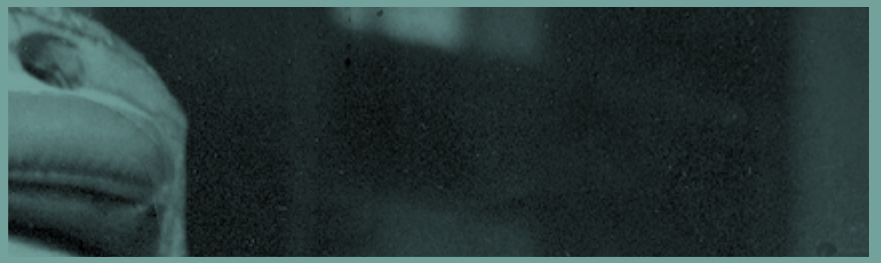
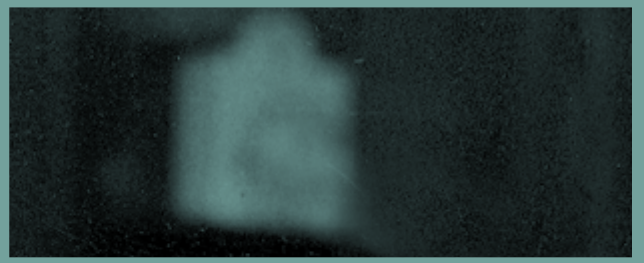
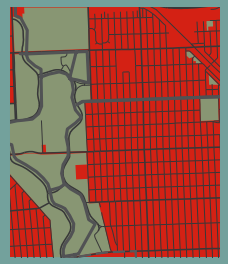
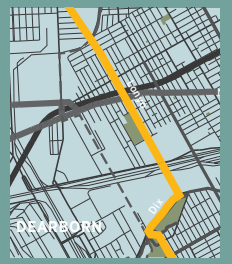







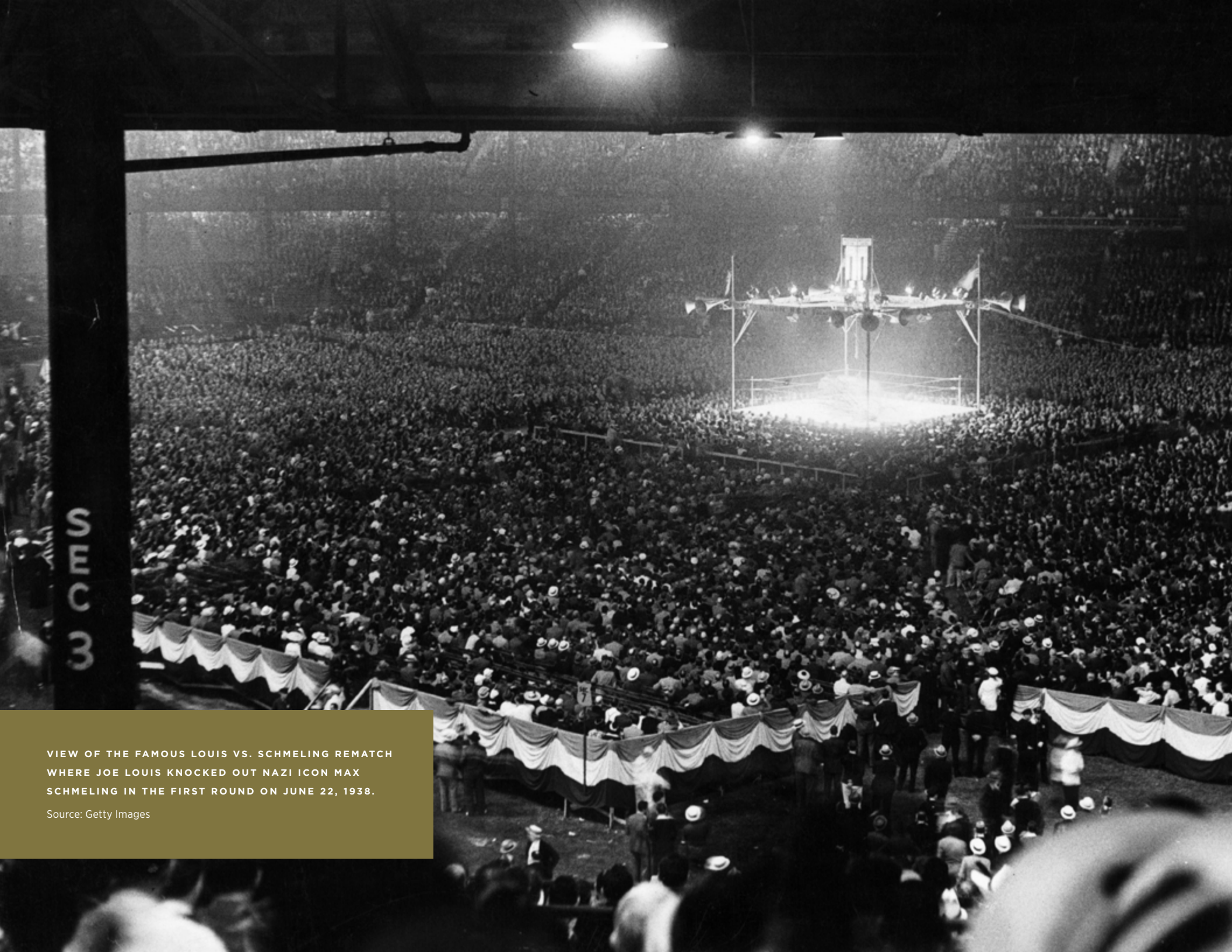
CITY OF DETROIT
GENERAL SERVICES DEPARTMENT

JOE LOUIS GREENWAY

FRAMEWORK PLAN VOL. 2
DESIGN STANDARDS

RELEASED JUNE 2021



VIEW OF THE FAMOUS LOUIS VS. SCHMELING REMATCH WHERE JOE LOUIS KNOCKED OUT NAZI ICON MAX SCHMELING IN THE FIRST ROUND ON JUNE 22, 1938.

Source: Getty Images

CITY OF DETROIT
GENERAL SERVICES DEPARTMENT

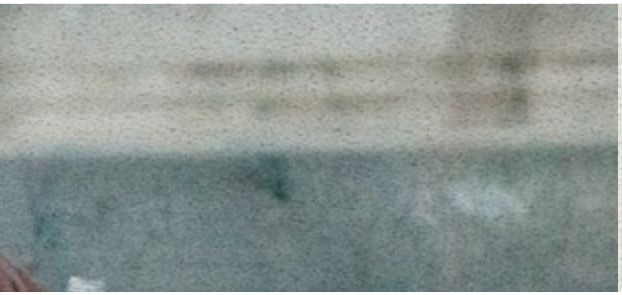
JOE LOUIS GREENWAY

FRAMEWORK PLAN VOL. 2
DESIGN STANDARDS

RELEASED JUNE 2021

The Joe Louis Greenway is a project managed by the City of Detroit's General Services Department.
This framework plan was made possible by funding from the Ralph C. Wilson Jr. Foundation.

Photo: James Brown



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FOR MORE INFORMATION ON THE JOE LOUIS GREENWAY PLEASE SEE THE **FRAMEWORK PLAN VOL. 1: THE VISION**.

FURTHER INFORMATION AVAILABLE IN THE **FRAMEWORK PLAN: APPENDICES**.

CHAPTER 1

GREENWAY DESIGN

Source: Hannah Ervin

1

GREENWAY DESIGN

LOOK, FEEL & FUNCTION

Greenway design standards provide recommendations to guide the overall look, feel and function of the Joe Louis Greenway.

These recommendations were defined through an extensive process of engagement among community residents, City of Detroit staff, agency and jurisdictional partners, stakeholders and the consultant team. These standards have been developed to promote recognizability and consistency in greenway facilities and to ensure a high level of quality, safety and accessibility for greenway users of all ages and abilities. They will guide the design of future greenway facilities and establish standards for the development of the Joe Louis Greenway over time.

Though the following greenway design standards represent the core vision for Joe Louis Greenway facilities, they are the baseline from which future design professionals will respond to specific site conditions. These standards shall be used for reference purposes only by City of Detroit staff, outside designers, planners and engineers or other partners. Future architects and engineers shall be fully responsible for correctness, accuracy and consistency of future construction documents and quality assurance and control.

"THE JOE LOUIS GREENWAY WILL BE MUCH MORE THAN ANOTHER PLACE TO WALK, BIKE AND ROLL IN DETROIT. **IT'LL BECOME AN EXCEPTIONAL PUBLIC SPACE THAT CONNECTS COMMUNITIES AND EXPERIENCES**—FROM QUIET MORNING WALKS TO LIVELY EVENING BIKE CLUB ROLLS WITH LIGHTS AND MUSIC. THIS FRAMEWORK PLAN HELPS ENSURE THIS HAPPENS IN ALIGNMENT WITH THE LOCAL COMMUNITY VISIONS ALONG THE GREENWAY."

—TODD SCOTT, EXECUTIVE DIRECTOR, DETROIT GREENWAYS COALITION

COMMUNITY INPUT

FEATURES & AMENITIES

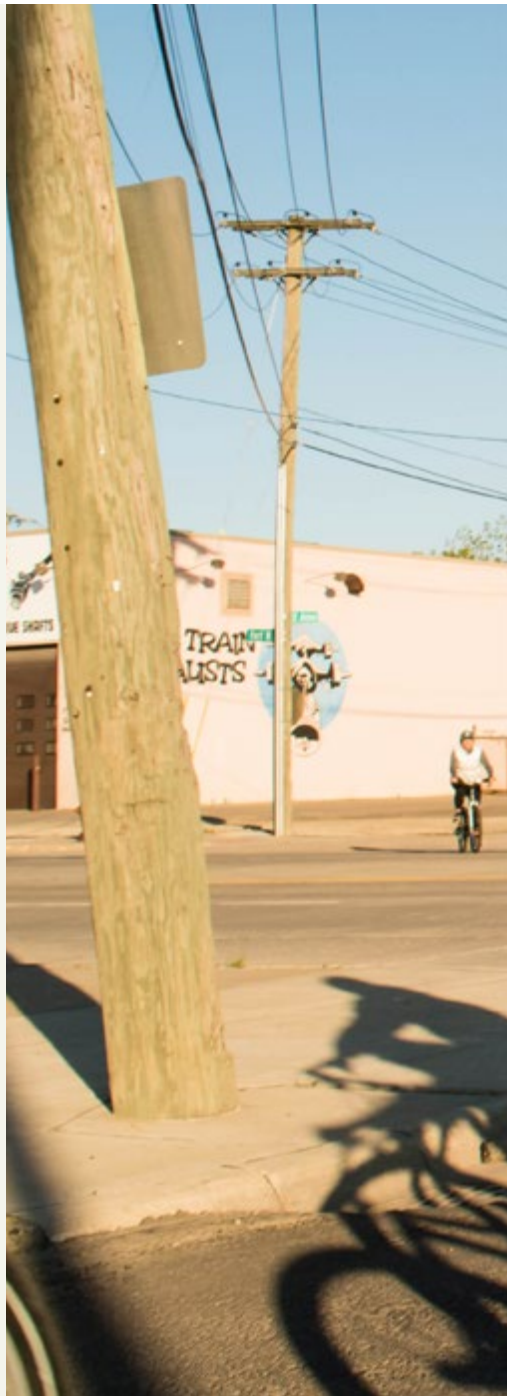
The image to the left represents the Top 50 most commonly occurring words pulled from the combined Small and Large Group activities—designed to enable community participants to identify the greenway features and amenities that are most important to them—ranked largest (most used) to smallest (least used). This input, among other activities, helped inform the greenway design guidelines.

DESIGN GUIDELINES & STANDARDS

The design standards outlined in this chapter reflect more than ten years of hard work and advocacy among City of Detroit staff, community residents and partner organizations.

The Joe Louis Greenway Framework Plan builds on this work, incorporating critical input from community residents and stakeholders, along with helpful precedents from numerous local, regional and national greenways concerning process, recommendations, design, implementation and performance.

Every segment, intersection, connection and design element of the pathway will support the mission of the Joe Louis Greenway—to unify Detroit's neighborhoods, people and parks by providing equitable spaces through programming, economic opportunities, and arts. Through continued community participation, ongoing analysis and evaluation, we can ensure the greenway provides inclusive benefits for all Detroiters—fostering economic development and housing for residents; celebrating history, arts and culture; improving mobility and access; and expanding green spaces and inclusive opportunities for recreation.



GREENWAY DESIGN IN DETROIT

At the local and regional level, a number of reference guides have informed the recommended design standards. These include: the City of Detroit Non-motorized Urban Transportation Master Plan, the SEMCOG and MDOT Non-motorized Plan for Southeast Michigan, the Detroit Bicycle Network Strategy and the City's Safe Routes to School program, among others. Local existing greenways and trails—including the Dequindre Cut, Detroit RiverWalk and Palmer Park trails—were studied to understand how urban trails are designed, perceived and used in Detroit.

To enhance safety and accessibility for greenway users of all levels and abilities, greenway planning and design guides such as the City of Detroit's bike network, mobility and field marking standards, MDOT standards and national standards including the NACTO Urban Bikeway Design Guide and ADA requirements were consulted.

Source: James Brown

DESIGN IN CONTEXT

The Joe Louis Greenway Framework Plan Design Recommendations take into account adjacent land uses and potential future development.

These design guidelines respond to the context of the greenway to embrace and connect complementary land uses while buffering private or incompatible uses. The specific guidelines range from creating shared and accessible amenities along active commercial corridors to providing fencing and vegetative screening alongside industrial land uses.

While these recommendations may guide future City of Detroit policy, these design guidelines do not currently reflect formal City policy or regulation. The City of Detroit should consider policy changes to support the Joe Louis Greenway as the project moves through design and implementation.

MAKING INFORMED DECISIONS

The Joe Louis Greenway is an unprecedented project of its kind within the City of Detroit, which makes it all the more important to ensure best design practices and adherence to local, regional, state and federal regulations. Below is a list of the standards and guidelines that were referenced.

