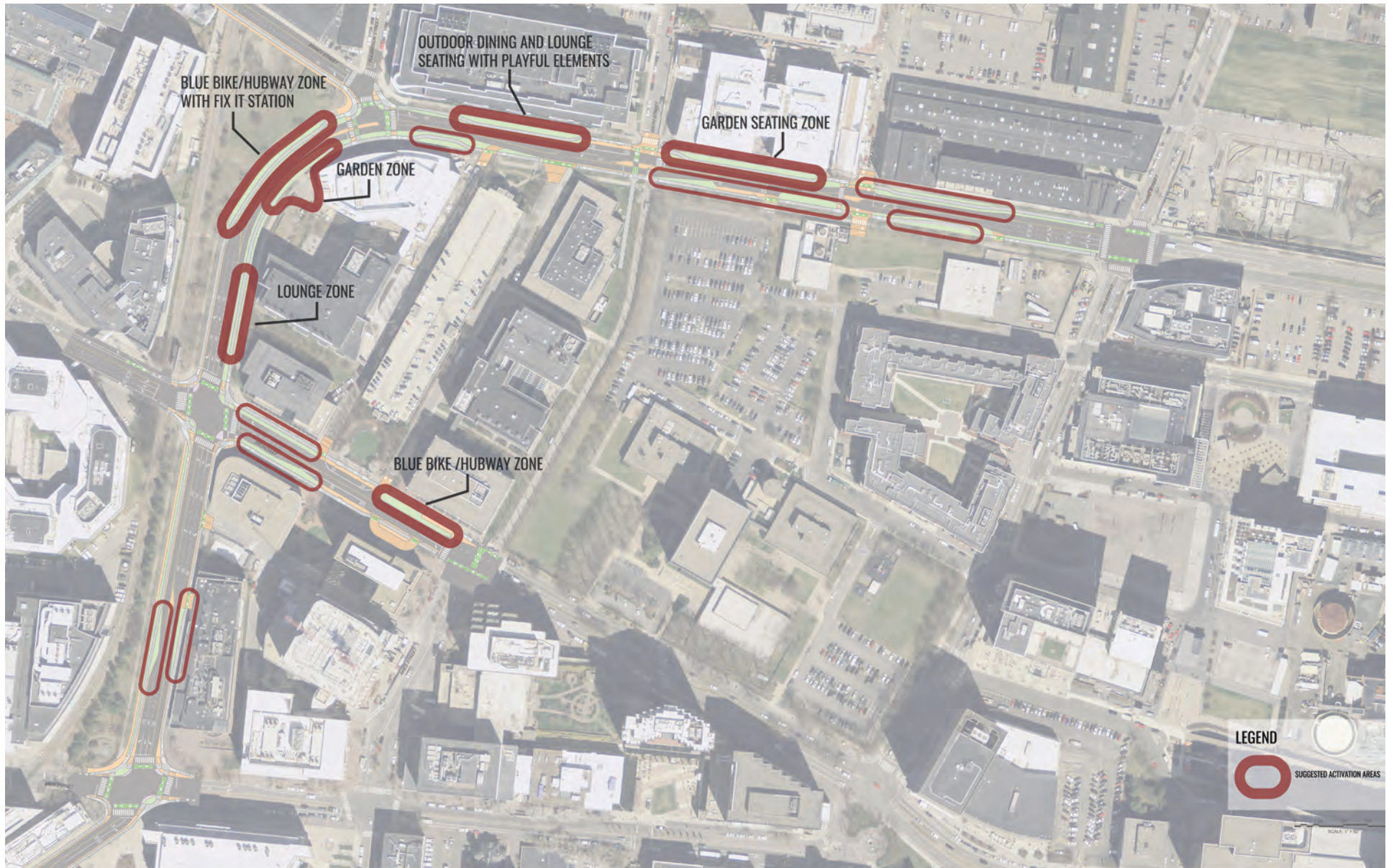
TRANSPORTATION



Existing Bus Stop

LANDSCAPE LAYERS

STREETSCAPE ACTIVATION



LANDSCAPE LAYERS

STREETSCAPE ACTIVATION



LANDSCAPE LAYERS

GREEN INFRASTRUCTURE



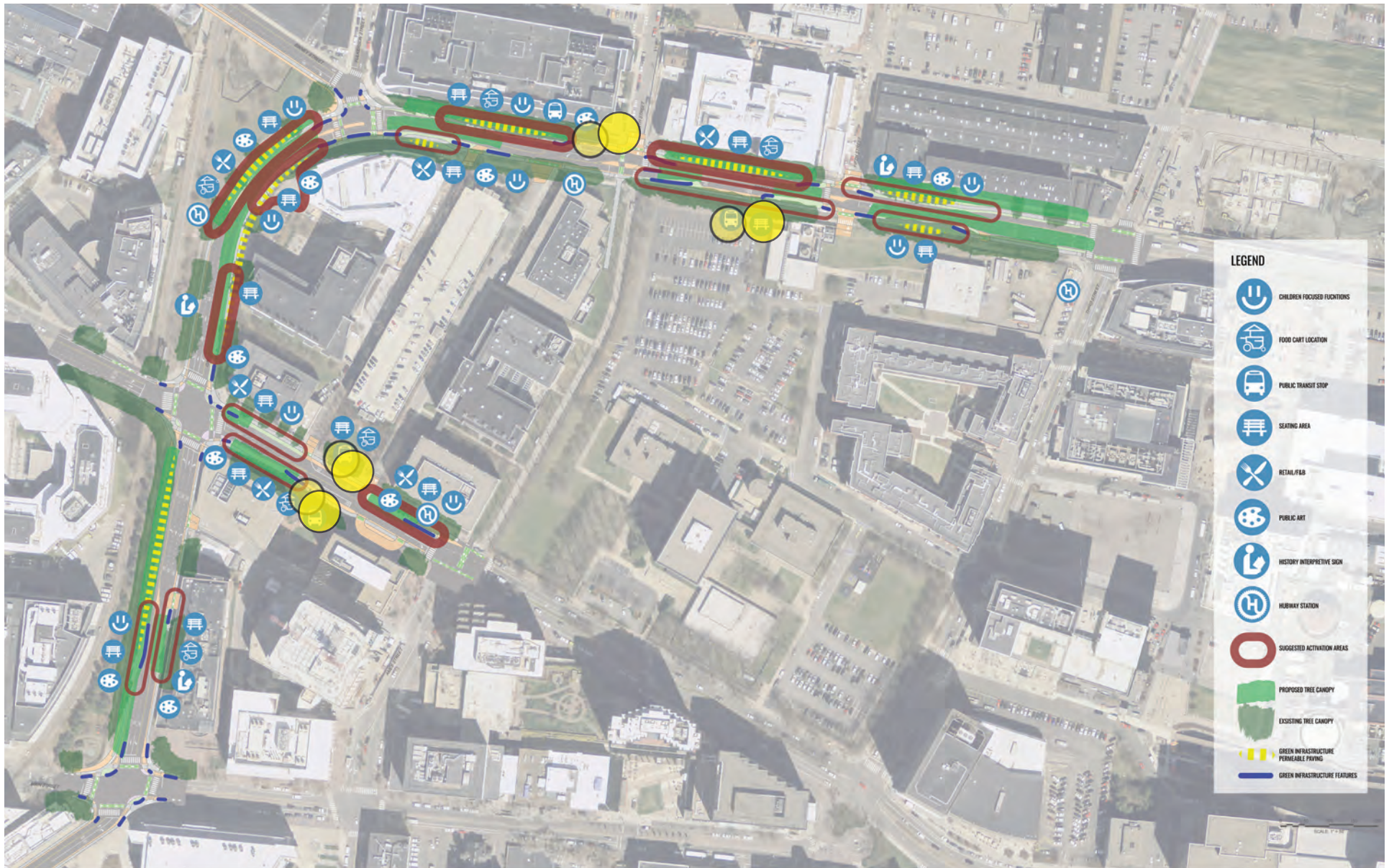
LANDSCAPE LAYERS

TREE CANOPY



LANDSCAPE LAYERS

COMPOSITE

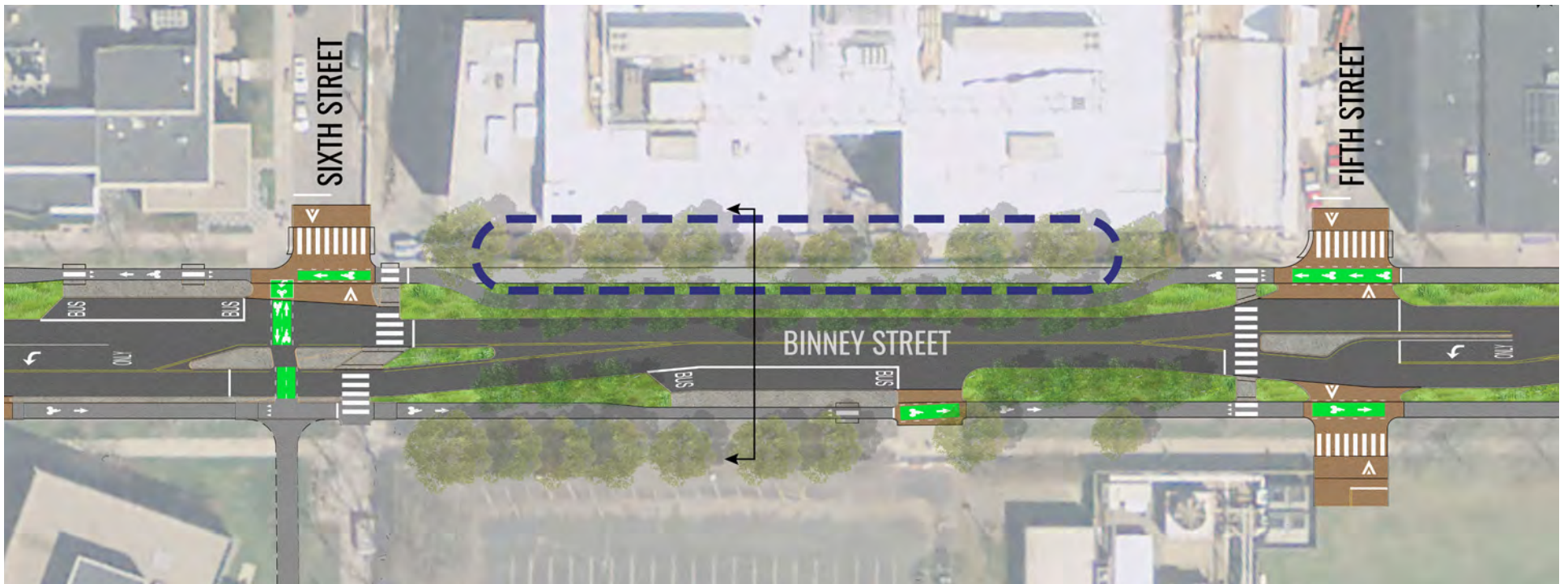
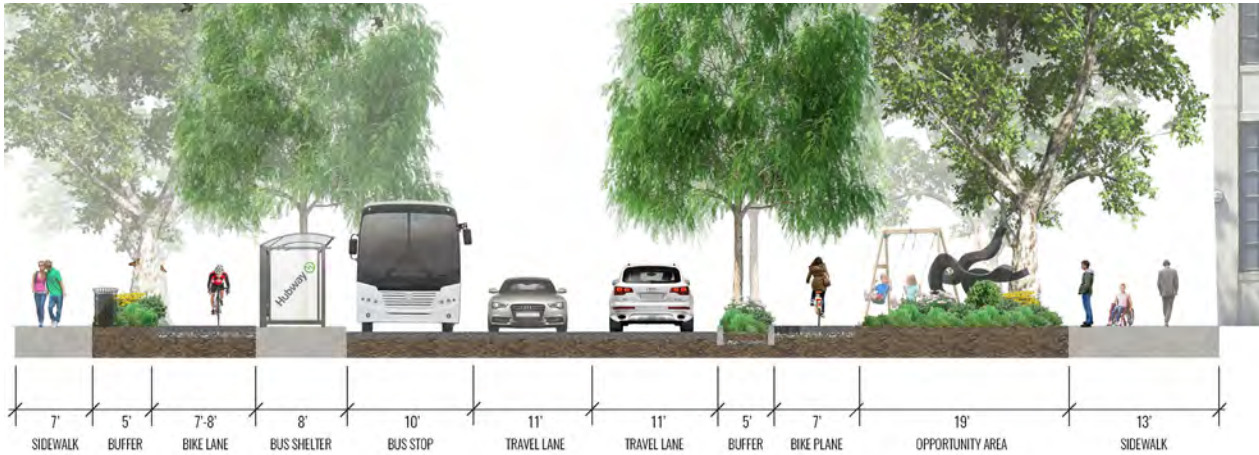


THE VISION



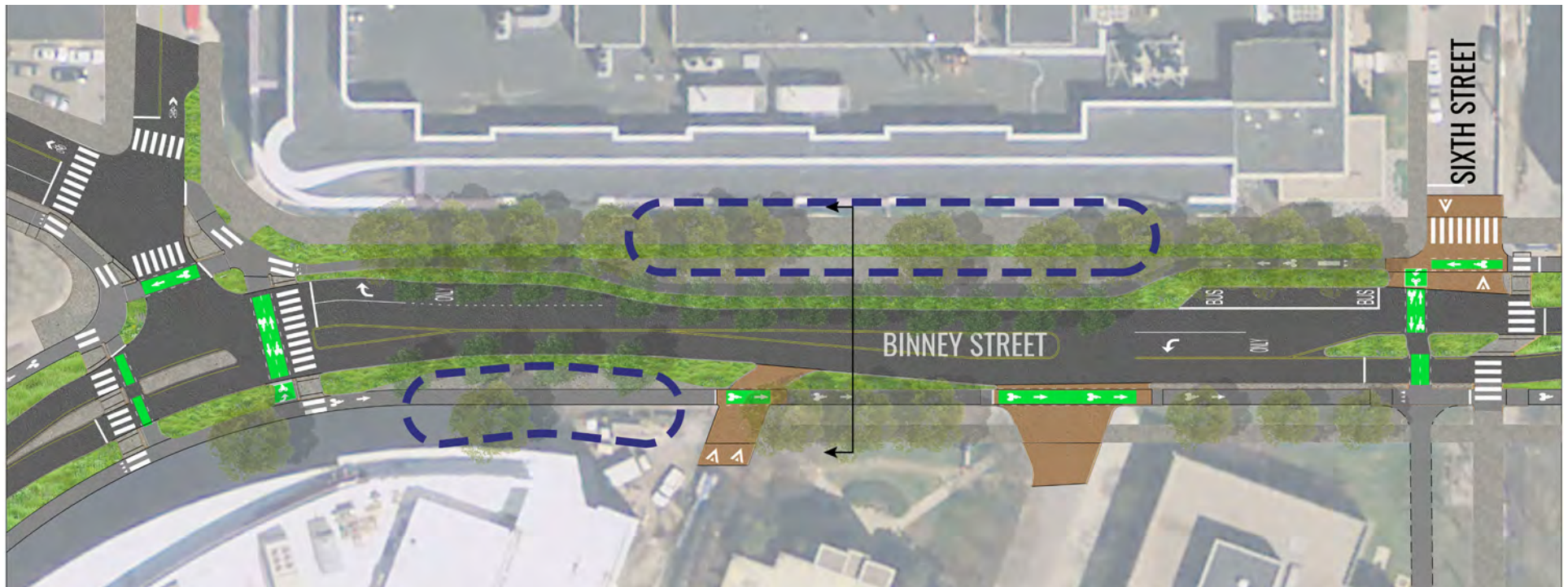
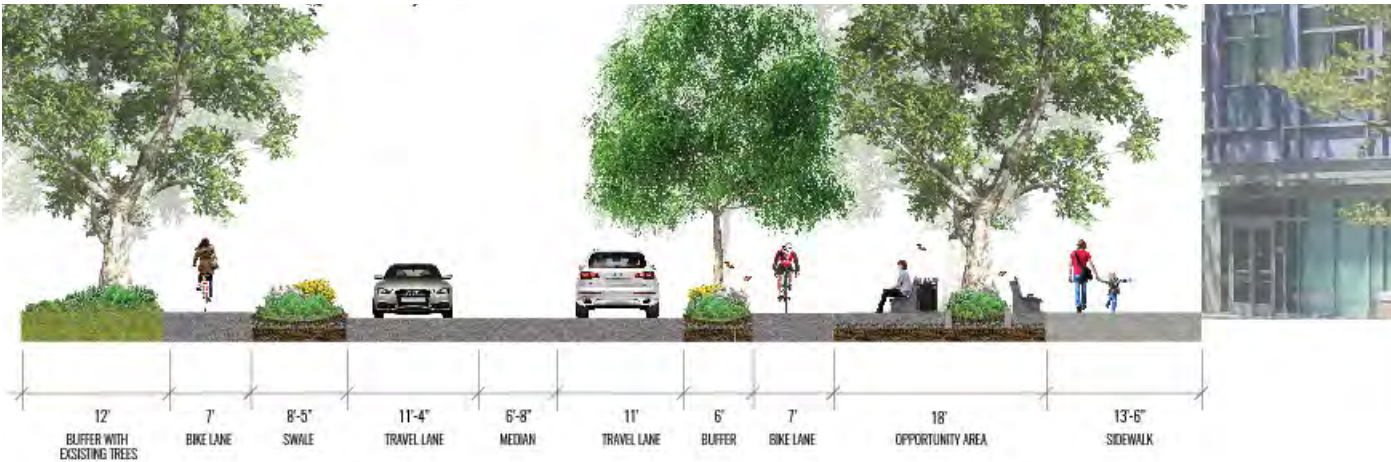
DESIGN CONCEPTS

BINNEY ST (BETWEEN 5TH AND 6TH ST)



DESIGN CONCEPTS

BINNEY ST (BETWEEN 6TH AND FULKERSON ST)



DESIGN CONCEPTS

BROADWAY (BETWEEN AMES AND GALILEO GALILEI WAY)







STREETSCAPE ACTIVATION

Streets have the ability to function as both a connection and a social and active space by establishing a relationship to the places where people live, work and play. Streetscape activation is an approach that enhances current streets by enabling safe, convenient, and comfortable travel, dwelling, and access for users of all ages and all abilities regardless of their mode of transportation. It is a person-oriented design philosophy that seeks to facilitate safe travel and a sense of place for those walking, bicycling, driving an automobile, or riding public transportation.

PROTECTED INTERSECTIONS

A protected intersection is an **at-grade road junction** in which cyclists and pedestrians are separated from cars.



PAVEMENTS

SIDEWALKS + CROSSWALKS

Sidewalks leading to crosswalks should encompass a waiting space for pedestrians. Crosswalks accommodate pedestrian access and mobility, and if well-designed and appropriately placed, they can increase pedestrian safety and comfort. Crosswalks should be installed at grade and across all legs of a signalized intersection, unless pedestrians are prohibited. Crosswalks should be paired with curb ramps, detectable warnings, and pedestrian countdown signals to be fully accessible.



Retroreflective Thermoplastic Crosswalk

Thermoplastic pavement markings in a perpendicular zebra striping pattern are the city standard.

SEPARATED BIKE LANES

A separated bike lane is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A separated bike lane is physically separated from motor vehicle traffic and distinct from the sidewalk.