The Joe Louis Greenway will be a dynamic and evolving project as it moves through design and implementation. Please note that, due to the changing standards and recommendations of these publications, as well as the changing urban conditions of Detroit, these guidelines and others should continue to be referenced.

" THE JOE LOUIS GREENWAY CONCEPT IS SOMETHING THAT IS VERY NEEDED. I'M EXCITED ABOUT IT. IT'S SOMETHING THAT WILL HAVE ACTIVITIES, SOCIALIZATION— AND IT CAN INCREASE OUR ACTIVITY, OUR HEALTH. I THINK IT'S A WONDERFUL IDEA."

— COMMUNITY INPUT

STANDARDS AND REGULATIONS (LATEST EDITIONS)

- City of Detroit Standards
  - — City of Detroit DPW Standard Specifications for Paving and Related Construction
- MDOT Standards
- AASHTO Guide for the Development of Bicycle Facilities
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- MMUTCD (Michigan Manual of Uniform Traffic Control Devices)
- ADA Standards (Americans with Disabilities Act)

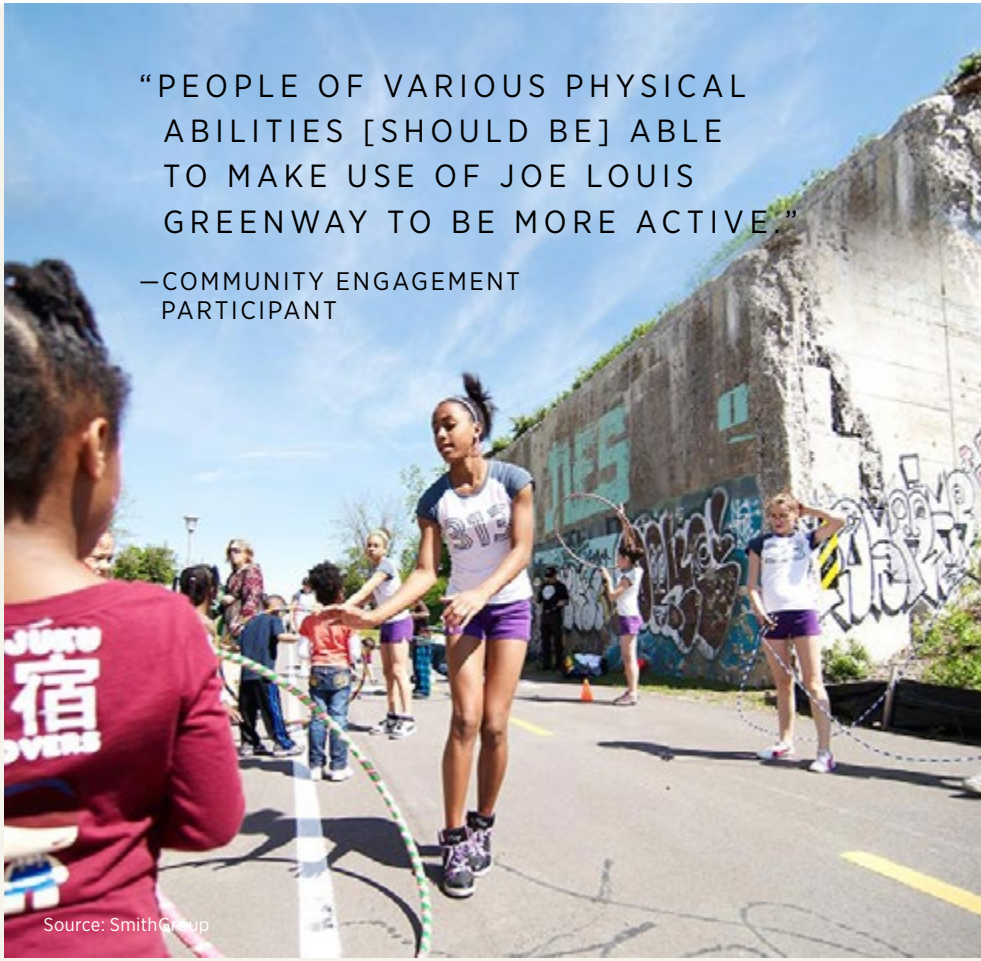
REFERENCES AND GUIDELINES (LATEST EDITIONS)

- NACTO Design Guidelines
  - — Urban Bikeway Design Guide
  - — Urban Street Design Guide
  - — Global Street Design Guide
  - — Transit Street Design Guide
- FHWA (Federal Highway Administration)
  - — Separated Bike Lane Planning and Design Guide
  - — Incorporating On-Road Bicycle Networks in Resurfacing Projects
  - — Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts
- Separated Bike Lane Planning & Design Guide (Massachusetts Department of Transportation)

DESIGNING FOR ALL USERS

Children learning to ride their bikes, senior walking groups, commuters on electric scooters, people walking dogs—these are just some of the many ways people will enjoy the Joe Louis Greenway.

From pedestrians, electric scooter and wheelchair users to cyclists and cross country skiers, the Joe Louis Greenway will welcome one and all—including people of all ages and abilities. This section identifies some types of groups who will commonly use the greenway—and provides guidelines that are responsive to both their shared and unique needs. The designs reflected here promote accessibility for a wide variety of users through ADA compliance and consideration for those who may benefit from visual and auditory accommodations.



Source: SmithGroup


Source: James Brown

Source: Alicia Adams

Source: James Brown

Source: City of Detroit

Source: A Healthier Michigan

DIVERSE PEDESTRIAN USERS

LOWER-SPEED USERS

Lower-speed users include people who are on foot, families with kids or dogs, seniors and groups of people. These users tend to meander, gather in small groups and make frequent stops. By designing for a separated path with greenway amenities, this ensures that users moving at lower speeds will not be in the way of those moving at higher speeds.

MID-SPEED USERS

As mid-speed users, runners and joggers need to be able to navigate the path easily, without encountering slower users. A separated path enables them to stay out of the way of pedestrians, children and dogs, while a decomposed fine aggregate shoulder provides a more comfortable running experience.

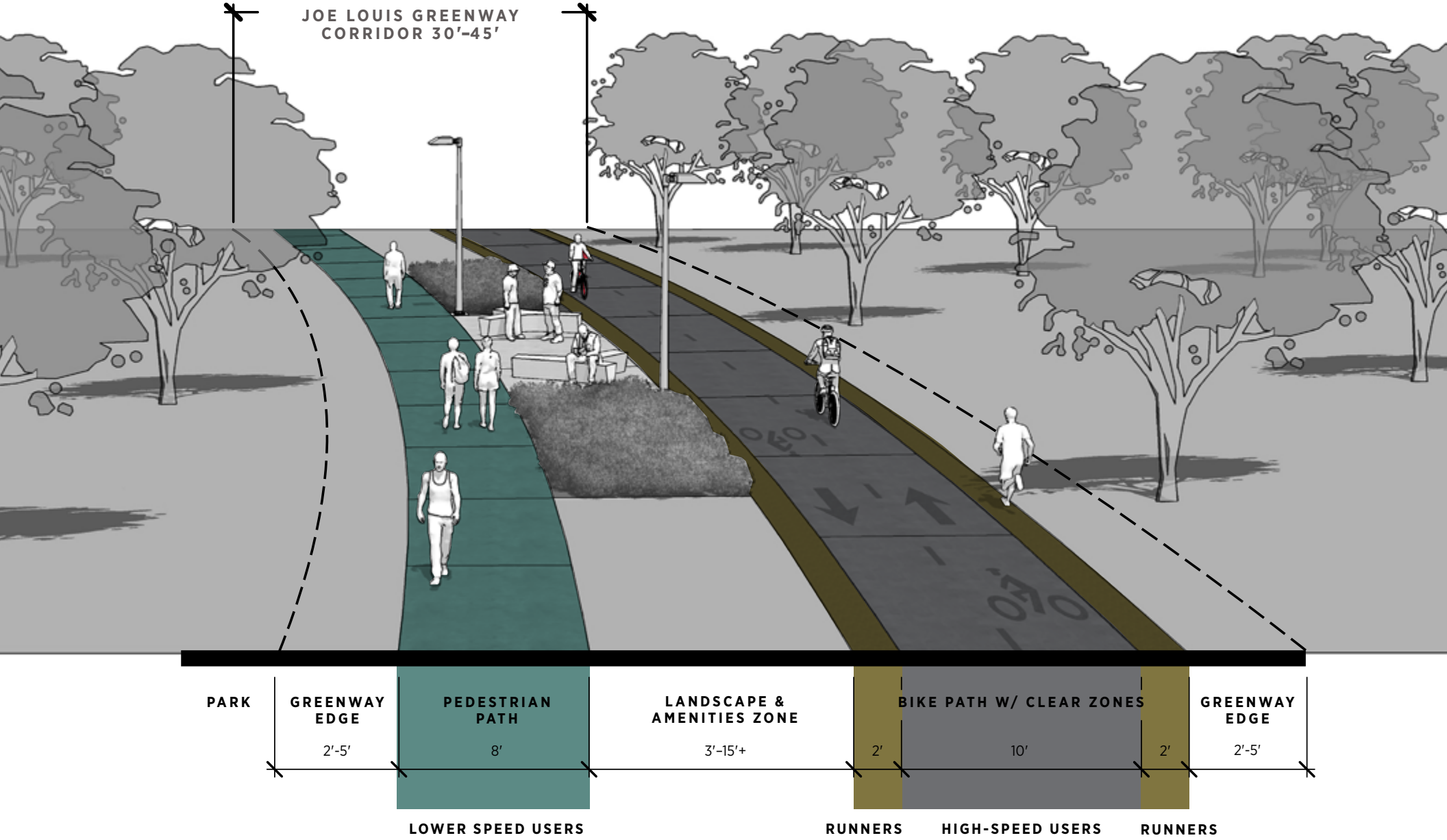
HIGHER-SPEED USERS

High-speed users include cyclists, scooter users, skateboarders, rollerbladers, cross country skiers and others. These users tend to move faster and stop less frequently. Separating this path from that of the lower-speed users reduces disruptions that can be caused by dogs, children and slower-moving groups.

People walking • Kids • People hanging out • Families • Seniors • People walking dogs • People with disabilities

Runners • Joggers

Bicyclists • Electric scooters • Rollerbladers • Skateboarders • Electric bikes • Bikes with trailers • Cross country skiers


JOE LOUIS GREENWAY
CORRIDOR 30'–45'
PARK
GREENWAY EDGE
2'-5'
PEDESTRIAN PATH
8'
LANDSCAPE & AMENITIES ZONE
3'–15'+
2'
BIKE PATH W/ CLEAR ZONES
10'
2'
GREENWAY EDGE
2'-5'
LOWER SPEED USERS
RUNNERS
HIGH-SPEED USERS
RUNNERS

PEDESTRIANS

Pedestrians are often the slowest-moving and least-predictable greenway user group. Children, dogs and people traveling in groups may make sudden stops, move without looking and veer off linear routes.

The pedestrian user group contains the widest range of ages and abilities. This group may include users with mobility supports such as wheelchairs or walkers, joggers and runners, people walking, groups of friends or tourists, families and people walking dogs. Each may have special considerations to be met in order to provide a safe and comfortable greenway experience.

FAMILIES AND GROUPS

Families often consist of multi-generational groups traveling together. Children may run, wander, veer or double back as they experience the greenway, while guardians with toddlers or infants may push a stroller on their walks. Guardians and the elderly may wish to rest and chat with other adults while keeping their children under supervision. Ample opportunity for exploration and play will exist along the greenway, both in formal and informal settings. Accommodations and seating along the greenway will provide opportunity for rest, social gathering and feeding.

For pedestrian-only paths and sidewalks, path width should comfortably support passing between two groups of people. A minimum standard width for these paths is 8′, with 10-18′ being an optimal dimensional range. In very constrained conditions only, the 8′ width may be reduced to 6′. This width, while not optimal for greenway conditions, may be sustained for short lengths, while still allowing enough width for two wheelchair users or people with strollers or carts to safely pass.

BICYCLISTS

Bicyclists are considered to be the fastest-moving user group. These users may bicycle alone or in groups and often travel in deliberate, direct routes. However, there are many types of bicycle users such as:

- Children learning to ride tricycles and bicycles
- People commuting to work by bicycle
- Recreational and leisure riders
- Riders traveling in large social groups or bicycle tours
- Adventurous bicyclists doing tricks, speed racing and spectating
- Parents toting children in cargo bikes and trailers
- Delivery riders with cargo bikes
- Pedicab riders and operators
- People riding electric-boost bicycles

People on bikes generally shy away from curbs, edges and obstacles by at least one foot of distance. Provide 6′ minimum width one-way lanes and 8′ minimum width cycle track, each with 2′ buffers, to allow space for bicycle passing. A minimum 12′ width is preferred for two-way cycle tracks to allow for for sociable riding. This also conforms with AASHTO Guidelines.

A typical adult bicycle is 70 inches long, but bicyclists today often defy convention with bike appearance, shape and size. Low riders, stretch bikes, trick bikes and cargo bikes all require different amounts of user space. The dimensions given above meet the many needs of bicycle riders.

In addition to the path dimensional standards, the following should also be considered:

- Space security bollards or other features at least 4.5′ apart, and avoid using bollards on narrow two-way cycle tracks.
- Bike racks are often spaced 3′ apart. However, where feasible, without minimizing rack count, bike racks spaced at least 4′ apart and in rows with maximized depths should be provided.
- Design refuge medians and other spaces to be at least 6′ in width to accommodate typical bicycle lengths while reducing risk caused by vehicular traffic.
- Bike parking, bike share and bike repair stations enable cyclists to more comfortably recreate, commute and reach destinations.

SKATEBOARDERS & ROLLERBLADERS

Skaters of all types will generally benefit from the same dimensional standards as those for people on bikes—although it will be necessary to pay special attention to surface quality. Because skateboards, roller and inline skates have small wheels, a smooth path surface is critical: Small wheels can catch in cracks and joints, causing skaters to trip and fall. Detroit's Riverside Park Skate Park lies adjacent to the southern alignment, and these users are expected on the greenway.

Source: City of Detroit

Consider providing small clusters of skateable features along the greenway to develop a sense of ownership among that group of users. Provide landscape furniture that holds up to hard and unconventional use. And offer secure storage lockers near greenway entrances, destinations, commercial districts and job centers to encourage people to use the path for transporation and commuting.

PEOPLE WITH DOGS

Spending quality time with our dogs improves our quality of life. The Joe Louis Greenway will ensure an enjoyable experience for both pets and owners. Split paths will keep dogs and their leashes out of the way of bikers and runners, and amenities such as dog parks, waste bag dispensers and dog-height water fountains will provide a fun, safe and healthy greenway experience.

RUNNERS

Runners often prefer decomposed fine aggregate over concrete pavement; the softer surface material is easier on joints and results in fewer stress-related injuries. For off-street portions of the greenway, 2′ wide decomposed fine aggregate shoulders are to be provided on both sides of the bike path to accommodate joggers and runners.

CROSS COUNTRY SKIERS

The Joe Louis Greenway will provide recreational opportunities throughout all four seasons. While road bike and pedestrian volumes may decrease in the colder winter months, fat tire bikers and cross country skiers will be thrilled to find snow-covered trails in the heart of Detroit.

It will be important to consider the different spatial needs of these bikers and skiers. While classic cross country skiers need a minimum path width of 5′, skate skiers benefit from a wider 8′ path. And in the cold weather, supporting amenities—such as seating, lighting and wayfinding—will be especially important.

EASE OF ACCESS

Greenway path configurations and widths are designed to accommodate users of all ages and abilities. Path widths should be greater than 6′ to support passing of wheelchair users or people with carts or strollers. Railings and adequate landing space will be incorporated into stair and ramp designs, and ample seating along the greenway will provide space for rest and recovery.

PEOPLE WITH IMPAIRED MOBILITY

Users of all types may have cognitive and/or physical impairments. These users include, but are not limited to, the elderly, injured or differently-abled persons, expecting mothers and persons with vision or auditory impairment. The greenway should be designed to be accessible to everyone and should consider the following:

- Visual Clarity
  - Visual and textural contrasts that are consistently applied the length of the greenway
  - Pedestrian-height lighting
  - Clear and identifiable signage and wayfinding

- Ease of Access
  - — Detectable warning surfaces where paths and sidewalks meet vehicular traffic
  - — Seating and other furniture meeting ADA dimensional requirements
  - — Path surfaces, abrupt height changes and slopes that meet ADA guidelines
  - — Temporary routes (due to construction or event closures) with advance warning signals, detectable barriers and smooth grade transitions
  - — Where bike paths and sidewalks merge, there should be longitudinal delineation of detectable warning
- Auditory Support
  - — Audible warning signals
  - — Audible interpretive elements where feasible

RESTRICTED & PROHIBITED USES

EQUESTRIANS

During community engagement, Detroit residents voiced a desire for horse access along the Joe Louis Greenway. They shared information regarding existing and emerging horse-related programs such as Detroit Horse Power.[1] Through the planning process, the City of Detroit met with local advocates to understand the infrastructural and safety needs for horse trails.

The Joe Louis Greenway cannot currently support horses along its path. The limitations arise from path width constraints, necessary safety measures for horseback riders, cyclists and pedestrians, need for environmental mitigation and infrastructural and amenity improvements. However, while horses are not permitted along the greenway, the youth and community-oriented horse programs along its route will provide key destinations for those traveling to and from their locations.

It's possible that, with adequate targeted funding and community interest, the City of Detroit may be able to undertake studies and potentially implement horse-related infrastructure along the greenway.

ATVS AND MOTOR VEHICLES

The speed and size of All Terrain Vehicles (ATVs) and motor vehicles are incompatible with other greenway uses. These vehicles may be dangerous to other uses and destructive to greenway features and surfaces. Additionally, the excessive noise and exhaust fumes from such vehicles make them incompatible with residential areas along the greenway—and with the goal of providing a healthy recreational opportunities. For these reasons, motor vehicles and ATVs are restricted uses on the Joe Louis Greenway.

The exception to this restriction may include maintenance, emergency and service vehicles.

1 Detroit Horse Power website: https://www.detroithorsepower.org/

DESIGNING FOR SAFETY & COMFORT

The Joe Louis Greenway will welcome users of many types, from people who are playing and exercising to those who are socializing, enjoying events or simply seeking respite. People walking, biking and using other low- and non-motorized transportation types, when compared to drivers of motor vehicles, are more vulnerable to injury or death during accidents. This section outlines broad guidelines for user safety and comfort through design, implementation, operations and management.

ROADWAY SEPARATION

User safety and comfort depends on providing accessible routes with minimal conflicts between people and vehicles. Greenway users should be separated from motor vehicles as much as is feasible. They should also be made as visible as possible to drivers of motor vehicles, and drivers should be encouraged to drive slowly.

PATH WIDTH & USER SEPARATION

People on bikes and using alternate modes often move faster and in more linear routes compared to pedestrians. Where a shared path is necessary, provide a minimum of 14′ to support social riding and safe passing between users. Where space allows, the greenway design will provide separate paths for pedestrians and cyclists in order to reduce circulation conflicts between these groups. Both paths shall be designed for sociability, comfort and accessibility.

PATH SURFACE

People in motion need space free of obstructions and slippery or jarring surfaces. A firm, smooth, level and slip-resistant surface shall be provided for the full length of the greenway to provide an accessible route for all users.

MAINTENANCE

As the greenway will be a key travel route, all users will require an accessible path throughout the year. Winter maintenance will be key to preventing an obstructed or icy path. Routine and seasonal maintenance suggestions are detailed in Maintenance and Operations.

RECOMMENDED DIMENSIONS

A minimum 5′ clear width is recommended for safe and comfortable cycling and is required by the ADA standards as the width needed for two wheelchair users to pass each other. This is the preferred clear width to be maintained on all paths and sidewalks at all times, including in the winter season.

- 2′ is a preferred shy space width for people on bikes, meaning intermittent objects and trees will appear no closer than 2′ to the edge of a path.
- 2′ is a required minimum lateral offset for signage according to the MUTCD.

All users need comfortable operating spaces in which to move. Considerations include:

- 8′ minimum vertical clearance should be maintained free of vegetation, signage, or other overhead obstructions, including under bridges, for all users & paths.
- 10′ minimum is preferred as a more comfortable vertical clearance.
- “Shy distance” typically refers to the area of sidewalk along the roadway that pedestrians tend to avoid in order to provide more separation between themselves and vehicular traffic. This distance is often assumed to be approximately 2′ but may be wider along roadways with higher vehicular speeds.

Photo: James Brown
Diagram: SmithGroup

SHARED MICROMOBILITY

Shared micromobility refers to a system of small-scale, rentable transport devices that people use as part of a shared mobility program.

This includes a wide variety of docked and dockless bikeshare, e-assist bicycles within a bikeshare platform and e-scooters. Shared micromobility is a relatively new and rapidly evolving industry that is already having an impact on transportation in urban environments across the nation.

The City of Detroit has developed policy[1] in response to the fluidity of the micromobility environment. Meanwhile, ongoing efforts are underway to understand and manage micromobility with regard to the Joe Louis Greenway.

This guide reviews existing micromobility types and design needs and makes recommendations based on best practices, City of Detroit policies and choices made in other cities. The intent of this review is not to create micromobility policy, but to provide recommendations for the physical infrastructure, technology and future policy changes that may be made by the City of Detroit to manage micromobility along the Joe Louis Greenway.

THE MICROMOBILITY INDUSTRY

Over the last few years, the landscape of the micromobility industry in the United States has changed significantly. Between 2016 and 2017, the number of bikeshare bikes nationwide more than doubled from around 40,000 to almost 100,000 bikes.[2] These were primarily traditional bikeshare programs, designed so that bikes could be checked out and returned to designated stations, but their rollout was limited by available capital and operating funding. This period includes the MoGo bikeshare system that launched in Detroit in 2017.

With advancements in personal transportation and smartphone technologies, designated stations were no longer necessary and electric-assist bikes (“e-bikes”) and electric scooters (“e-scooters”) became viable additions to the micromobility

1 Detroit Horse Power website: https://www.detroithorsepower.org/
2 Bike Share in the US: 2010-2017. National Association of Community Transportation Officials (NACTO). https://nacto.org/bike-share- statistics-2017/

Fitzgerald Greenway, Detroit
Source: SmithGroup

"WE SEE THE CITY DIFFERENTLY WHEN WE'RE NOT IN A CAR. DETROIT HAS SO MUCH TO OFFER. WHEN YOU'RE OUTSIDE, EXPLORING, INTERACTING...IT GIVES LIFE TO THIS CITY."

industry. The entry of companies supported by venture capital funding also allowed large-scale rollouts of new "dockless" systems. These systems allow users to find and unlock an e-scooter using a smartphone. Once a ride is finished, the session is ended, and the device self-locks. Basic security features are put in place to lock wheel movement and sound an alarm when scooters are moved without a session being initiated.

By the end of 2018, there were over 85,000 e-scooters available in about 100 cities in the United States, with approximately 38.5 million trips taken on this new type of mobility.[3] Companies started deploying e-scooters in the City of Detroit in 2018.

3 Bike Share in the US: 2010-2017. National Association of Community Transportation Officials (NACTO). https://nacto.org/2019/04/17/84-million-trips-on-shared-bikes-and-scooters/

Mogo Bikes, Detroit
Source: SmithGroup

MOGO FOR ALL

The "MoGo For All" program extends the reach of the program beyond the typical user base through:

Financial Assistance: A low-income discount program that provides a $5 annual pass for registered members of established state benefits programs such as Food Assistance, Cash Assistance/Family Independence, Healthy Michigan Plan and others.

Accessible Cycles: An adaptive bicycling program that includes 13 different adaptive bicycles including recumbent tricycles, upright cargo tricycles, hand tricycles, tandem bicycles and tandem tricycles. The program is provided through a partnership with Wheelhouse Detroit and Programs to Educate All Cyclists (PEAC). Adaptive bicycles are checked in and out of Wheelhouse Detroit's riverfront location, which means that most trips start and end along the Riverfront Trail.

Payment Options: A cash payment option offered through a partnership with PayNearMe and 7-Eleven, CVS and Family Dollar stores.

Education: Free bicycle skills and safety classes.

Neighborhood Ambassadors: Local residents help promote the program through group rides, community meetings, events, information sessions, sign-up events, one-on-one interactions and other activities.

BIKESHARE IN DETROIT

As of late 2020, MoGo is a 620-bike, 75-station bikeshare system. Launched in Detroit in May 2017,[1] it has been expanding ever since. The smart-dock system utilizes stations distributed throughout a growing service area in Detroit. Users utilize kiosks or supporting apps and passes to rent bicycles for a window of time. Rented bicycles are undocked and may be returned to the same station or another in the MoGo system.

In August 2019, MoGo introduced fifty electric-assist bicycles (e-bikes) to its fleet. These bicycles are interchangeable with regular bikes. They have built-in batteries, which are plugged in and recharged as needed, and they have a limited maximum assist speed of 15 miles per hour.

MoGo operations are supported by user fees and sponsorship. The program employs a staff that manages and operates the system—including technicians and mechanics who maintain the stations and bikes and "rebalancing" staff who collect and move bikes when stations become too full or empty.

BIKESHARE PLANNING & DESIGN CONSIDERATIONS FOR THE JOE LOUIS GREENWAY

As MoGo has expanded in the City of Detroit, it has become a growing asset to residents, visitors, commuters and recreators. The bikeshare program began in Detroit's economic center. As a result, MoGo availability was initially concentrated in Downtown, Midtown and surrounding neighborhoods. The bikeshare system expanded service in 2020, adding 31 stations and 141 bikes in the Livernois/McNichols corridor of Detroit, as well as Ferndale, Royal Oak, Oak Park, Berkley and Huntington Woods. This growing system will have greater access to the Joe Louis Greenway and beyond.

The information presented here is more pertinent to planning and design for the greenway rather than policy. To ensure broad access, the City should continue to collaborate with MoGo to determine station siting. Potential locations to prioritize include trail access points, nearby transit stations and places where the greenway passes through or near commercial districts. Additionally, five bikeshare stations are currently located within 600 feet, or about two blocks, from the proposed greenway alignment, on the southern end of the loop. The greenway development team should coordinate with MoGo to determine if any of the existing stations need to be relocated to be more visible to trail users.

MoGo operations are supported by user fees, sponsorship, and advertising. The City may also choose to explore opportunities for cross-promotion of the Joe Louis Greenway with MoGo. This could be in the form of showing MoGo stations on greenway maps and vice versa, creating ride itineraries that can be advertised through both platforms, and looking for opportunities where future programming of the Joe Louis Greenway can use the existing "MoGo for All" program to encourage greater participation in active transportation and use of the greenway. As part of greenway programming and operations, the City of Detroit will need to verify MDNR revenue generation and advertising requirements for the Joe Louis Greenway, particularly as they apply to the Conrail segment.

1 https://mogodetroit.org/

Stations include a payment kiosk and a series of connected docks where the bikes are parked. Existing stations are solar powered and do not require any excavation. Vehicular access of MoGo stations is necessary for service, maintenance and rebalancing of bikes at stations. These services are typically conducted using fleet vehicles such as vans and small trucks. To facilitate access, any MoGo stations sited along the greenway should be located at access points or cross-street intersections, with space available for temporary parking.

Stations can be placed on the street, on sidewalks, or on other off-street locations with hard, level surfaces. Where stations are being considered along the greenway, a minimum 6′ wide x 30′ long clear footprint is required on a hard, level surface that is free of utilities and obstructions. Additional width may be required to allow bikes to be pulled out of the station without conflicting with pedestrians and other trail users. Stations could also be shorter or longer depending on anticipated demand. See the design standards for micromobility parking at the end of this section for more details.

ELECTRIC SCOOTERS IN DETROIT

E-SCOOTERS AND CURRENT DETROIT POLICY

E-scooters were first rolled out in Detroit by private companies in July 2018. In response, City staff created a Memorandum of Interpretation (MOI), last updated in October 24, 2018, that outlines how existing City Code defines and establishes regulations for the use of e-scooters in the City.[1] The MOI outlines several operating requirements that are relevant to the Joe Louis Greenway.
The e-scooter program is overseen by the City and currently includes three vendors: Bird, Lime and Spin.