Separation may be achieved with vertical barriers like landscaping and curbing or planters, flexiposts, or by raising the bicycle lane to sidewalk level. When using any of these separation solutions, the MassDOT Separated Bike Lane Design Guide should be consulted for design guidance.



Photo Credit: [Nacto.org/ westsideaction.wordpress.com](https://nacto.org/)

BIKE BOXES

Bike boxes are a designated spaces at signalized intersections that are exclusively for bicyclists. Bike boxes are located at the head of a traffic lane and allow bicyclists to queue in front of motor vehicle traffic during the red signal phase. Placing bicyclists in front of motor vehicles increases the visibility and safety of both bicyclists and motorists.



BICYCLE PAVEMENT MARKINGS

Bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection and provide a clear boundary between the paths of bicyclists and motor vehicles in the adjacent lane.



CORNER SAFETY ISLANDS

A corner safety island is a raised area that separates the separated bike lane from the general purpose travel lane and defines the corner radius of the intersection. The island provides comfort for waiting bicyclists and may manage the speed of turning vehicles.

RAISED CROSSINGS

Raising the roadway to meet the sidewalk is encouraged where possible to help calm traffic and emphasize the importance of pedestrians and bicycles crossing the streets.





LIGHTING

Activity Zones should experience separate lighting from the rest of the site to **enhance the spaces** while also **making them unique**. Lighting opportunities can arise around public art, fountains, play spaces, or public plazas. Provision of power connections within the activity zones will also be important, for seasonal displays and to broaden the types of activation opportunities available.

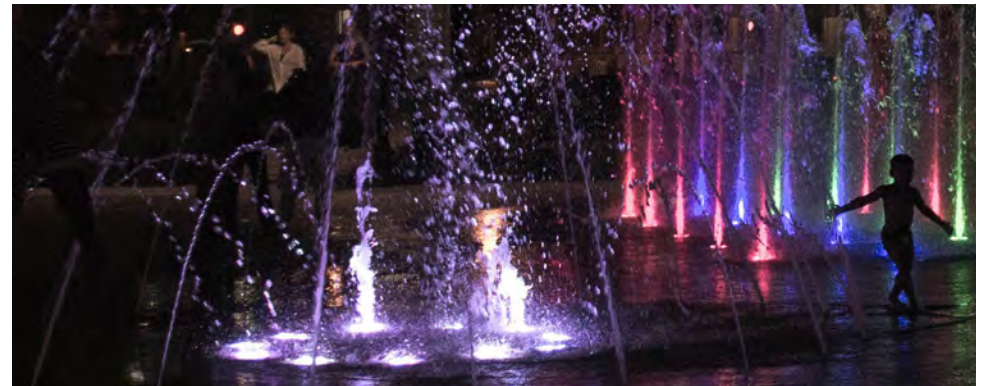


Photo By Nathan Duderstadt
<https://www.flickr.com/photos/125536921@N05/>

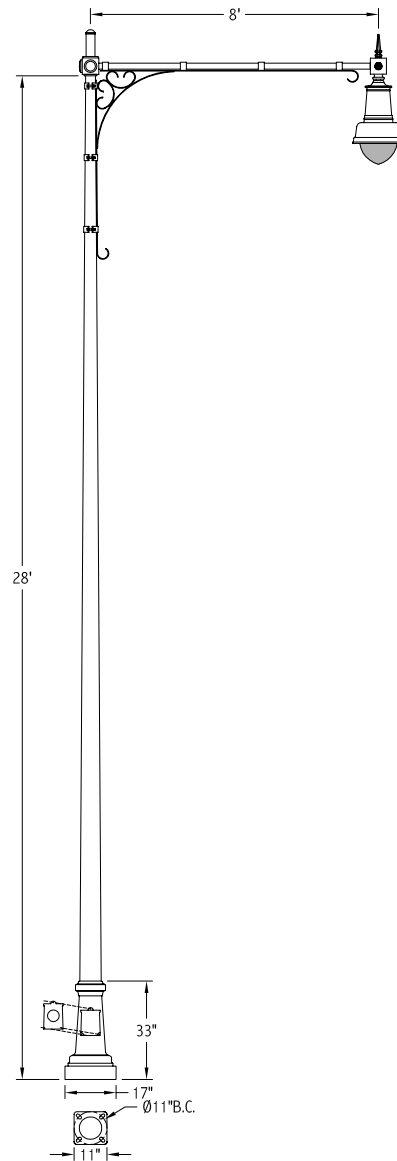
ROADWAY LIGHTING

Lighting improves visibility for both pedestrians and motorists - particularly at intersections. Lamp fixtures should be placed at a height of 24-28 feet and poles should be spaced approximately 50-100 feet apart on roadways, depending on the intensity of lights. Lamp fixtures should project light downward in order to provide sufficient illumination of the sidewalk while limiting excess light pollution. Illumination should be warm and moderate, rather than dim or glaring, and should provide a balanced coverage of the corridor and surrounding area for comfort and security.

Appropriately scaled street lighting provides a safer, more visible, and more inviting environment for all roadway users. Pairing pedestrian-scaled street lighting with other improvements, such as street trees, helps alert motorists to the potential presence of pedestrians and bicyclists. Lighting should not backlight the pedestrian at unsignalized crossings to improve visibility for passing motorists.



CAMBRIDGE SERIES



SCALE: 1/4" = 1'-0"

CB-17-TS-28-BC-ARM-BC-17

CSI POLE SPECIFICATION

POST

Post shall be tapered smooth steel with a 3" x 3" tenon for crossarm mounting. The post shall have a cast aluminum wrap around base with an access door for wiring and anchorage. 2" Pipe with 1"x2" scrolled steel supports clamped to pole in 3 locations.

III. ANCHORAGE DETAIL

Post base is furnished with (4) Ø3/4"x24" hot dip galvanized L-type anchor bolts with 3" minimum projection each.

FINISHES

Five Year Powder Coating Warranty

Niland Company factory-applied powder coatings are warranted against peeling, excessive fading and cracking under normal climatic exposure for a period of five years from date of shipment. Damage to finish coating caused by abuse or mishandling during installation is not covered by this warranty. This warranty is limited to the repair or replacement of the material involved and does not include reimbursement of consequential expenses such as installation or removal of equipment or transportation costs.

I. STANDARD FINISH

Satin iron achieved by rotary sanding, blasting and phosphate conversion coating.

II. THERMOSET POWDER PAINT FINISH

Pretreatment shall consist of a phosphate conversion coating.

FINISH COAT

Thermoset TGIC super polyester powder coat finish electrostatically applied, oven cured and bonded at approximately 420° F to a minimum dry film thickness of 1.6 mils. All Niland powders must pass a minimum 3000-hour salt-spray test for corrosion resistance. The National Association of Architectural Metal Manufacturers, Metal Finishes Manual rates the outdoor life of these powders at 15-plus years.

III. ELECTRICAL

All electrical components and materials shall be UL-recognized and wired by a certified UL technician. All Niland ballasts are high power factor rated for 30°C/-20°F starting. Medium and Mogul base sockets are 5KV rated. The electrical assembly is prewired with quick disconnects for servicing. Fixture shall be UL certified for wet locations and carry all HID listings required. Ballast components shall carry the ballast manufacturers limited warranty of two years. QL induction ballasts and lamps are optional.

WARRANTY

Niland Company warrants to repair or replace, at our option, any equipment that fails due to defects in material or workmanship within one year from date of shipment. This warranty does not include failures as a result of improper installation, mishandling or misapplication. This guarantee is limited to repair or replacement only and does not include reimbursement for expense of installation, removal of equipment, transportation or any other expenses that may be incurred. Authorization must be obtained from Niland Company in El Paso, Texas before any material is returned.

Niland Cambridge 17 Series (1 Light) - CAMBRIDGE
 17 SERIES CAST IRON CLAM SHELL-TAPERED
 SMOOTH STEEL SHAFT-28' 8" POLE HEIGHT-
 SINGLE 6' CAMBRIDGE ARM WITH SCROLL-BC LED
 PENDENT FIXTURE-NILAND OSRAM SYLVANIA LED
 UNIT-4000 KELVIN-125 ACTUAL WATTS-250 WATT
 0-10V DIMMING DRIVER EQUIVALENT-VOLTAGE
 RANGE-TYPE III REFRACTOR-GFI RECEPTACLE
 WITH WEATHERPROOF COVER-GLOSS BLACK NEMA
 TWIST LOCK PHOTOCELL - GLOSS BLACK



Niland Company

NILAND COMPANY • PH: (915) 779-1405 • FAX: (915) 779-3618 • E-MAIL: INFO@NILANDCO.COM
 320 N. Clark El Paso, Tx 79905 • PH: 800-648-9013 • FAX: 888-779-3065 • WEB PAGE: HTTP://WWW.NILANDCO.COM

PEDESTRIAN LIGHTING

Sidewalk lighting should be located in areas with high pedestrian activity. Pedestrian-scale lighting fixtures, typically 12 to 15 feet high, illuminate pedestrian-only walkways and provide supplemental light for the sidewalk. Various arrangements of lights with different heights, colors, style, and spacing will create different experiences for people in various spaces and corridors. Establishing a hierarchy of light fixtures and lamp sources for gathering spaces and sidewalks with an intentional approach is important to a cohesive nighttime streetscape in Kendall Square. Pedestrian lighting will also increase safety, wayfinding, and creates a sense of drama in the nighttime landscape.

OVERHEAD LIGHTING (Saturn Cutoff LED)

Overhead lighting can illuminate larger pedestrian corridors, bikeway corridors, and primary pathways leading to gathering spaces such as; public plazas, outdoor dining areas, playgrounds, landmarks, or public art.