Each vendor is restricted to “not more than 400 scooters city-wide at any given time.” The current fleet is therefore restricted to no more than 1,200 e-scooters city-wide. The City should consider that parts of the Joe Louis Greenway might produce high demand for e-scooter trips for commuter, errand-running and recreational trips.

Scooters in Detroit are gathered each evening by crowdsourced residents, compensated per scooter collected and charged. E-scooters are then distributed to pre-determined locations by residents early each morning. Distribution of scooters is responsive to changes in demand and will likely see changes as the Joe Louis Greenway is implemented and increases access.

Unless specific policies are created to prohibit the use of e-scooters on the Joe Louis Greenway, the City’s MOI currently allows e-scooters to operate on the greenway so long as users adhere to the speed, operational and parking requirements set out in the MOI.[2] It also includes the framework that if e-scooters are not desired on parts or all of the greenway, they could be prohibited so long as signage was posted at all entrances to the greenway.

1 Detroit Scooter MOI: https://detroitmi.gov/document/escooters
2 The MOI also outlines potential penalties for violating these requirements, which include a misdemeanor punishable by a fine or imprisonment. The City can also remove obstructions and impound e-scooters if they cause an obstruction for more than 24-hours.

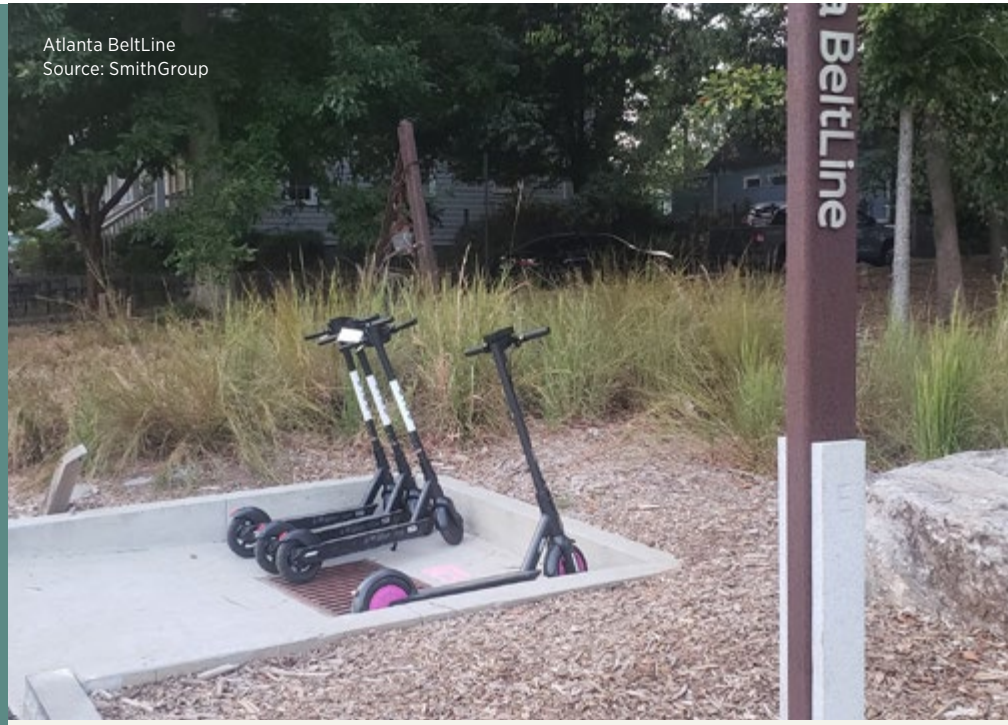
E-SCOOTERS AND GREENWAYS IN OTHER CITIES

The use of e-scooters on trails and greenways varies across the country. Some cities allow or encourage their use, while some restrict, discourage or prohibit their presence.

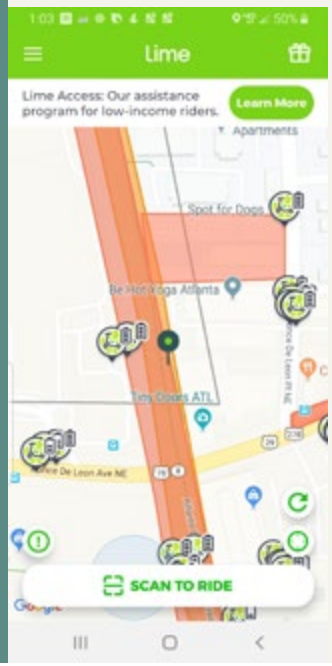
Examples of where e-scooters are not allowed on a trail or greenway include the Mission Trail in San Antonio, Texas and the Bloomingdale Trail in Chicago, Illinois.[3] In most of these cases, the trail or greenway is overseen by the city's parks department, which established policies restricting the use of the trail by motorized vehicles. E-scooters, which are often not defined in city codes, have been categorized as motorized vehicles and as such are prohibited from these trails. Interagency coordination will be required to agree to the terms of use on the Joe Louis Greenway.

Other places allow e-scooters on their trails and greenways, many of which use geofencing technology to manage behavior. Geofencing employs GPS or RFID technology to create a virtual geographic boundary. When a mobile device (in this case an e-scooter) crosses the boundary, it triggers a software response in the device. In this case, it can be used to slow scooters below a certain speed, stop them altogether inside the boundaries or prevent the user from ending their trip.

3 https://chi.streetsblog.org/2019/06/19/dont-scoot-on-the-Bloomingdale-nobody-knows-it-but-scooters-are-prohibited-on-the-606/



Atlanta BeltLine
Source: SmithGroup



Examples of where geofencing has been applied include:

San Diego, California: the city of San Diego[1], which passed a resolution requiring e-scooter vendors to limit speeds to 8 mph in high-traffic areas and 3 mph along the Embarcadero and the boardwalk at Mission and Pacific Beaches.

Atlanta, Georgia: In many parts of Atlanta, scooter speeds are unregulated. However, a geofenced area on the Atlanta Beltline caps scooter speeds at 8 mph. The Atlanta Beltline has also imposed geofence-enforced restrictions to allow scooter sessions to end only once the device is located within a designated parking area.[2]

Due to safety concerns, Atlanta has also chosen to implement a "nighttime ban," halting scooter rentals between 9:00 pm and 4:00 am.[3]

Vendor Operations in Other Cities: Many cities establish service levels for providers that clarify what is expected of the provider in the maintenance of the e-scooter system. For instance, cities will establish rules to ensure that operators clear any devices that cause an obstruction, are disabled or are inactive in the same location for more than 24 hours.

Atlanta BeltLine
Source: SmithGroup

This requires program oversight to follow up and enforce these requirements. Some cities charge vendors a fee to operate in the right-of-way, which helps fund staff time to oversee the program. Some cities also require vendors to pay upfront into a fund the city can draw on if they need to impound a device or for other forced expenses. Neither of these structures appear to be in place in Detroit.

Some vendors hire local staff to conduct maintenance, redistribution and recharging. This provides more surety to an agency that a maintenance request will be fulfilled by a company. Most of these functions are performed in private vehicles, including trucks and vans.

FUTURE POLICY DEVELOPMENT IN DETROIT

E-scooters will be permitted on both off- and on-street segments of the Joe Louis Greenway. The greenway development team should work with the City to update the existing e-scooter policies. As the city's current MOI does not specifically mention shared-use paths, the City should consider developing policies specific to shared-use paths and other conditions unique to the Joe Louis Greenway.

As the greenway is implemented, consideration should be given to conflicts in policy and operations that may arise out of overlapping area

1 Detroit Horse Power website: https://www.detroithorsepower.org/
2 Collin Kelley, Atlanta INtown, *BeltLine puts the brakes on e-scooter users, limits parking on trails*, 2019
3 Atlanta, Georgia Press Release, 2019

restrictions, such as those planned in city parks or currently in place on the Detroit Riverfront. Where possible, relative continuity of service should be maintained along the greenway so users are able to reach destinations without changing transportation modes.

SERVICE LEVELS

Consider establishing service levels for providers. This can be done as part of citywide policy that would include the greenway, or as part of stand-alone policy that is unique to the greenway. This is not an exhaustive list, but service levels may be established that require providers to:

- Provide users with the means to report a safety or maintenance concern
- Build in capacity for remote disabling of units
- Keep records of maintenance, reported collisions and complaints
- Remove obstructing, disabled or inactive devices within timeframes which are established based on the level of obstruction or hazard[4]

To meet the agreed service levels for the greenway, the City should be encouraged to create evaluation and enforcement protocols for vendors. This could include software to monitor the system or lobbying for fees to operate on the greenway or in the City to fund staff time. The selection of vendors can also influence service performance; vendor selection should consider the vendor's track record and their staffing plan to address concerns.

Some cities enforce service levels by assessing end-of-month or end-of-year reports for compliance. Penalties can include loss of license, a financial penalty or can factor into renewal or future permit applications.

MAINTENANCE

E-scooters are particularly sensitive to pavement surface conditions. Maintenance of the trail to repair any potholes and uneven surfaces should be prioritized in order to maintain user safety and reduce damage to e-scooters. The MOI provides maintenance considerations for the devices themselves.

SPEED

E-scooters travel surprisingly fast when unregulated. This speed, combined with user inexperience, lack of public policy and infrastructure and poor visibility can significantly impact the safety of both users and those they encounter. Detroit policy currently establishes a 15 mph speed limit for e-scooters, enforced by geofencing technology. Consider establishing zones where speeds are regulated 8 mph for moderately congested areas and 6 mph (the speed of a typical runner) for highly-congested parks and greenway segments.

In addition to speed reduction, there may be areas of the greenway where scooters are not appropriate. In these instances, geofencing zones may be implemented, which will cease operation of the scooter once a certain geographic boundary is crossed. Any speed reduction or prohibited zones should be clearly signed and alternative modes of travel should be available as needed.

4 Tiered or conditional timetables may be established for different events based on their level of obstruction or danger, with shorter timeframes for obstruction of bicycle lanes or transit stops.

PARKING

The following guidelines establish dimensional and design recommendations in order to ensure clear and accessible routes, to manage scooter parking and to establish flexible areas for use of micromobility.

- E-scooter/dockless e-bike parking zones should be 6′ deep x 10′ wide at a minimum.
- Bikeshare hubs should be a minimum 6′ deep x 30′ wide.

On-street greenway or where the greenway Intersects with cross streets:

- Maintain a 4′ wide accessible route on sidewalks behind any designated dock or dockless mobility parking zone.
- Per the MOI, maintain 6′ from the e- scooter parking zone to all surrounding features—landscape furniture, hydrants, other bikeshare stations, etc.
- Provide a minimum 2′ clearance from a dock or parking zone to the face of the curb.

At greenway access points:

- Maintain a 4′ wide accessible route on sidewalks behind any designated dock or dockless mobility parking zone.
- Per the MOI, maintain 6′ from the e- scooter parking zone to all surrounding features—landscape furniture, hydrants, other bikeshare stations, etc.
- Provide a minimum 4′ wide clearance from micromobility docks and parking zones to the greenway

User parking zones and requirements should be determined as part of greenway operations. Consider designating parking zones at all trail access points, as well as near high volume intersections and transit stops. While zones should be planned ahead as much as possible, it is also feasible to determine specific parking zone locations once e-scooters are used along the greenway and observations are made on areas where scooters are regularly clustered, where volumes overwhelm a part of the sidewalk or buffer zone or where an area has received complaints.

Parking zones should be visible and well organized to encourage correct parking behavior. In the off-street portion of the greenway, use trail crossings/access points to 1) establish parking within cross-street sidewalk areas or 2) establish flexible spaces adjacent to the trail that might support parking in the near-term without committing the city to parking in the future. These areas could be paved; alternatively, it would be possible to place hard platforms on grass areas of the greenway that could be removed later. In the on-street portion of the greenway, consider using sidewalk furniture zones, street parking spaces, daylit areas or other off-street public spaces for parking.

In all cases, hard, level surfaces are preferred and will allow markings, symbols, and signs to be installed. Use of consistent markings and signage will create a “brand” for the parking zones such that they become recognizable. The size of the parking zone will vary depending on the anticipated demand but should be a minimum of 6 feet x 10 feet. This will accommodate at least 10 micromobility devices. Where possible, a “micromobility hub” model should be implemented by co-locating dockless micromobility parking zones with MoGo bikeshare stations.

Parking and other behavior can be influenced through signage at the trail access points and reinforced on the vendor’s website and app splash screens, which could be programmed to show safety tips at the start of a ride and parking requirements at the end of a ride. Some vendors require the user to take a photograph of the parked e-scooter using their app at the end of a trip, which can also provide some surety to users if they need to settle concerns about whether they parked the device appropriately or not.

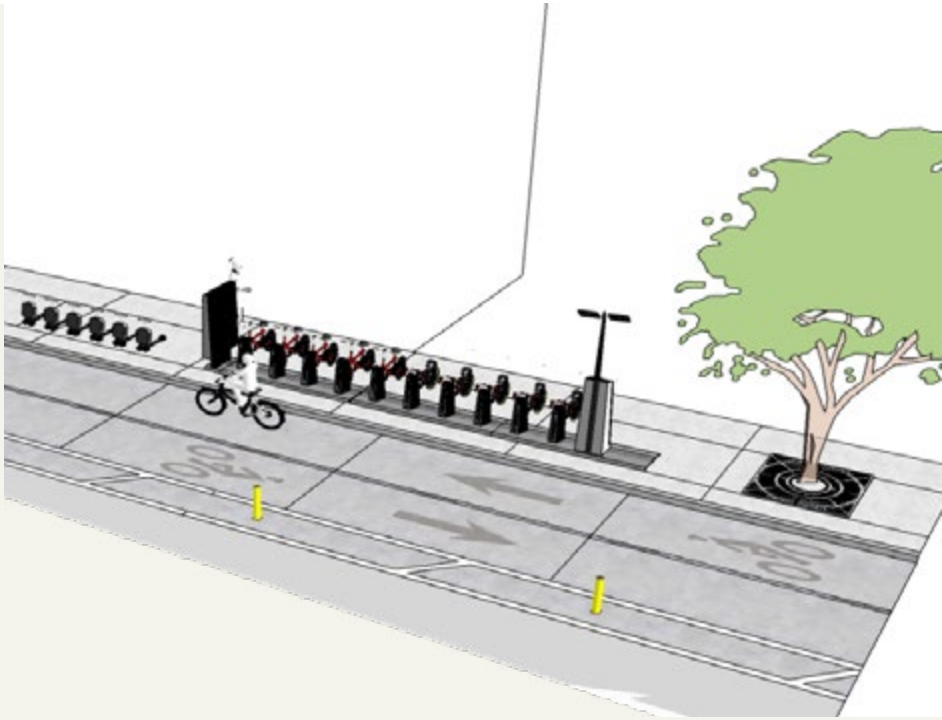
Geofencing can be used to encourage parking at designated parking zones or to restrict it in others, as with the Portland example in parks.