Saturn Cutoff LED - CAST ALUMINUM HOUSING BLACK FINISH, FORMED SPECULAR ALUMINUM REFLECTOR, LAMINATED GLASS ENCLOSURE WITH CLEAR SECTION BELOW LEDS. LED SINGLE MOUNTED LG3700 700MA@65W TYPE III DISTRIBUTION 5000K 0-1 OV DIMMING DRIVER. STEEL POLE 14' HIGH W/DUPLEX GFI RECEPTACLE MTD@13'AFG



Model	LED Color	Finish	Anchorage	Motion Sensor (optional)
SP010	WW (3000K)	B (Black)	AKE (Embedded)	1S (1 sensor)
SP012	NW (4000K) W (5700K) B (Blue)	BZ (Bronze) P (Platinum Silver)	AKS (Surface Mounted)	4S (4 sensors)

SOLAR POWER BOLLARDS

Bollards with integrated lighting can illuminate activity zones for pedestrians at night. The lighting is more dramatic and lower, useful for highlighting areas outside of businesses, restaurants, street lounges, playgrounds, plazas, and residential areas. Bollards should not be used in areas with cyclists or bike facilities, as it can present a hazard for people on bikes.



METEOR Solar LED Bollard SP-010

Meteor Lighting's Meteor Solar LED bollards incorporate batteries to help maximize the lighting period to up to 12 hours after only four hours of charging from direct sunlight to solar panels mounted on top of the bollard. The bollards have a fluorocarbon finish to stand up to harsh environmental conditions.

SIDEWALKS

Sidewalks are the most fundamental element of the walking network, as they provide a dedicated space for pedestrian travel that is **safe, comfortable, and accessible**. In Kendall Square, generous sidewalks are appropriate for the amount of foot traffic in the area. Sidewalk widths of at least 8-feet are generally desirable but can be less if there are parallel facilities such as multi-use path or more if there are large furniture zone areas..





PAVEMENTS

Sidewalk pavements should be durable, practical from a maintenance standpoint, and safe and comfortable for pedestrians, including those who use wheelchairs and other mobility aids. Incorporating different types of pavements can enhance large paved surfaces and denote areas of importance.

Feature strips can help break up large areas of pavement that appear vast to the eye. Feature strips can also highlight paved areas outside of businesses, pedestrian gateways, and denote pathway hierarchy.

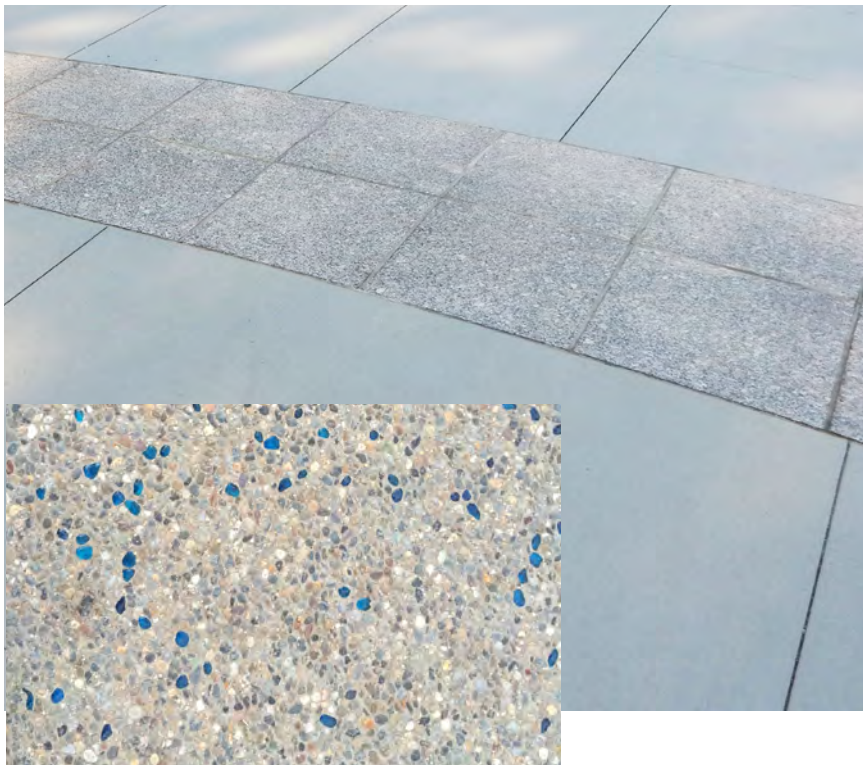
CAST IN PLACE CONCRETE (for Sidewalks)

Cast in place concrete is an efficient, safe, and feasible option. Standard CIP concrete will achieve continuity between Kendall Square and its adjacent roadways with the same style of concrete sidewalks. Concrete sidewalks will use a broom finish and saw-cut joints in a pattern to reduce the scale of surface.



BRICK PAVING (for Feature Strips)

Brick paving will be used to be consistent with surrounding streetscape projects. Edges and joints shall create a smooth, continuous surface. The installation design (paving section) shall ensure a level, stable paving surface and in accordance with manufacturer's recommended installation method(s) Wire cut brick is the Cambridge standard and a variety of colors including mixed colors and finishes are recommended to add visual interest. Brick or paver feature strips may be installed as a permeable stormwater paver installation when appropriate spacing and base material are used.



ENHANCED CAST IN PLACE CONCRETE (for Feature Strips)

Enhanced concrete may have an exposed aggregate finish for a rich, textured surface, and may incorporate special joint patterns for a more refined appearance. Enhanced cast in place concrete can also be utilized as a pervious surface in areas adjacent to impervious surfaces, and within transition spaces in between vegetated buffers. Integral color and decorative aggregates can be selected for aesthetic quality and meet accessible design requirements for slip resistance.



POURED RUBBER (for Playspace)

Poured Rubber offers a colorful, seamless, and safe surface for the playspace activity zone. This surface has great shock absorption and footing for children so they can play safely. The installation design (paving section) shall ensure a level, stable paving surface and in accordance with manufacturer's recommended installation method(s). Note that not all proposed play elements in the activity zone will require safety surfacing.

FURNITURE

Site furnishings are critical components of creating a socially and economically vibrant streetscape and accommodating a wide range of needs and activities. A consistent aesthetic and design language in street furnishings can help to tie the entire streetscape together. Providing benches at key rest areas and viewpoints encourages people of all ages to use the walkways by ensuring that they have a place to rest along the way. Bike racks accommodate bicyclists traveling to their destinations. Trash and recycling receptacles promote cleanliness and sustainability. Landscaped planters and movable furniture offer aesthetic and placemaking benefits to the sidewalk.



BENCHES (Chase Park Bench)

The standard Chase Park Bench can be located throughout the Kendall Square streetscape to ensure a basic level of seating everywhere, that anyone can rely on regular places to stop and rest briefly, on any pedestrian route. The Chase Park Bench is a unifying design element that expresses the value of high quality in the public realm. The Chase Park Bench has two sizes, a larger size that is 74" long and a smaller size that is 50" long.



SEATS

K COLLECTION OUTDOOR PEBBLES

The K Collection Outdoor Pebbles may be located within activity zones, allowing a place to sit for groups and individuals. These seats are placed along the outer parts of the activity zones so people can view into and out of the zones. The K Collection Outdoor Pebbles presents a high quality and modern design element to the landscape. The Seats have four sizes. KE70 is 20.4"x27.5"x14.9", KR70 is 25.5"x27.5"x15.7", KR85 is 29.9"x32.3"x12.7" and KR100 is 34.6"x37.4"x19.6".

SEATS (HD ADIRONDACK 4 SLAT)

The lolltrade adirondack chairs used in the project area can be incorporated further into the design and activity zones.

lolltrade.com



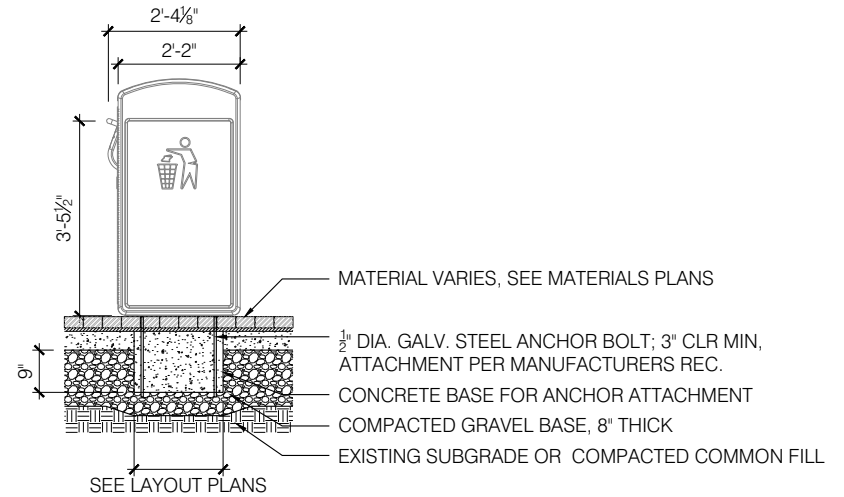
TRASH RECEPTACLES (Big Belly Solar Trash Compactor & Recycling Combination)

Waste stations contribute to keeping streets clean and promoting good behavior by people who use them. Their frequent presence ensures a place to put one's waste and exhibits a value of quality and care in the public realm.

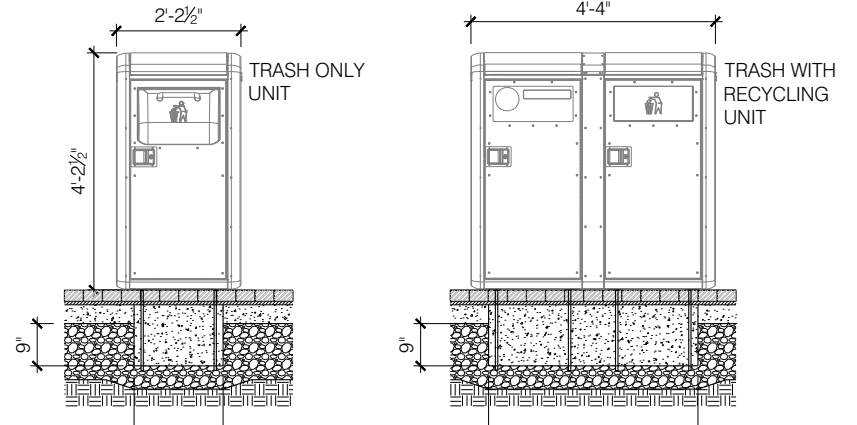


1 BRICK PAVEMENT ON CONCRETE SLAB

SCALE: 1 1/2" = 1'-0"



SIDE ELEVATION

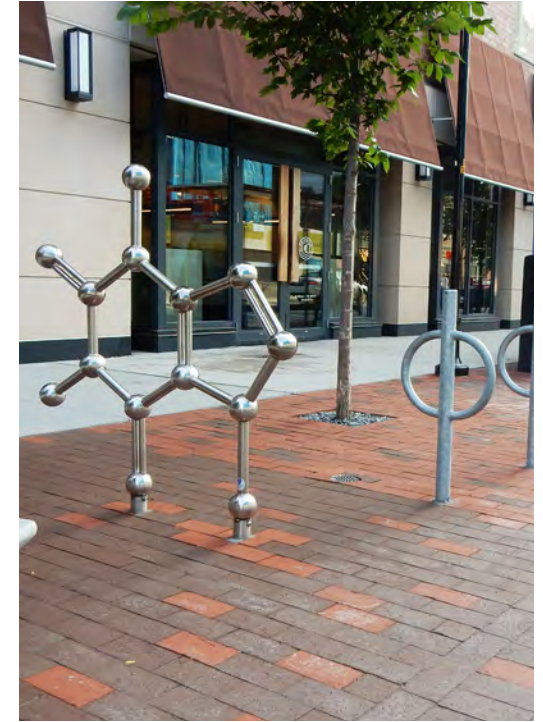


The Big Belly Solar Trash Compactor (Color-Black), and Big Belly Single Stream Recycling (non-compacting) as manufactured by BigBelly Solar (Color-Black) will be used on sidewalk streetscapes. Custom decals can be created for the front and sides of the receptacles to enhance Kendall Square's sense of place. Optional foot pedal to be included.

CREATIVE BIKE RACKS

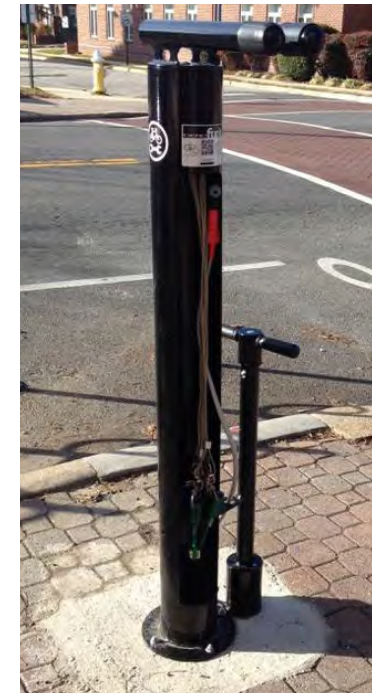
Bike parking promotes bicycle use through Kendall Square for transportation and recreation. To provide secure short-term parking and express a commitment to cyclist and bike culture, high-quality racks shall be located throughout the area, on all streets.

In 2015 Climate Co Lab sponsored an art bike rack competition. The Fly Cycle Bike Rack by Julia Hansen and Jeff Olinger was selected as the winner. The Flycycle design team took into account Cambridge city bike rack regulations, design whimsy, useful locations around Kendall Square, and compatibility with existing buildings and street design. <https://www.climatecolab.org/>



BIKE FIX-IT STATIONS

Fix-it stations give cyclists the ability to perform basic maintenance and repairs, from changing a flat to adjusting brakes and tire pressure. Retractable tool attachments and manual wheel pumps installed at key areas provide a valuable amenity to users along the bike facility; the fix-it stands are sturdy and can be easily mounted to existing sidewalk.





BIKE SHARING

Bike Sharing provides an accessible and green transit option. Take a bike from a location near your home or office and pedal your way to the next lunch meeting, errand or shopping trip, or to visit friends and family. Hubway is public transportation by bike, owned by the municipalities of Cambridge, Boston, Brookline, and Somerville. The Hubway bike share system is fully integrated amongst the municipalities so travel is seamless.

<http://www.cambridgema.gov/CDD/Transportation/gettingaround-cambridge/bikeshare>



SIGNAGE

Effective signage in addition to contributing to a sense of direction also grants a sense of well-being, safety, and security. Signage is used so people can effectively simplify their routes and develop “mental maps” of the area. Signage can also assist placemaking initiatives.

KIOSKS

As hubs between different modes of transportation, bikeshare kiosks and parking kiosks can also incorporate maps into their design to help visitors navigate pedestrian pathways and bikeways.

WAYFINDING

Maps and wayfinding signage at key locations along pathways and streets can be implemented so people can easily navigate through Kendall Square. Comprehensive wayfinding systems will efficiently utilize the combination of signs, maps, symbols, and colors. Advanced wayfinding systems will integrate mobile applications, digital displays, and other wireless technologies.

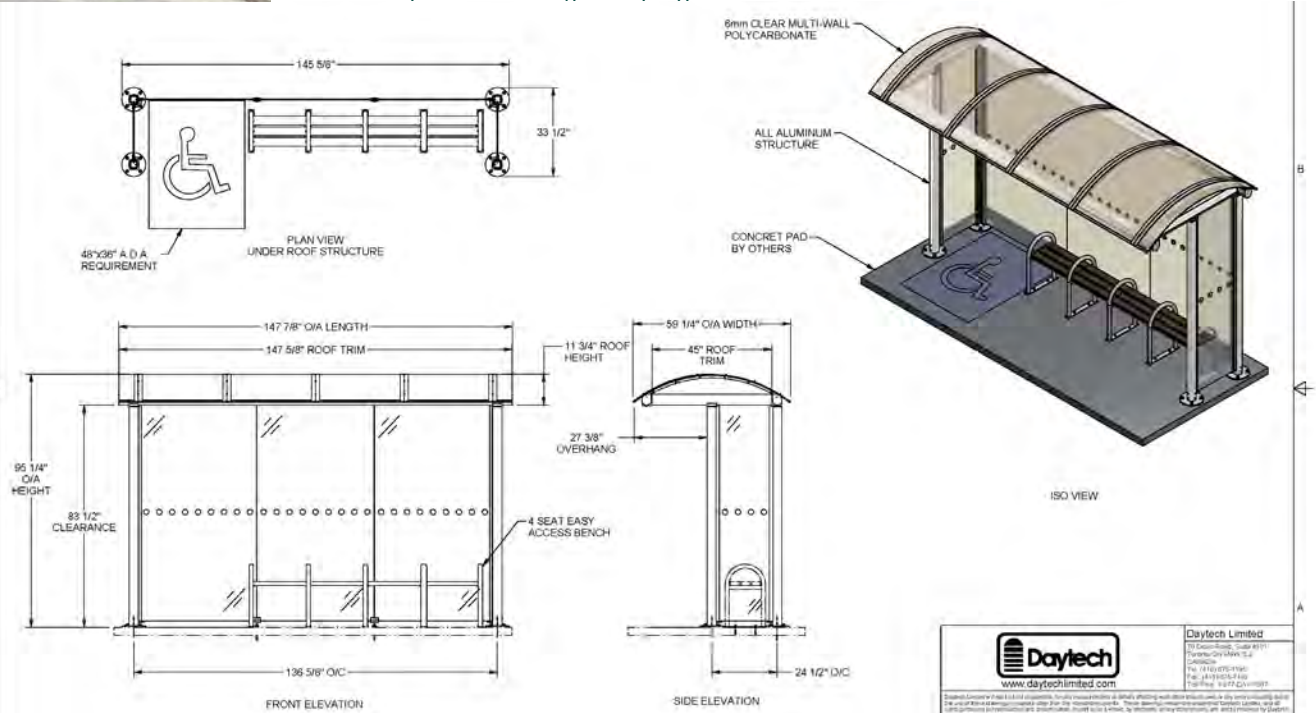




BUS SHELTERS

Bus shelters are located at many of the busiest bus stops in Cambridge to provide a convenient and comfortable place to wait for the bus. Using buses for everyday transportation is a convenient and cost effective way to get around. Providing bus shelters is one of the ways that the City and the Massachusetts Bay Transit Agency (MBTA) hope to encourage people to use buses.