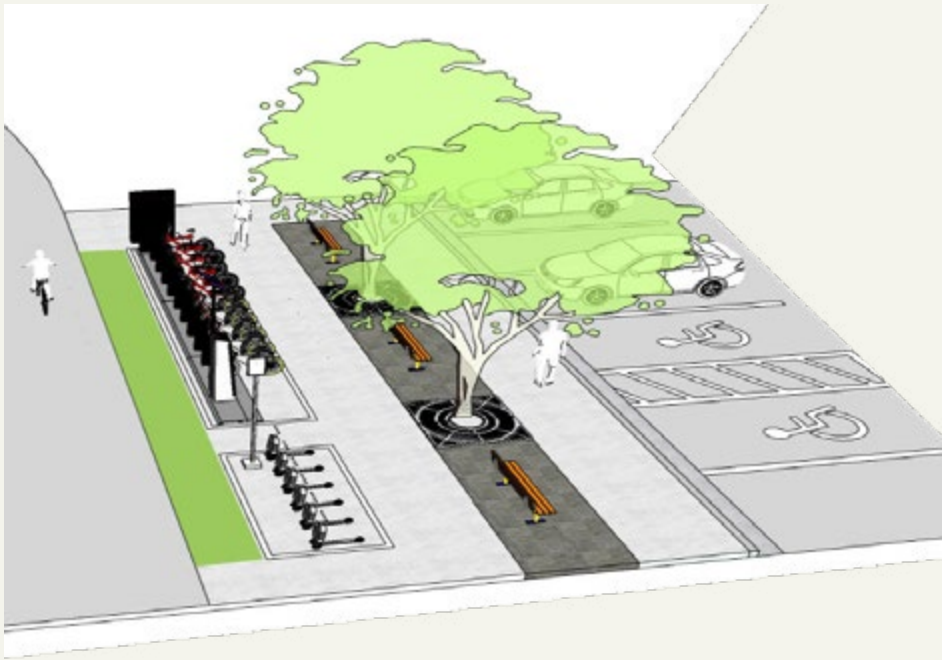
CONCLUSION

Established models of bikesharing continue to grow in large cities such as Boston, DC, and New York but have slowed or even disappeared from a few smaller cities. Some have switched to private ownership to support a transition toward dockless bikes and e-bikes, such as in Minneapolis. Meanwhile, the current model of shared e-scooters continues to grow at a rapid clip and is, in some places, heading toward more docked scooter-share programs, as this simplifies charging.

Furthermore, people are increasingly buying their own mobility devices, including electric scooters and bikes. While some of these have their own internal locking mechanisms, many people want to add external locks and/or to lock their devices to something like a bike rack.

Trends toward use of active transportation and micromobility modes can safely be expected to continue though the mode types and service providers will likely change over time. With such a rapidly evolving landscape, a nimble and proactive approach to policy and infrastructure investments will best serve the City of Detroit.





BUS & TRANSIT

"THE JOE LOUIS GREENWAY SHOULD HAVE ACCESSIBLE, RELIABLE AND AFFORDABLE TRANSPORTATION SERVICES."

Source: DDOT

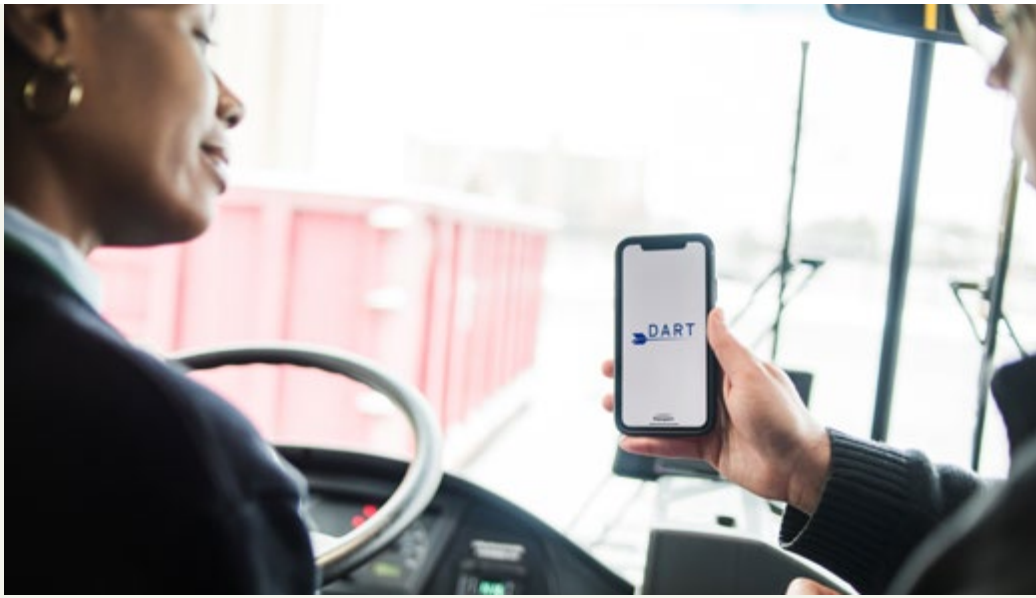
While the Joe Louis Greenway will accommodate a variety of non-motorized mobility options, its connectivity to alternative transportation systems will provide additional value. Integration with the existing—and future—transit systems of Detroit will increase usage of both transit and the greenway, improve access and last mile connectivity while alleviating the financial and physical burdens of personal vehicle ownership.

Direct access to the greenway will be available from local DDOT and regional SMART buses with routes that cross or operate adjacent to the greenway. Other transit systems with stops and stations not directly along the greenway—including Amtrak, the QLine and many disconnected DDOT and SMART routes—will be accessible through on-street infrastructure designed to provide safe and comfortable connections for non-motorized users.

DDOT BUS SYSTEM

The Detroit Department of Transportation (DDOT) is the largest public transit provider in Michigan that serves the City of Detroit, surrounding suburbs, and neighboring cities, including Highland Park and Hamtramck. DDOT prides itself on providing reliable, clean, safe, and efficient service to an average of 85,000 riders daily.

Neighborhood Routes: DDOT neighborhood routes provide access to key residential neighborhoods in Detroit.



Top: Bus rider uses Detroit's new DART App
Bottom: City of Detroit DDOT ConnectTEN Bus
Source: DDOT

Key Route: DDOT key routes service provides connection along major commercial corridors and thoroughfares.

ConnectTen: DDOT's ConnectTen service operates 10 routes along major corridors with 24/7 service.

Detroit Metrolift: DDOT's ADA paratransit service provides accessibility options to seniors and individuals with disabilities.

Night Shift: Night Shift is a partnership between DDOT, the City of Detroit Office of Mobility Innovation and New Economy Initiative that provides a $7 credit toward a ride with Lyft or Detroit Cab Co. between 11 p.m. and 5 a.m. for commuters from a ConnectTen bus stop.

New Freedom: DDOT was awarded grant funds from the Federal Transit Administration (FTA) to address some of the transportation challenges facing the city's disabled community.[1]

DDOT 2.0

Consideration should also be given to greenway connections to possible DDOT 2.0 routes. DDOT 2.0 was launched as part of the City of Detroit Strategic Plan for Transportation amd proposes to create a high-frequency transit system accessible to 60% of Detroit residents by 2022. Joe Louis Greenway plans should incorporate connections to existing and planned high-frequency transit routes.

APP INTEGRATION

DART (DART Detroit Transit): The official payment app to ride on DDOT and SMART fixed-route buses and the QLINE streetcar. For more information, visit thedartapp.com.

Transit App: A simple and reliable way to get upcoming departure times of nearby bus routes. For more information, visit www.ridedetroittransit.com.

1 This program is still in service but is no longer accepting new applicants.

A bus rider uses the DDOT bike racks
Source: DDOT

TRANSIT INTEGRATION

Metro Detroit's growing network of non-motorized and transit connectivity promotes equitable access to neighborhoods, jobs, amenities and resources. Where these systems interconnect, it's important to consider the needs of both single and mixed-mode users.

SHARED CORRIDORS BETWEEN THE JOE LOUIS GREENWAY AND DDOT BUS ROUTES

1. Hamtramck Drive
2. Joseph Campau
3. Oakman Boulevard
4. Warren Avenue
5. Dearborn Street
6. Jefferson Avenue
7. Fort Street
8. Bagley Avenue

DDOT Bus Driver Wearing a Facemask. Source: City of Detroit

SMART BUS SYSTEM

The Suburban Mobility Authority for Regional Transportation (SMART) is Southeast Michigan's only regional bus system helping people connect to work, school, medical appointments, shopping centers, entertainment and cultural events.

FIXED-ROUTE SERVICE

Fixed Route is the easiest, most affordable and economical way to connect to destinations throughout Macomb County, portions of Oakland and Wayne County. SMART's Fixed Route service covers major corridors, crosstown routes and local, limited stop and express routes.

FAST SERVICE

Frequent Affordable Safe Transit (FAST) powered by SMART, offers limited stops and connects the suburbs to Downtown quickly and easily. The high-frequency service travels along three of Detroit's busiest corridors—Gratiot, Woodward and Michigan—connecting riders to the airport, Pontiac and Chesterfield Township. Unlike the traditional SMART routes, FAST only stops at designated FAST stops about every mile. This allows for a more streamlined service and provides better access to destinations and transfer points. FAST runs about every 15 minutes during peak operating hours 7 days a week, even late nights and weekends. This new service never requires a transfer at the Detroit border.[1]

1 https://www.smartbus.org/ridesmart-fast

CONNECTOR

Connector Service is an advance reservation, curb-to-curb service operated by SMART. When using Connector, riders may travel anywhere within a 10-mile radius of a designated service area. Rides are available on a first come, first served basis and reservations are required. A six-business-day notice is recommended for medical appointments and a two-business-day notice for other destinations.

ADA PARATRANSIT SERVICE

ADA Paratransit Service is an advance reservation, curb-to-curb service that is provided for people who are unable to use SMART Fixed Route bus service because of a disability. In order to use this service you must be ADA-certified and live 3/4 of a mile or less from a SMART Fixed Route bus stop.[2]

SMART BUS APP

The SMART Bus system features an app with Bus Tracker, trip planner, routes, nearest stops, service bulletins and fares.

SMART's website[3] offers tools such as schedules, maps, trip planners and a bus tracker to make commuting easy.

TEXT YOUR BUS

In a couple of easy steps, the app sends a text with the estimated time of arrival. Steps include:

- Find your stop ID number on the bus stop sign or website
- Text SMART [stop id] to 41411 i.e. "SMART 989"
- Receive a return text with the estimated arrival time

For more information, visit Smartbus.org or call 866.962.5515.

WINDSOR CONNECTION

When the US-Canadian border is open, the Windsor Connection provides short route access between Downtown Detroit and Windsor via the Detroit Windsor Tunnel.[4] Accessible services are available.

Bike racks are available on the tunnel bus between Detroit and Windsor. All bicycles entering Canada or the United States must be inspected and approved by a Customs Officer.[5]

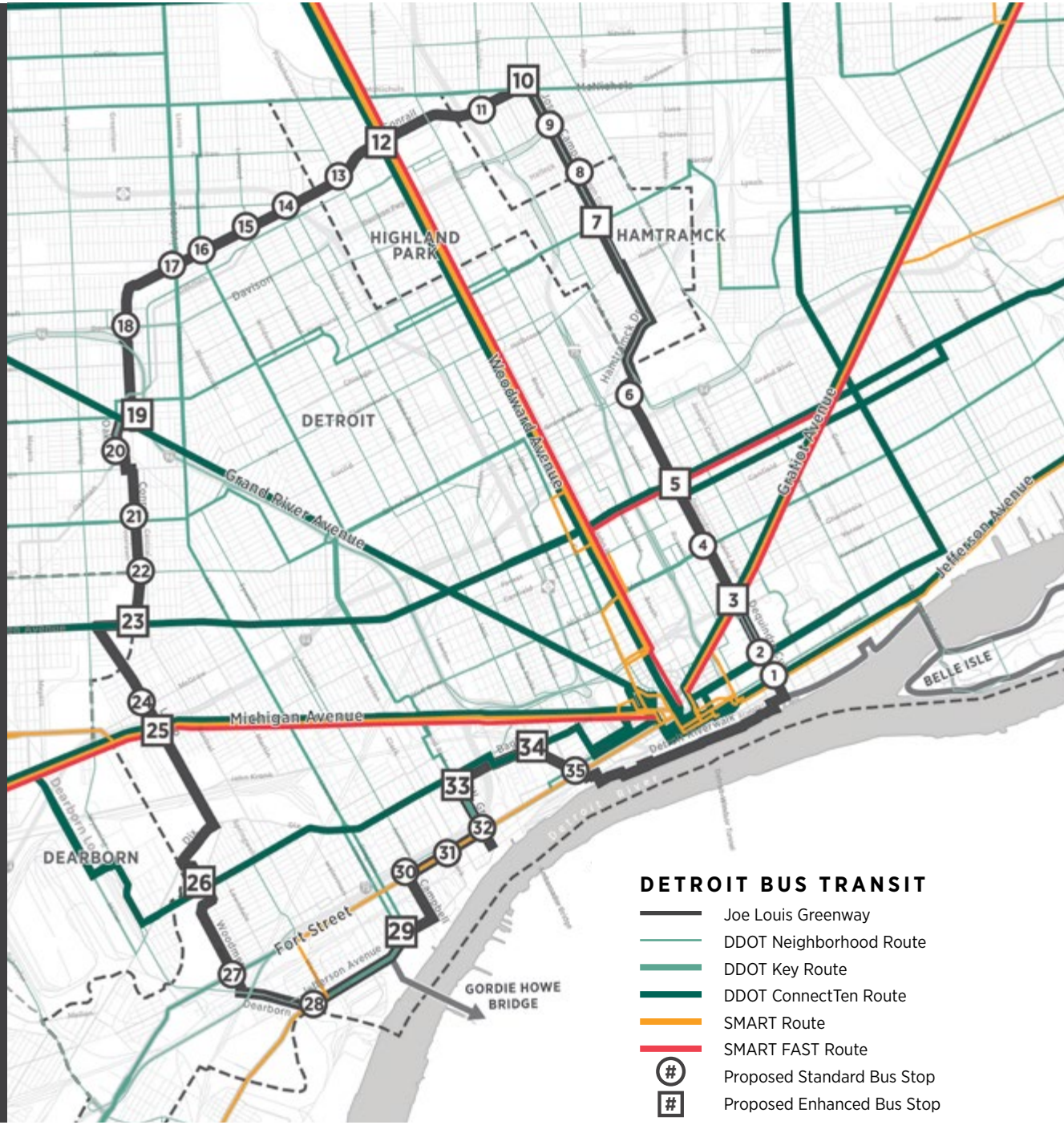
2 ADA certification requires an application process
3 smartbus.org
4 Windsor Connection Service Map: https://www.citywindsor.ca/residents/transitwindsor/Routes-and-Schedules/Documents/maps/Tunnel%20Map%20New%202019.pdf
5 Windsor Connection Bike Guide: https://www.citywindsor.ca/residents/transitwindsor/ride-guide/pages/bike-racks.aspx

BUS STOP CONNECTIONS

Enhanced bus stops indicated in bold below.

1. Jefferson Avenue
2. Lafayette Street
3. **Gratiot Avenue**
4. Mack Avenue
5. **East Warren Avenue**
6. Hamtramck Drive
7. **Caniff Street**
8. Carpenter Street
9. East Davison Street
10. **McNichols**
11. Dequindre Street
12. **Woodward Avenue**
13. Hamilton
14. Ben Hill Playground
15. Salsinger Park
16. Dexter
17. Livernois
18. West Davison Street
19. **Grand River Avenue**
20. Oakman Boulevard
21. Joy
22. Tireman
23. **West Warren Avenue**
24. McGraw
25. **Michigan Avenue**
26. **Vernor Highway / Woodmere Street**
27. Fort Street
28. Rouge River Outlook
29. **Gordie Howe Bridge**
30. W. Fort Street and Campbell Street
31. W. Fort Street
32. W. Grand Boulevard and W. Fort Street
33. **Bagley Street and W. Grand Boulevard**
34. **Southwest Greenway at Bagley Street**
35. Ralph C. Wilson Jr. Centennial Park

Every bus stop along the Joe Louis Greenway will need to meet DDOT Design Standards, regardless of whether they are indicated on this diagram.



BUS STOPS

The most common type of modal intersections can be found at bus stops. Existing bus stops are indicated, at their most basic, as a sign and call number, while stops with higher ridership have bus shelters and seating. In order to promote transit ridership and use of the Joe Louis Greenway, these spaces should be enhanced for comfort and utility.

All bus stops connecting either directly or indirectly with the greenway should include, at a minimum:

- Signage: Information regarding bus stops and routes, as well as assistance and emergency resources
- Lighting: Lighting to ensure visibility, comfort and safety
- Accessibility: An accessible 8′ wide concrete pad to accommodate DDOT and SMART lift systems

Additional amenities such as benches, bus shelters, bike racks, waste receptacles and route schedule should be provided, as is feasible, to encourage ridership by greenway users.

ENHANCED BUS STOPS

Bus stop enhancements may be installed in higher transit use locations and at major greenway access points. These enhanced bus stops will provide additional amenities to riders to encourage use and improve comfort. In addition to those amenities offered at standard bus stops along the greenway, these bus stops may include:

- Bike Parking: Bike racks and micromobility parking
- Bus Shelter: Sheltered waiting area
- Waste: Trash, recycling, ash urn
- Lighting: Enhanced pedestrian lighting
- Barriers: Leaning or guard rails

MULTIMODAL COMPATIBILITY

The locations shown on the route map represent segments where on-street greenway segments coincide with bus routes. Greenway typologies reflect integration of bus traffic and stops with cycle tracks and bike lanes. It’s important to provide high-quality pedestrian facilities to connect transit lines and stops to the greenway.

All bus stop locations should be coordinated with DDOT. Through this process, DDOT will determine if additional bus stop changes are needed.

Lonyo Street may include transit service in the future, and Holbrook may emerge as a major transit corridor intersecting the greenway. Coordinating street design with DDOT will ensure that transit facilities are incorporated.

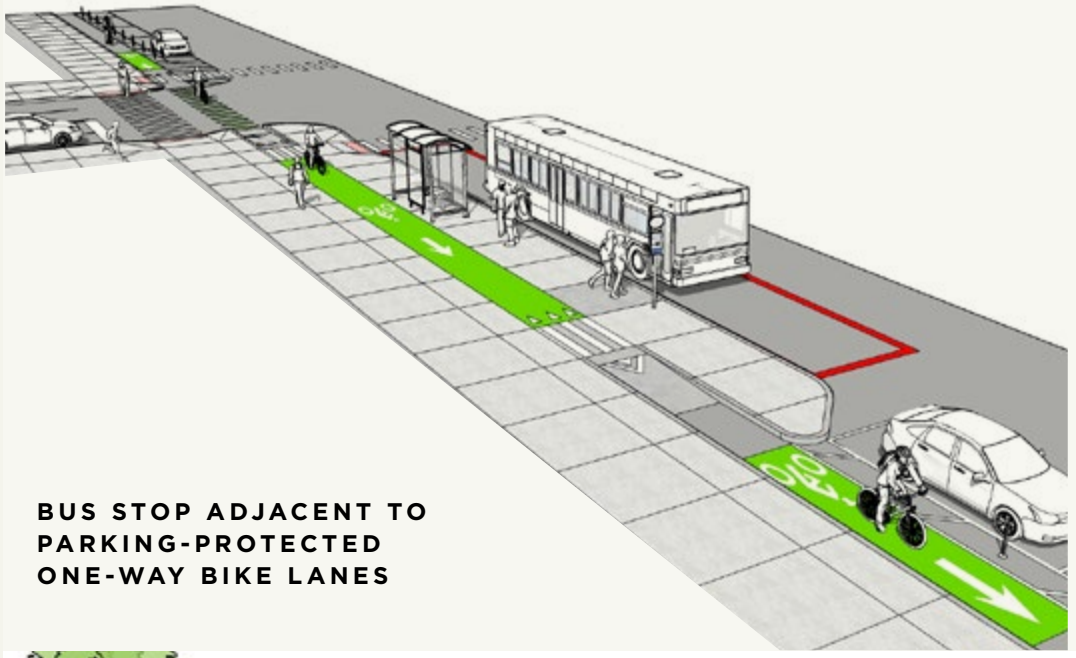
ACCESS STANDARDS

As traffic modes intersect, user access, comfort and safety must be considered. While the configurations of bus stops along the greenway will change according to the spatial dimensions and context of each stop area, each bus stop must adhere to minimal access standards. All bus stops must provide clear boarding and alighting areas, as well as rear door zones. Additionally, maintain a minimum 4′ clear access route between the sidewalk, boarding and alighting areas, rear door zone, shelters and benches. Finally, provide vertical and horizontal clearances from bus stop design features for people's safety and comfort.

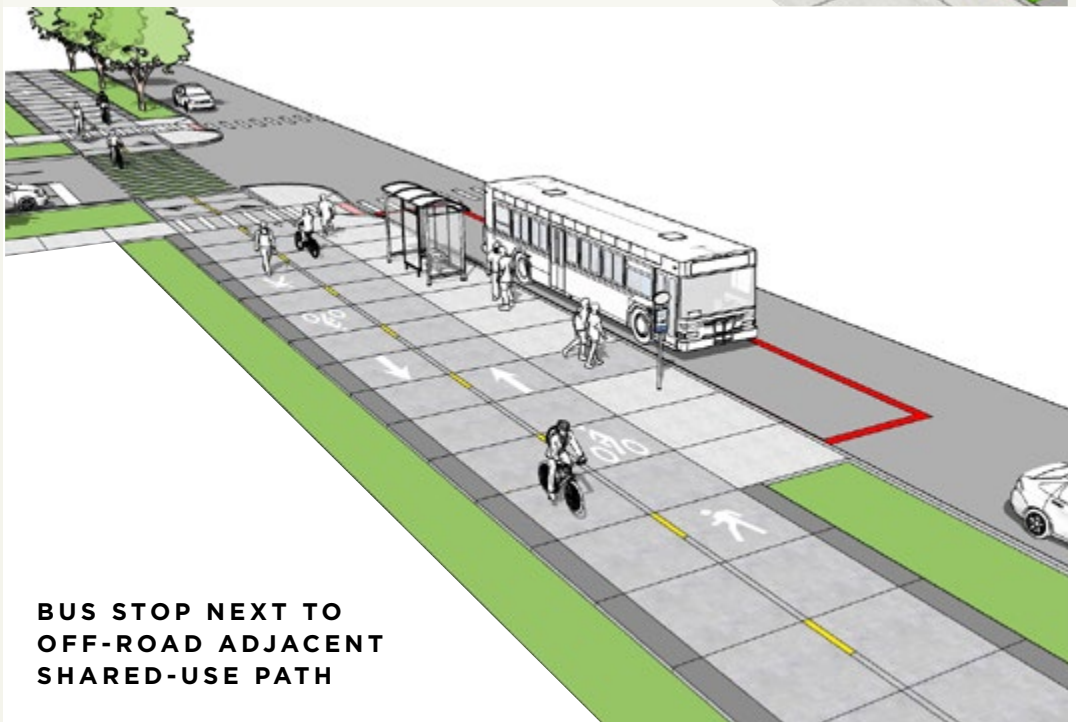
Three major typologies are identified for how the greenway will interact with bus stops:

- **Floating Bus Island for the Two-Way Cycle Track:** These bus stops "float" in an island, separated from the main street curb by non-motorized infrastructure.
- **Bus Stop Adjacent to Parking Protected One-Way Bike Lanes:** This bus stop separates pedestrian traffic the bus stop area with a raised one-way bike lane to facilitate accessibility and safety.
- **Bus Stop Next to Off-Road Adjacent Shared Use Path:** This stop provides ample waiting and egress space for bus traffic, adjacent to a two-way shared-use path.

This Plan also assumes that each bus stop will be a far side stop—a stop that occurs after a bus passes through an intersection—as this is more operationally efficient.



BUS STOP ADJACENT TO PARKING-PROTECTED ONE-WAY BIKE LANES

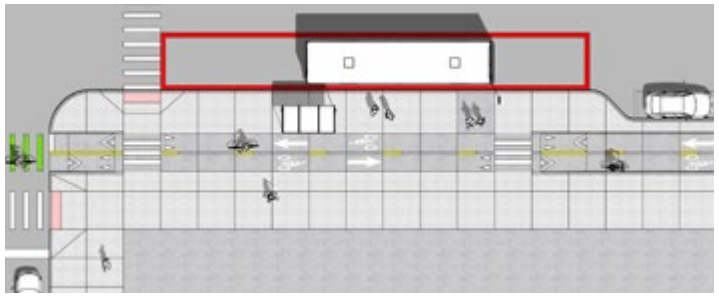


BUS STOP NEXT TO OFF-ROAD ADJACENT SHARED-USE PATH

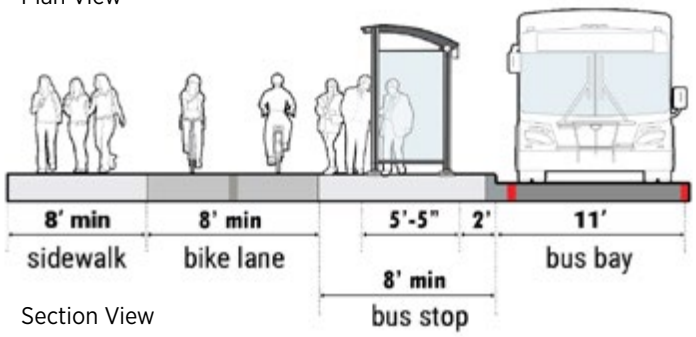
"THE JOE LOUIS GREENWAY SHOULD HAVE MORE SHELTERS AT BUS STOPS."

—COMMUNITY MEMBER

FLOATING BUS ISLAND FOR TWO-WAY CYCLE TRACK



Plan View



Section View

GREENWAY TYPOLOGIES

WHAT ARE GREENWAY TYPOLOGIES?

This term refers to the classification of physical and dimensional characteristics of the Joe Louis Greenway. The following typologies are general recommendations for the typical conditions found along the proposed greenway route. These typologies are intended to guide future design and implementation. Greenway sections should be discussed with residents and refined in detail to ensure the community's wishes—and context-specific conditions—are reflected in design development and construction documentation.

The following typologies are based on the input of residents and safe dimensional standards. Preferred dimensions are used if space is available for the proposed facility and based on roadway width and users' needs. Minimum dimensions are used in areas or segments that are constrained physically or when limits of property restrict space.

In the following pages where greenway sections are illustrated, the dimensions noted are the preferred options chosen to maximize safety and access. However, in certain cases and because of known constraints, some are shown as minimums. What has been illustrated are typical section recommendations. These typologies are conceptual. Additional community engagement validation of specific site conditions will take place during the design and construction stages within the immediately impacted areas.