<http://www.cambridgema.gov/CDD/Transportation/programs/cu->



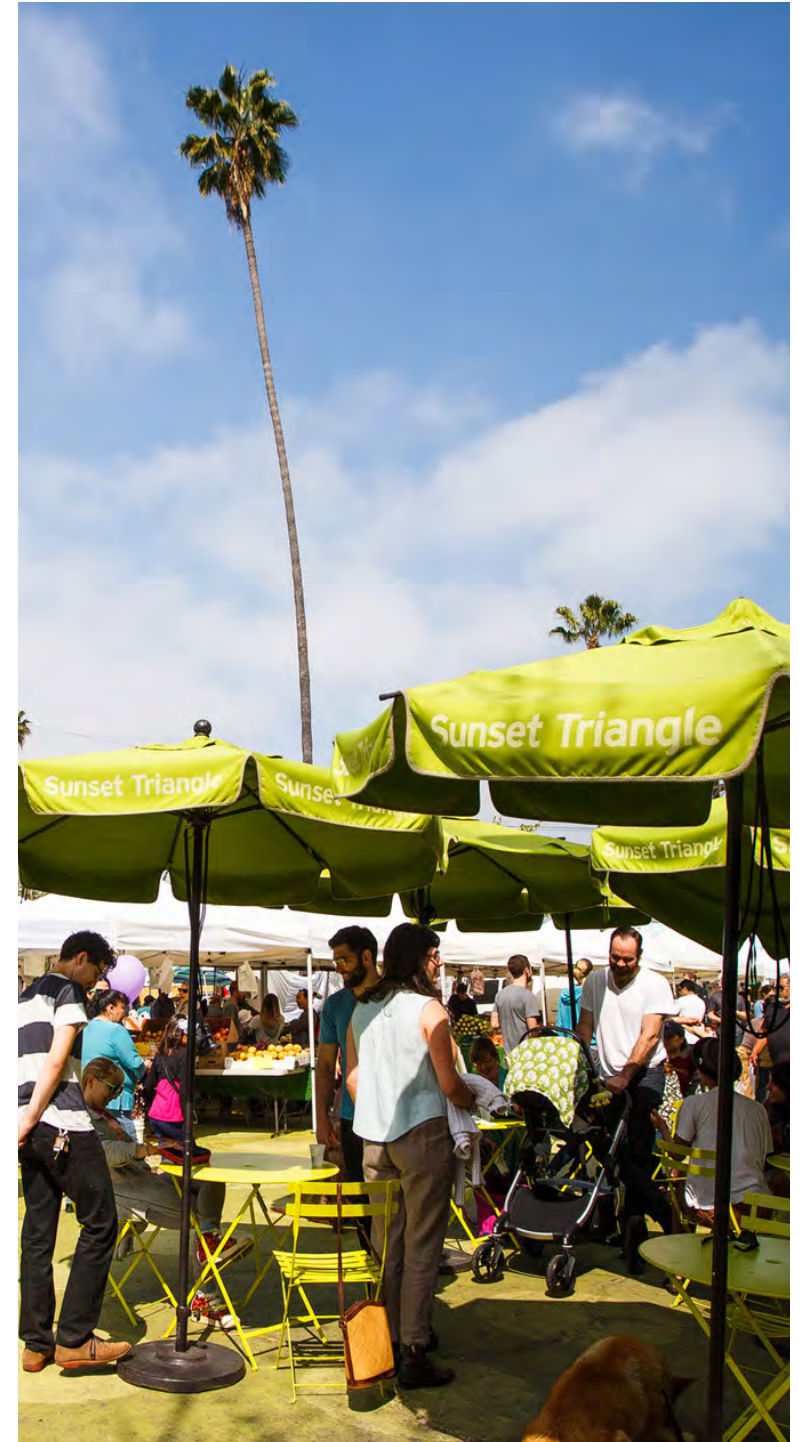




ACTIVITY ZONES

Activity Zones are important implementation areas that grant opportunities to **enhance the public realm** and transform a space into a vibrant, sociable place that **reflects the local culture and environment**. These areas should be developed by in coordination with the adjacent buildings to maximize the interplay between the buildings and streetscape.

Activity zones are fully accessible public spaces and will require additional design development and are most successful when developed with public input. Activity zones shall complement the activities in adjacent open spaces, and not clutter the streetscape environment. Existing street trees shall be preserved to the maximum extent possible and will not be removed to create the public activity spaces. Six activity zones have been developed further in the design plans (Streetscape Activation Page 11).



SPECIALTY PAVEMENTS

Unique paving materials can greatly contribute to the character of a street. In addition to standard concrete, special paving can be used judiciously to enhance the quality of the space and help define activity zones within Kendall Square.

CONCRETE PAVERS

Unit paving is a modular system that provides an enhanced level of material quality and detail. These pavers can exist as multiple sizes and can be laid in different directions to create unique patterns in the landscape. Pavers can highlight cultural and historical backgrounds as well as denote one activity space from another. Paver color and finish should be selected for aesthetic quality and meet accessible design requirements for proper visual contrast and slip resistance. Paver edges and joints should create a smooth, continuous surface, and should not be implemented in the primary path of travel. If they are used in activity zones, they should not limit accessibility. The installation design (paving section) should ensure a level, stable paving surface, and in accordance with manufacturer's recommended installation method(s). Use of unit pavers also provides the opportunity for infiltration between the pavers, which will be important where developing activity spaces within the existing street tree plantings.

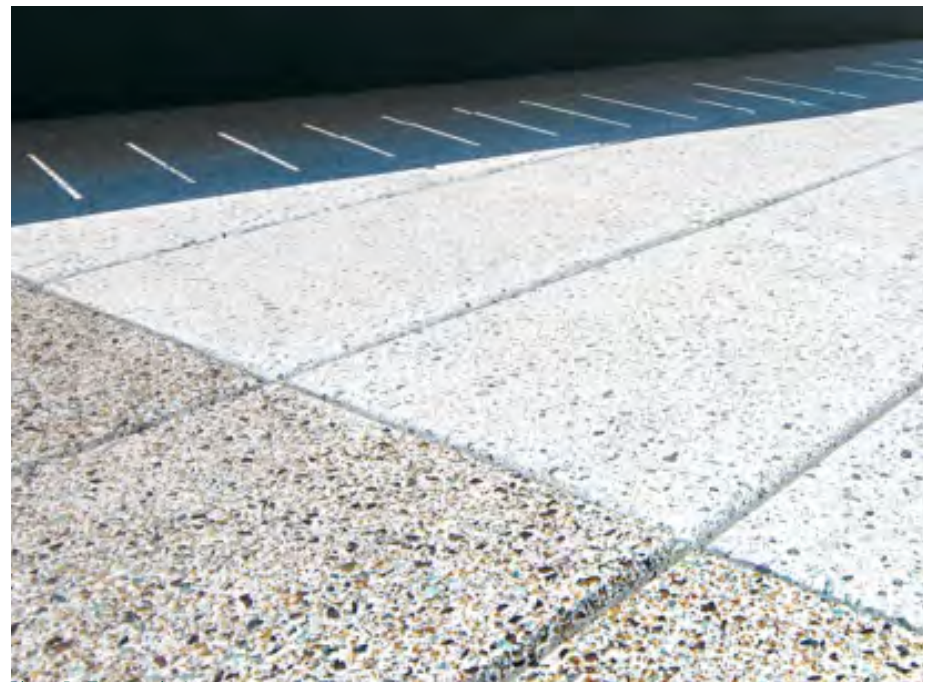
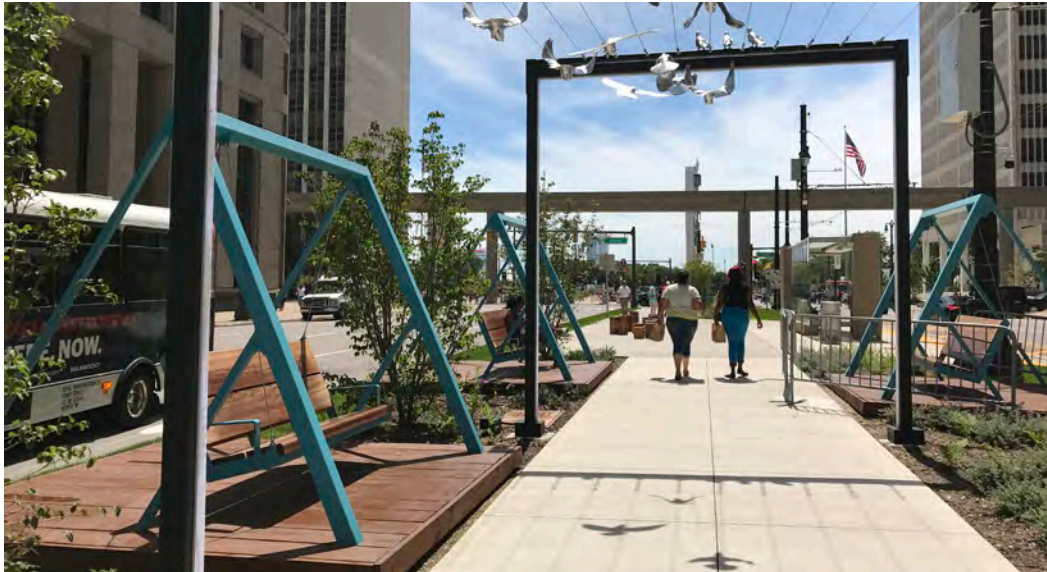


Photo By Tectura designs



ACTIVITY ELEMENTS

Street and sidewalk elements help activate the space by attracting people into activity zones. These activity elements can include but are not limited to cafe's, plays areas, public plazas, street lounges, food carts, and public art.

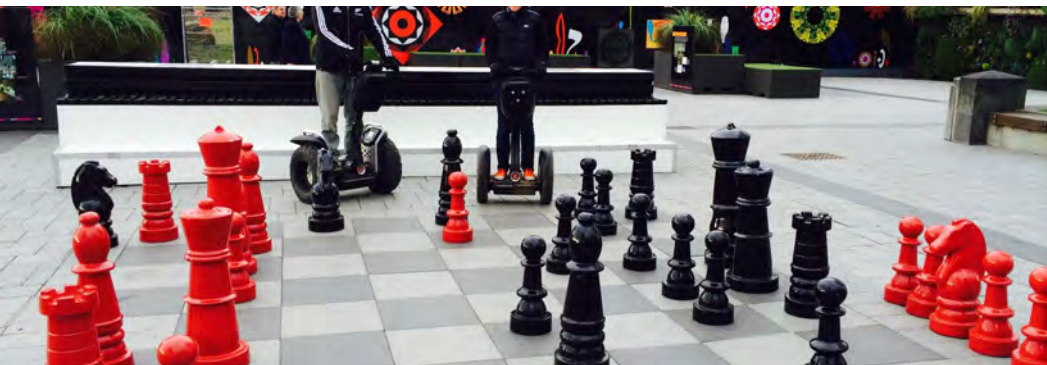
SWINGS

Playful elements, such as swings and other adult 'play' equipment, can be included in the activity zones to invite pedestrians to gather and spend time outside. Furniture can reflect and enhance Kendall Square's unique identity by including local artwork, fun colors, and modern design.