OFF-STREET

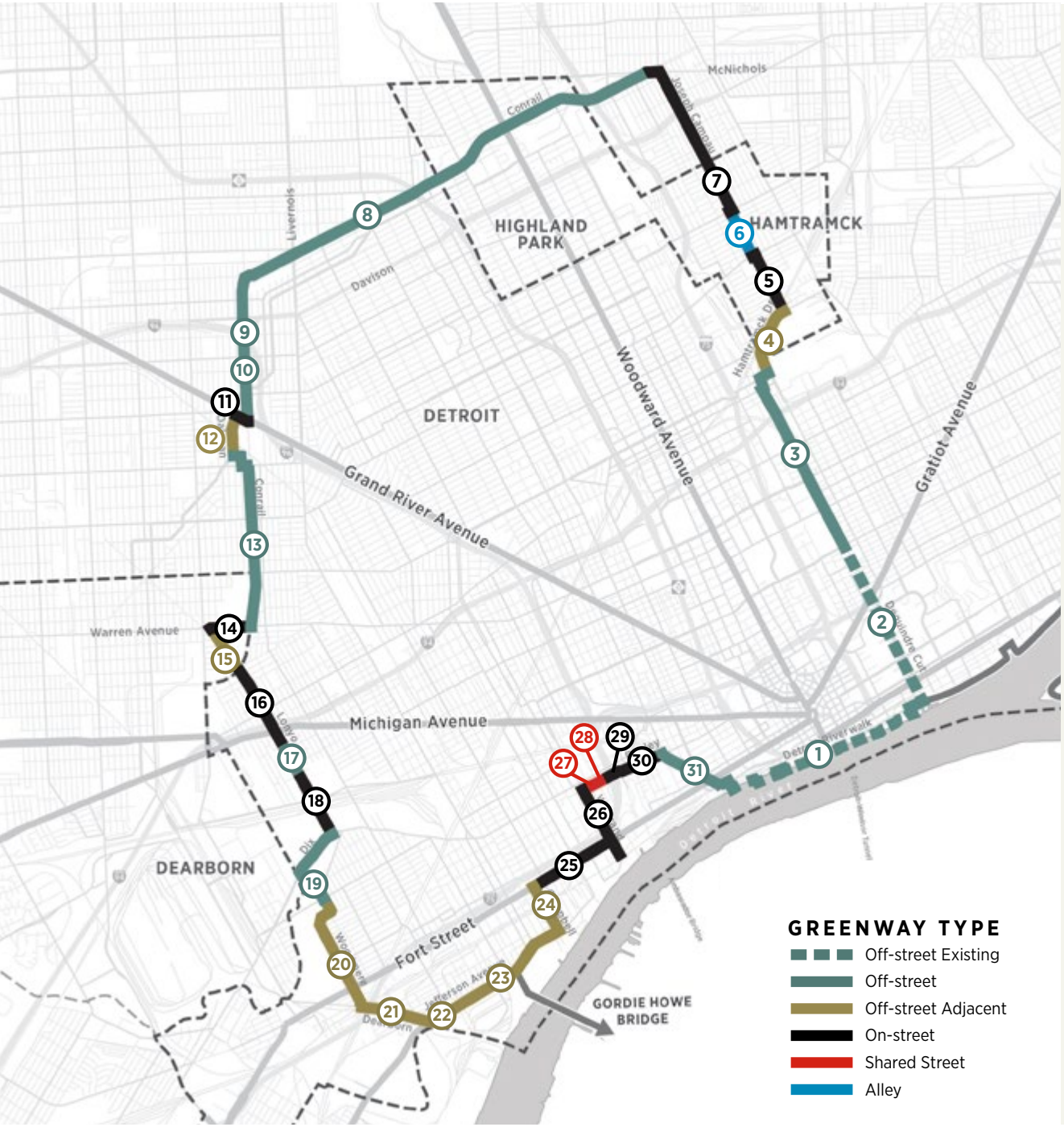
Off-street greenway segments will be located within former rail corridors or parks which are completely separate from the existing roadway network, and will provide the highest level of safety, accessibility and comfort for greenway users of all ages and abilities.

OFF-STREET ADJACENT

Off-street adjacent segments will be located along streets in the existing roadway network. These segments will be separated from roadway traffic and will be placed behind the curb line and buffered spatially or physically where space allows. Greenway users of all ages and abilities will experience a high level of safety, accessibility, and comfort.

ON-STREET

On-street greenway segments will be located within existing public roadways where streetscape improvements will integrate the highest standards for safety and accessibility for bicycle facilities and provide non-motorized pathways for greenway users of most ages and abilities.



SHARED STREET

The shared street typology will be found in a single location along the Joe Louis Greenway and is an extension of a unique shared street and commercial district along the route. Implementing the highest safety and traffic calming standards, the shared street typology will provide a safe and accessible environment where bikes and vehicles share the roadway.

ALLEY

Like the shared street, the alley typology is found in a single location along the Joe Louis Greenway, and provides a safe and accessible environment where bikes and vehicles share space. This segment will provide a unique experience for greenway users and offers opportunities to connect to local businesses.

DEQUINDRE CUT EXTENSION

From Mack Avenue to Milwaukee Street

The Dequindre Cut Extension connects and builds on one of Detroit's most popular existing greenways.

It is predominantly located off-street, with a small segment classified as on-street adjacent.

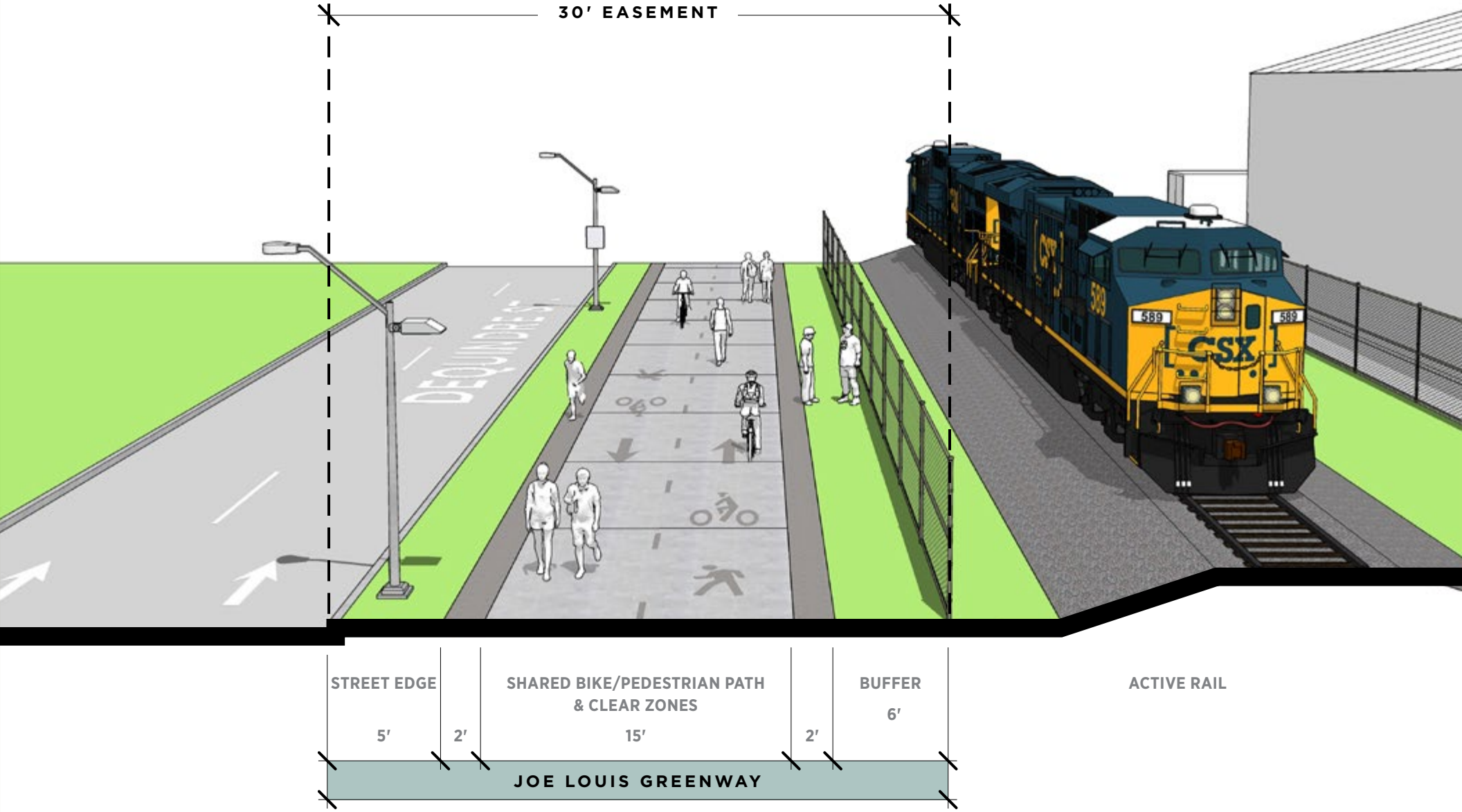
This segment of the Joe Louis Greenway will also be located in a relatively narrow easement adjacent to an active rail line.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** A shared-use bicycle and pedestrian path is centered in the available easement adjacent to the east side of Dequindre.
- **Pedestrian Path:** A pedestrian path is integrated into the shared-use path. No sidewalks are available on west side of street.
- **Buffer:** A buffer of landscaping or lawn with trees separates the shared-use path, and lawn with trees or landscaping between the path and street edge, private property or the active rail line.

CONSIDERATIONS

- **Fencing & Screening:** Define fencing in areas where private residential, commercial or industrial properties require barriers for safety or security. Buffer greenway users from unsightly, noisy or smelly adjacent industrial land uses as needed.
- **Space:** Constrained available space may alter segment dimensions. Consideration should be given in subsequent design and implementation phases.



VIEW LOOKING NORTH

HAMTRAMCK DRIVE

From East Grand Boulevard to Joseph Campau Avenue

The segment of the proposed greenway route along Hamtramck Drive presents significant challenges.

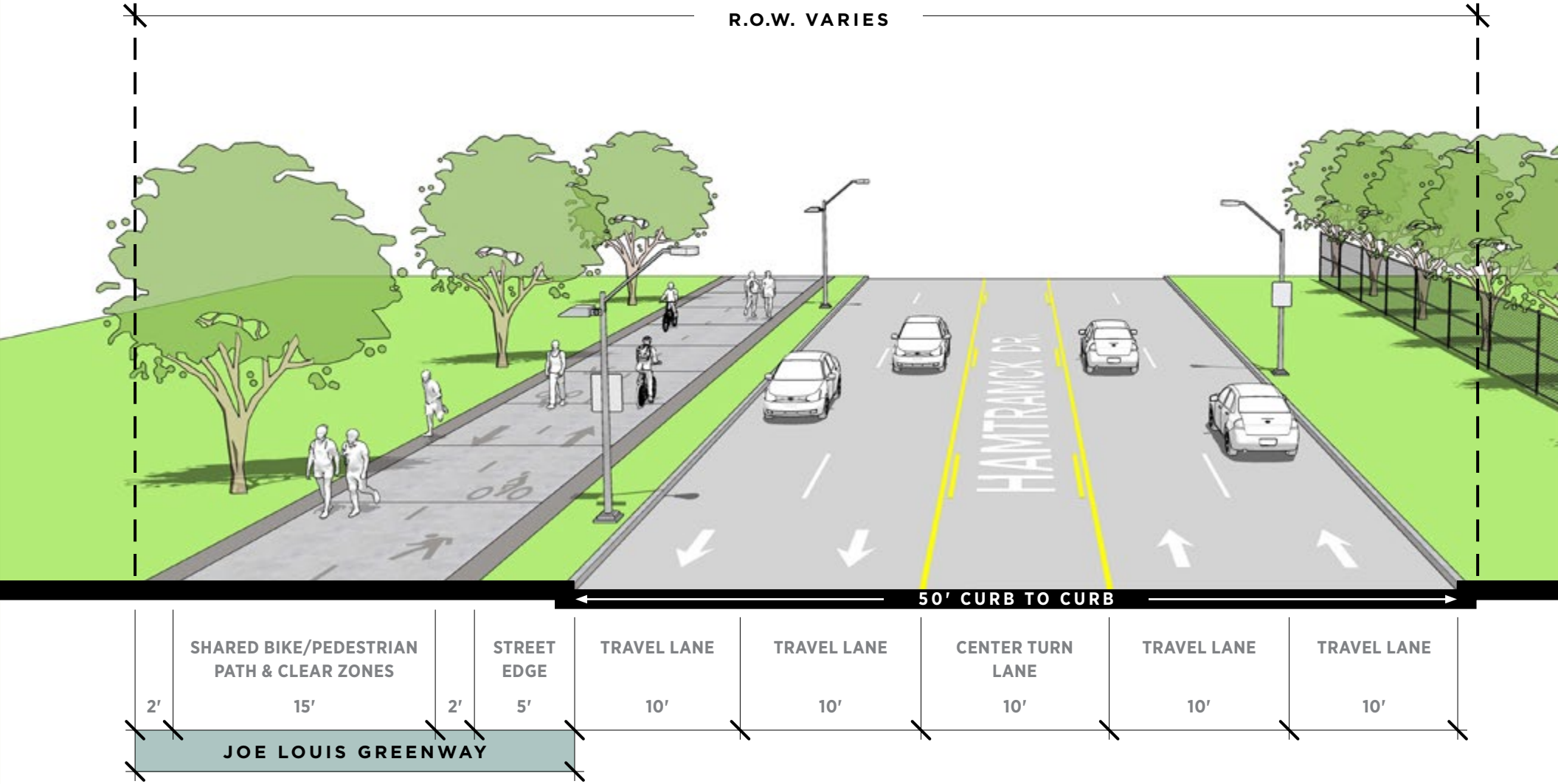
These include widely varying available dimensions of the right-of-way behind the existing curb as well as ownership, land control and easement issues. During community engagement, residents voiced a preference for on-street greenway routes. Because of this, both on-street and on-street adjacent options are presented for Hamtramck Drive. Specific recommendations for the on-street option are outlined here.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** A shared-use bicycle and pedestrian path on the north and west sides of the street.
- **Pedestrian Path:** Pedestrian path is integrated into shared-use path. No sidewalks available on east or south sides of the street.
- **Parking:** No on-street parking will be available on Hamtramck Drive.
- **Vehicular Travel:** Two vehicular lanes in each direction with center turn lane.
- **Buffer**: A buffer of lawn with trees or landscaping between the cycle track and pedestrian path at street edge.