"LAWN" GAMES

Games breathe life into a streetscape, programming the space and encouraging people of all ages to come out and play. Games (such as cornhole, urban chess, jumbo jenga, and mini-putt) give open space a purpose, create destinations within activity zones, and enhance the sense of place along the streetscape.





CAFE'S + OUTDOOR DINING

Outdoor cafes or outdoor dining are excellent ways to enliven a street. By creating another space for people to reside along the sidewalk it encourages others to do the same and enjoy the outdoors during the day and at night. These spaces can bring a cutting edge flare to a street while also enhancing the local economy. While outdoor seating is naturally located near food vendors (either take-out or sit-down), locations where workers and residents can sit and eat their own food are important as well. Movable tables and chairs grant the user flexibility to adapt the space to their needs and find the right level of comfortability.

PLAYSPACE

A playspace provides a safe and active area for children and adults to enjoy. Creating active spaces grants another destination for families to spend time together in the public realm. A range of playground styles can be designed for various levels of enclosure. Goric Half Euroflex Balls may be used in the playspace activity zone. There are three sizes for the half balls. Other structural elements from Goric are suitable for the area including the spiral and grass elements.

Not all play features have to be standalone structures requiring rubber surfaces, play can be incorporated into the public realm in a variety of creative and delicate ways. A key play element for Kendall Square is to provide interactive and inventive play features for all ages.

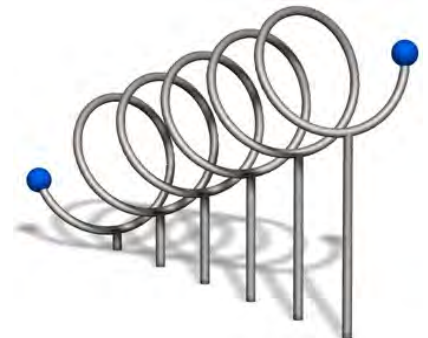


Photo by Goric - Goric.com



FOOD CARTS

Food carts bring new, affordable, and local food to the area. Food vendors bring foot traffic to commercial districts which increase sales for retail businesses. They can also offer culturally diverse foods that typically do not compete with sit down restaurants. They bring positive activity and can also serve as a positive entry point for individuals wanting to own their own business. Food carts can also more easily be integrated into the confined spaces available in the streetscapes which will be inaccessible to the food trucks that already service the Kendall Square area. Food carts may require an electrical connection, and one should be available in these areas.



PUBLIC ART WALK

Public art creates a free outdoor gallery for individuals or groups to enjoy. Public art can also be from the local community bringing out a stronger feeling of attachment. This work can create a cultural or historical identity for the city, block, and street.

PUBLIC PLAZAS

As both an active pedestrian route and communal front yard for residents, the Public Plaza provides social gathering spaces with seating arrangements for neighbors and visitor. It is a place to have a conversation or eat lunch. A suite of distinctive, matching furniture pieces—such as love seats, comfortable chairs, and coffee tables—invites people to spend time along the street.



Photo credit: Alan Karchmer and Above Summit (<http://myk-d.com/projects/pier-4-plaza/>)

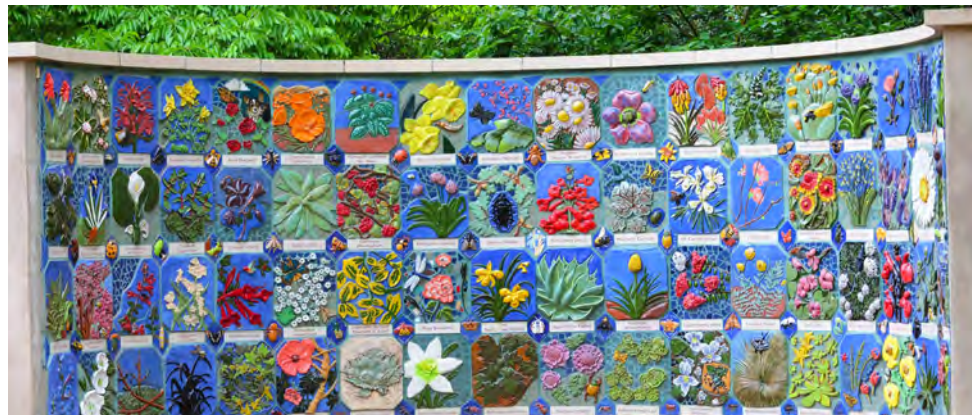
STREET LOUNGES

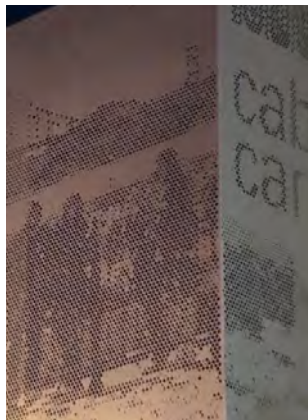
A unique feature for a vibrant, social street. Lounges are special, comfortable outdoor “rooms” for walkers, shoppers and other visitors to spend time. They are pleasant places to be on the street – to watch people or meet friends. Lounges are clearly defined spaces and located outside the flow of pedestrian traffic. They provide a comfortable barrier from passing cars and integrated seating but are also open and flexible, to invite use and adoption by adjacent businesses and vendors. Electric charging stations for mobile devices may help entice longer stays in street lounge areas. Street lounges can incorporate large and small wood lounge chairs for individuals or groups to sit on.



ART PLATFORM AND FREE STANDING ART WALL

Within the Art Walk, platforms for sculptures can be implemented. Art walls can be incorporated along the art walk for two dimensional art pieces. The platforms and art walls may be made of stone or concrete.





PERFORATED METAL SHADE STRUCTURES

This activity element defines the pedestrian space with an iconic structure. Using a perforated metal material introduces an artistic feature to an otherwise simple structure; light shining through the material casts interesting shadows on the ground plane that change throughout the day as the sun moves. Zahner, an international fabrication company, can transfer any image into a custom perforated metal sheet. An image or text that resonates with Kendall Square can be used in the canopy of the proposed structure to enhance the placemaking and beautify the street.

PERFORATED METAL BARRIERS

Perforated metal can also be used as a physical barrier between the street, bicyclists, and pedestrians. The design in the metal should reflect the culture of the community; not only do they make the fencing more appealing, but they can act as a tool for storytelling, wayfinding, or creative expression. Intricate perforated metal sheets can be used intermittently along a barrier to break up normal fencing, or more simple designs can be used throughout.



SUSTAINABILITY + GREEN INFRASTRUCTURE

Green infrastructure offers an environmentally-friendly approach to managing urban stormwater, and if installed in appropriate locations and maintained over time, can be a viable supplement to or replacement of conventional stormwater drainage infrastructure. Green infrastructure systems are designed to slow, absorb, and filter stormwater at or near its source, thus decreasing the quantity and improving the quality of urban stormwater runoff.





STREET TREES

Trees have the ability to **slow stormwater flow** by intercepting rainfall in their leaves and branches and to **reduce the volume of stormwater** by absorbing water through their root systems. In urban areas, street trees are often confined to planters, which significantly constrains the amount of space, water, and air available to a tree's root system. Soil compaction is another major threat to tree survival in urban areas. To address the **constraints of the urban environments**, subsurface structures (such as structural soils) can help prevent compaction over time. These subsurface modifications suspend pavement systems over soils, significantly increasing the volume, aeration, and water storage capacity of soils, while also accommodating the weight of sub-surface utilities and traffic loads.

BINNEY STREET

Hybrid Elm (*Ulmus x species*)



Photo by Gardenweb

GALILEO GALILEI WAY

Red Oak (*Quercus rubra*)



Photo by Panayoti Kelaidis

BROADWAY

Littleleaf Linden (*Tilia cordata*)



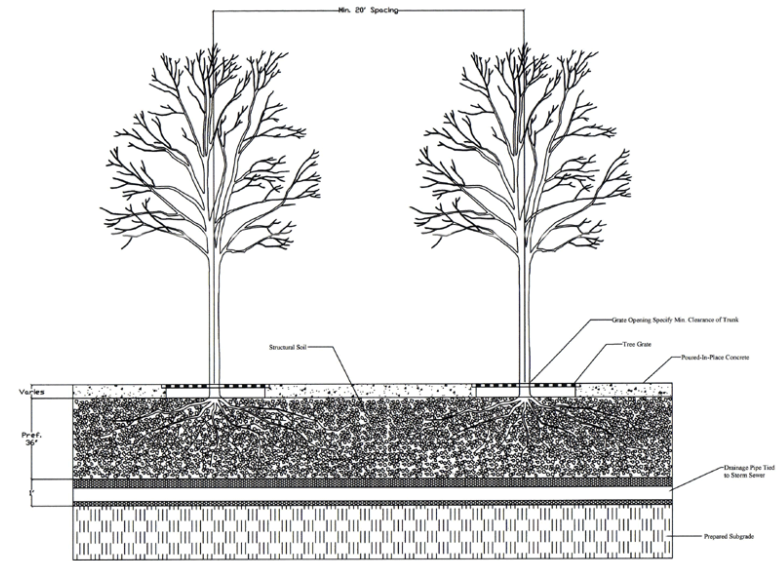
Photo by Van Den Berk Nurseries



PLANTING WITH STRUCTURAL SOILS

Street trees require well-treated and well-nourished soil in order for trees to grow large and healthy. Good soil makes a big difference when it comes to planting large tree specimens in an urban environment. It is common for street trees in urban conditions to gather insufficient water and suffer from soil compaction due to a poor growing environment along the street. A system of structural soils should be used to ensure healthy soil by supporting traffic loads, reducing soil compaction and granting a quality volume of stormwater for trees along the street. 'Structural soil' is a designed medium which can meet or exceed pavement design and installation requirements while remaining root penetrable and supportive tree growth. This system can also prevent the roots lifting pavers as the tree grows.

Structural Soil is made of 80% crushed rock and 20% loam soil coating the rock. The mix is compacted to 95% Proctor Density. Crushed rock has approximately 30% void space and the soil fills these voids, remaining uncompacted with the compaction force and paving loads transferred through the rock matrix. Clay loam soil is required in the mix specifications. Tree roots grow in the soil-filled voids spaces with access to air and water. Vehicular loaded paving can be built over Structural Soil. The debate on structural soils is on-going, but some method should be employed on the Kendall Square streetscape project.



TYPICAL STREET TREE PLANTING - VIEW 2



Structural Soil

http://www.deeproot.com/silvapdfs/resources/articles/Comparing_Silva_Cells_and_Structural_Soil.pdf

STORMWATER PLANTERS

Stormwater planters, which include rain gardens, are manmade depressions in the landscape that **slow, filter, and infiltrate stormwater**. Unlike stormwater swales, which often parallel a road and have a larger catchment area, stormwater planters are designed to collect water from a discrete, local source, such as a rooftop, driveway, or street corner. Stormwater planters can be planted with perennials, grasses, shrubs, and/or trees and provide a great opportunity to **improve streetscape aesthetics**.



DESIGN + MAINTENANCE

Stormwater planters are intended to infiltrate stormwater, not collect and store it for long periods of time; therefore, well-draining soils are required. If water is entering the stormwater planter at a discrete location (i.e., inlet), this area should be stabilized to prevent erosion. The inlet should also be designed to allow sediment to settle and should provide easy access for routine sediment removal. Landscape maintenance (e.g., weeding and watering) will be more frequent in the first few years as plants become established; over time, maintenance regimes may be reduced in frequency, but should be tailored to ensure the desired aesthetic is achieved.

ROADWAY CONTEXT

Stormwater planters vary in size and in design, making it relatively easy to integrate this type of green infrastructure into different land uses. In rural areas or where space is not a constraint, stormwater planters may have a more organic shape defined by less structural materials, such as an earthen berm. In urban areas, where space is limited and/or a more formal aesthetic is desired, stormwater planters can be integrated into the streetscape in the form of bump-outs, medians, sidewalk buffers, or raised planters.



PLANTS

Utilizing plants where space is available will grant **ecological benefits** by increasing biodiversity, and will **beautify the public realm**.



PLANTS FOR GREEN INFRASTRUCTURE

SHRUBS

Ilex verticillata 'Southern Gentelman'	Winterberry Holly
Ilex verticillata 'Sunset'	Winterberry Holly
Ilex verticillata 'Winter Red'	Winterberry Holly
Lindera benzoin	Spicebush

PERENNIALS

Achillea millefolium 'Sunny Seduction'	Yarrow
Achillea millefolium 'Paprika'	Yarrow
Agastache 'Blue Fortune'	Hyssop
Amsonia hubrichtii	Arkansas Blue Star
Aronia arbutifolia 'Brilliantissima'	Red Chokeberry
Asclepias tuberosa	Butterfly Weed
Aster aevis 'Bluebird'	Smooth Aster
Aster oblongifolius 'Raydon's Favorite'	Aromatic Aster
Baptisia x bicolor 'Starlite'	False Indigo
Baptisia 'Carolina Moonlight'	Wild White Indigo
Echinacea (multiple varieties)	Coneflower
Gillenia trifoliata	Indian-Physic
Helenium (multiple varieties)	Helen's Flower
Iris (multiple varieties)	Iris
Kalimeris (incisa "Blue" Star'	Double Japanese Aster
Liatris spicata	Spike Gayfeather
Phlox paniculata (multiple varieties)	Perennial Phlox

(CONT.)

Vernonia lettermannii 'Iron Butterfly'	Narrowleaf Ironweed
Veronicastrum Virginicum	Culver's Root
GRASSES	
Panicum virgatum 'Heavy Metal'	Switch Grass
Panicum virgatum 'Shanendoah'	Switch Grass
Panicum virgatum 'Northwind'	Switch Grass
Panicum virgatum 'Cheyenne Sky'	Switch Grass
Panicum virgatum 'Ruby Ribbons'	Switch Grass
Panicum virgatum 'Warrior'	Switch Grass
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass
Pennisetum alopecuroides 'Foxtrot'	Fountain Grass
Schizachyruim scoparium	Little Bluestem

SHRUBS	
Cornus sericea	Red Twig Dogwood
Ilex glabra	Inkberry
Spiraea japonica 'Shirobana'	Shironbana Spirea
PERENNIALS	
Echinacea (multiple varieties)	Coneflower



PLANTS FOR ACTIVITY ZONES

<i>Liriope muscari</i>	Liliyturf
<i>Nepeta</i> 'Walkers Low'	Catmint
<i>Perovskia atriplicifolia</i>	Russian Sage
<i>Rudbeckia subtomentosa</i>	Sweet Coneflower
<i>Sedum</i> (multiple varieties)	Stonecrop
GRASSES	
<i>Pennisetum alopecuroides</i> 'Hameln'	Dwarf Fountain Grass
<i>Panicum virgatum</i> 'Northwind'	Switch Grass
<i>Panicum virgatum</i> 'Cheyenne Sky'	Switch Grass







INTERPRETIVE OPPORTUNITIES

In addition to stormwater quantity reduction and water quality benefits, green infrastructure can also help achieve **aesthetic, educational, and biodiversity goals**, especially when native plants are used. Incorporating a diversity of green infrastructure systems into the streetscape will enable towns and the region to sustainably manage stormwater, improve streetscape aesthetics, combat climate change, create memorable gateways, provide educational opportunities, and calm traffic.

TELLING THE SUSTAINABILITY STORY



ART + CULTURE

The history and culture within a landscape provides great opportunities for visitors to connect with the historical environment. Kendall Square has a rich history in Cambridge that reflects an **industrial** and **educational** background. History and culture within a site can be an asset for the local economy and more importantly creates a sense of place.



The High Line in New York City



Kendall Boiler and Tank Company Building



Faneuil Hall



Photo By - Erik Anestad - <https://www.flickr.com/photos/aneswede/>



Screen Capture- You Tube: <https://www.cambridgema.gov/arts/publicart/whatsnew/fernstreet>

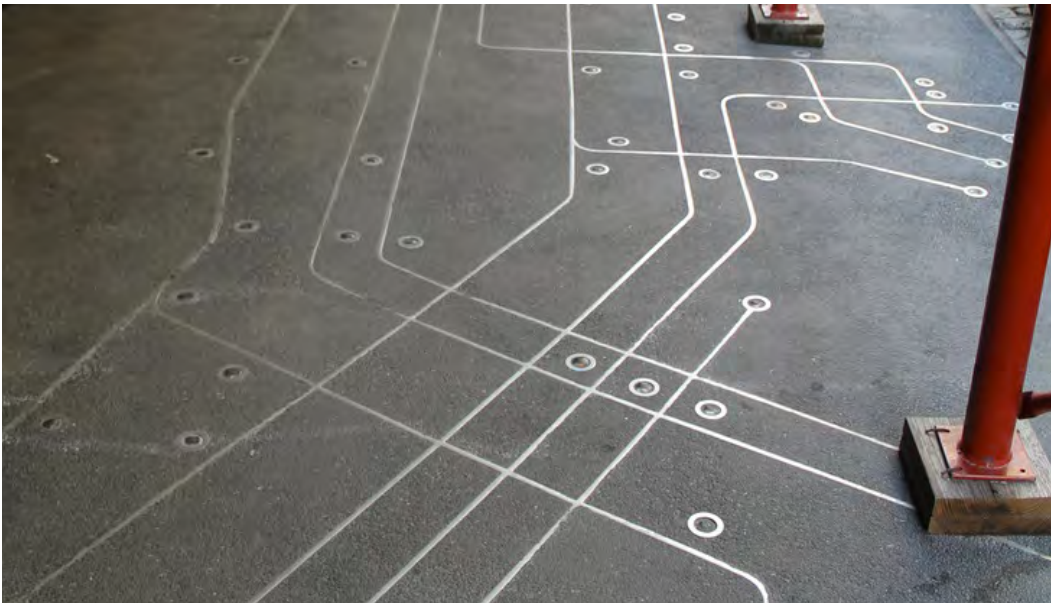
PUBLIC ART

Public Art is an important part to a cities cultural, social, and economic value. It is accessible to anyone, grants a view into the past, present, and future of a city, and represents the inner culture of a community to outsiders. The reaction towards public art embeds itself into visitors and effects how they think, feel, and act. For cities public art can be iconic landmarks that a city can be remembered by or frequently visited. The art captures a spirit of the people who created it and enhances the sense of place in an area. All proposed public art should be considered in coordination with the Cambridge Arts Council Public Art program.

PLACEMAKING

Custom elements and other design components that are unique to Kendall Square can help distinguish the street from others in the Boston area. Banners, gateways, inlaid street name markers, and other iconic signage informs the pedestrian that they are in a culturally significant area. Wayfinding in conjunction with custom design elements, such as wayfinding medallions, etched paving, or inlaid metal or concrete pavement banding, creates a brand for the area that is uniquely Kendall Square; consistent branding contributes to creating successful and active public spaces. A strong sense of place can attract tourism, business investment, and supports a pedestrian environment.





THANK YOU.

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255 Main Street, 8th Floor, Cambridge, MA 02142
Ph: 617.492.6800, Fax: 617.492.6804