CONSIDERATIONS

- **Railroad Viaducts:** The existing railroad viaduct along Hamtramck Drive provides limited vertical and horizontal space. Additional analysis, design and coordination should be done to prioritize a safe and comfortable experience.
- **Right-of-way:** Dimensional constraints of right-of-way behind curb may not accommodate a shared use path.
- **Coordination:** Hamtramck Drive is under Wayne County jurisdiction. The Hamtramck Drive segment will meet both Wayne County and City of Detroit standards and requirements. The detailed engineering and design will be jointly coordinated between Wayne County and the City of Detroit.



VIEW LOOKING NORTH

JOSEPH CAMPAU AVENUE

From Hamtramck Drive to Holbrook Avenue and Caniff Avenue to McNichols Road

Led by the Cities of Detroit and Hamtramck, Joseph Campau Avenue is currently undergoing design and implementation of streetscape and bike infrastructure improvements.

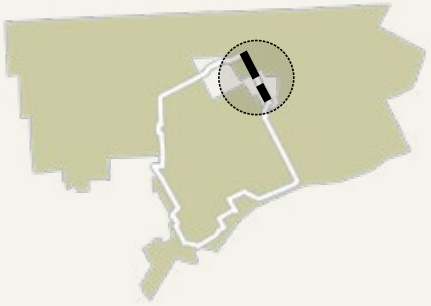
Though these improvements are being implemented independently by the Cities of Detroit and Hamtramck, within their respective municipal boundaries, together they will comprise a part of the Joe Louis Greenway that passes through some of Detroit's most diverse neighborhoods and will be connected in a safe, logical, and characteristically similar manner to maintain the overall consistency of safety and accessibility of the Joe Louis Greenway. The Hamtramck portions of this greenway are being designed by Hennessey Engineers, Inc.

SEGMENT CHARACTERISTICS

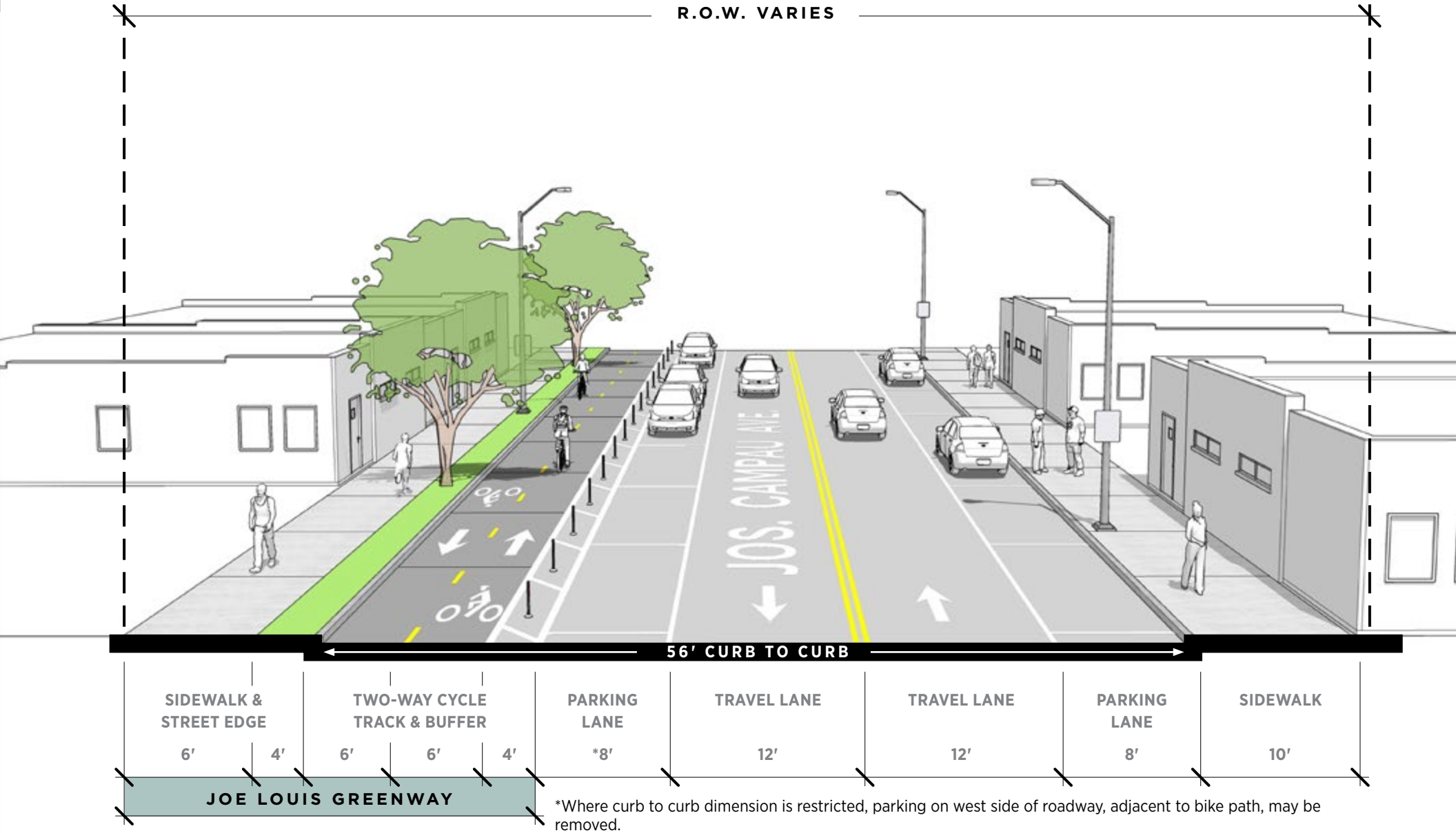
- **Greenway Configuration:** At-grade two-way cycle track on the west side of the street with striped buffer and delineator posts.
- **Pedestrian Path:** Sidewalks along west and east sides of street, with those along west side separated from cycle track with lawn or landscape buffer and trees.
- **Vehicular Travel:** One vehicular lane in each direction
- **Greenway amenities:** Future planning in coordination with the City of Hamtramck is needed to add amenties such as seating areas, landscaping, wayfinding, and public art.

CONSIDERATIONS

- **Coordination:** The City of Detroit and the City of Hamtramck will continue to coordinate the design and implementation of the Joseph Campau segment of the greenway.



- **Enhancements:** The current design of the Joseph Campau segment is being funded through a TAP Grant. Future fundraising may support the enhancement of bike infrastructure, buffers and safety features, as well as the incorporation of amenities such as MoGo bike stations.
- **Buses:** The current configuration requires bus riders accessing bus stops along this segment to cross active bike lanes in order to board or depart buses. Consideration should be given to signage and safety in this area, as well as opportunities for future enhancements.



*Where curb to curb dimension is restricted, parking on west side of roadway, adjacent to bike path, may be removed.

VIEW LOOKING NORTH

HAMTRAMCK ALLEY

First Alley West of Joseph Campau, from Holbrook Avenue to Caniff Avenue

The Hamtramck Alley will be a novel and truly unique feature of the Joe Louis Greenway.

The greenway travels this route to avoid the narrow right-of-way of Joseph Campau while still providing access to Hamtramck's Downtown—a key destination along the greenway's route.

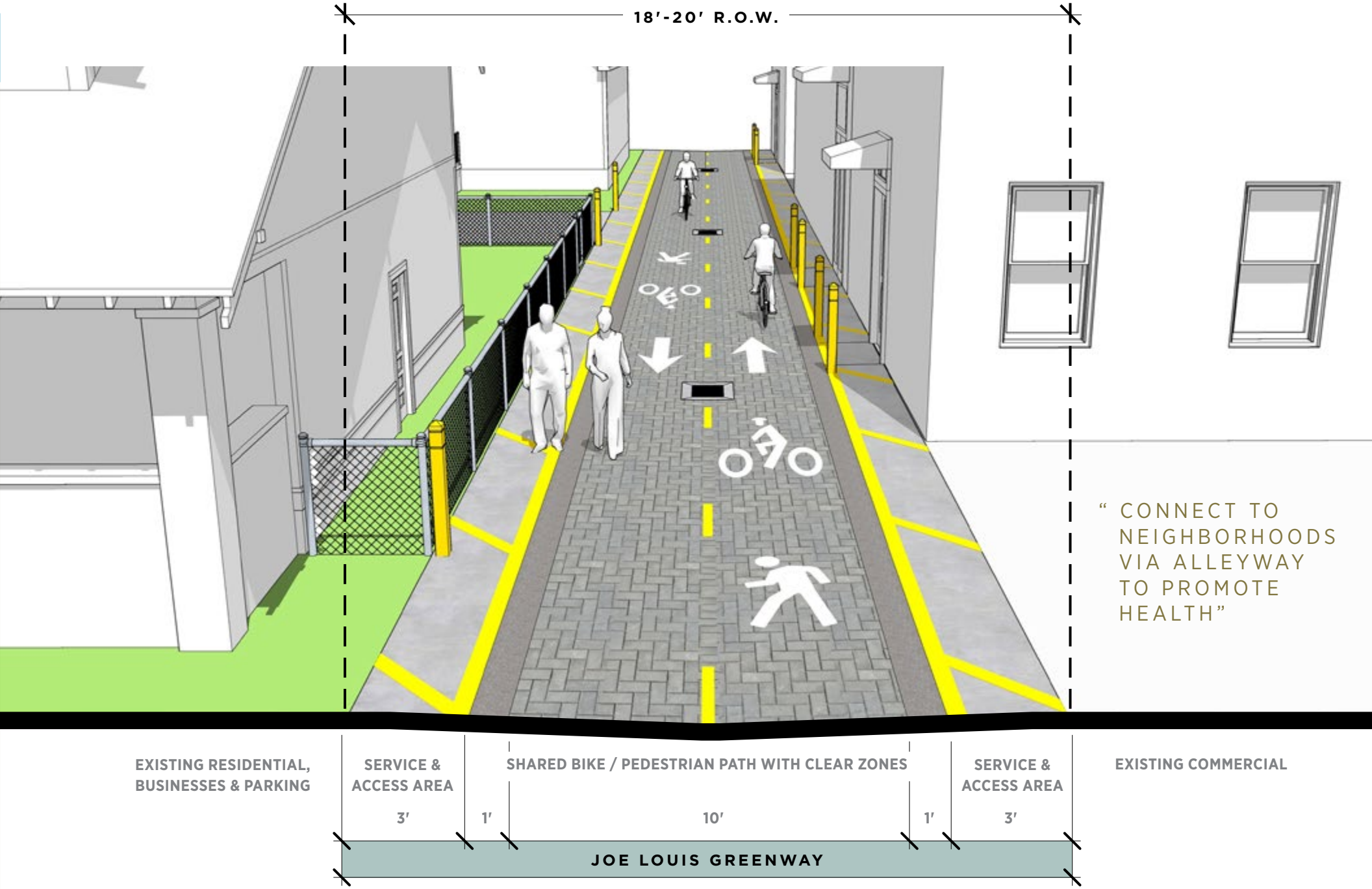
City of Detroit staff have directly engaged businesses and property owners along the entire alley corridor, while the Detroit and Hamtramck City Managers have maintained ongoing coordination. The General Services Department, independent of the Framework Plan process, developed and conducted door-to-door business owner surveys to solicit input on proposed alleyway connection. The majority opinion of engaged business owners was that alleyway improvements would benefit the community. Additional outreach will be required when the segment is implemented.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Shared-use path, centered in alley
- **Vehicular Travel:** Limited vehicular traffic will be permitted on alley segment of greenway to service existing businesses. Traffic calming measures will be designed and constructed to slow cross vehicular traffic at alley intersections to ensure safe crossings for pathways users.
- **Clear & Service Zone:** Paved area on each side of the path accommodates door swings, bollards, equipment and swinging fences.

CONSIDERATIONS

- **Right-of-way:** Alley right-of-way is limited, with dimensions ranging from 18-20′ in width. The design section at right assumes a minimum dimension of 18′. An additional 1′ clear zone is provided between the greenway and service access areas, so the current clear and service zone width is 4′, increasing to 5′ when right-of-way allows.
- **Coordination:** Requires cooperation of adjacent businesses to relocate parking and to relocate dumpsters to a consolidated trash collection area outside of alley.
- **Service & Loading:** Business servicing and loading will occur during designated times outside of primary greenway use hours to reduce user and space conflicts.
- **Safety and Uses:** There may be risks associated with the integration of bike traffic with service, trash and utility uses. The paved border may incorporate special pavement treatments to allow walking while discouraging cyclists and other wheeled users from crossing into the service area. This segment will be pedestrian focused. In order to maintain safety, bicycle traffic will need to be directed to slow down and defer to pedestrians. Faster cyclists may choose to remain on Joseph Campau with vehicle traffic. Signage, pavement markings and safety devices should be incorporated into alley design.
- **Stormwater:** The alley should be graded to drain stormwater to centrally located and bike friendly structures.

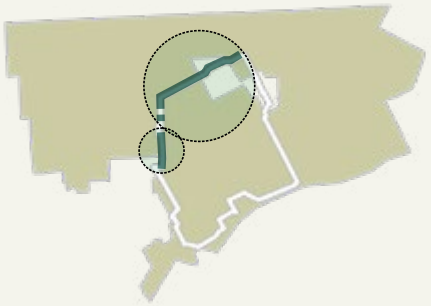


" CONNECT TO NEIGHBORHOODS VIA ALLEYWAY TO PROMOTE HEALTH"

VIEW LOOKING NORTH

CONRAIL

From McNichols Road to the I-96 Bridge, the I-96 Bridge to Grand River Avenue and Oakman Boulevard to Warren Avenue



The former Conrail corridor is off-street and completely separated from vehicular traffic.

The varied width of the right-of-way provides opportunities for many amenities in addition to bike and pedestrian paths. Additionally, the corridor passes varied land uses including industrial facilities and residential neighborhoods.

SEGMENT CHARACTERISTICS

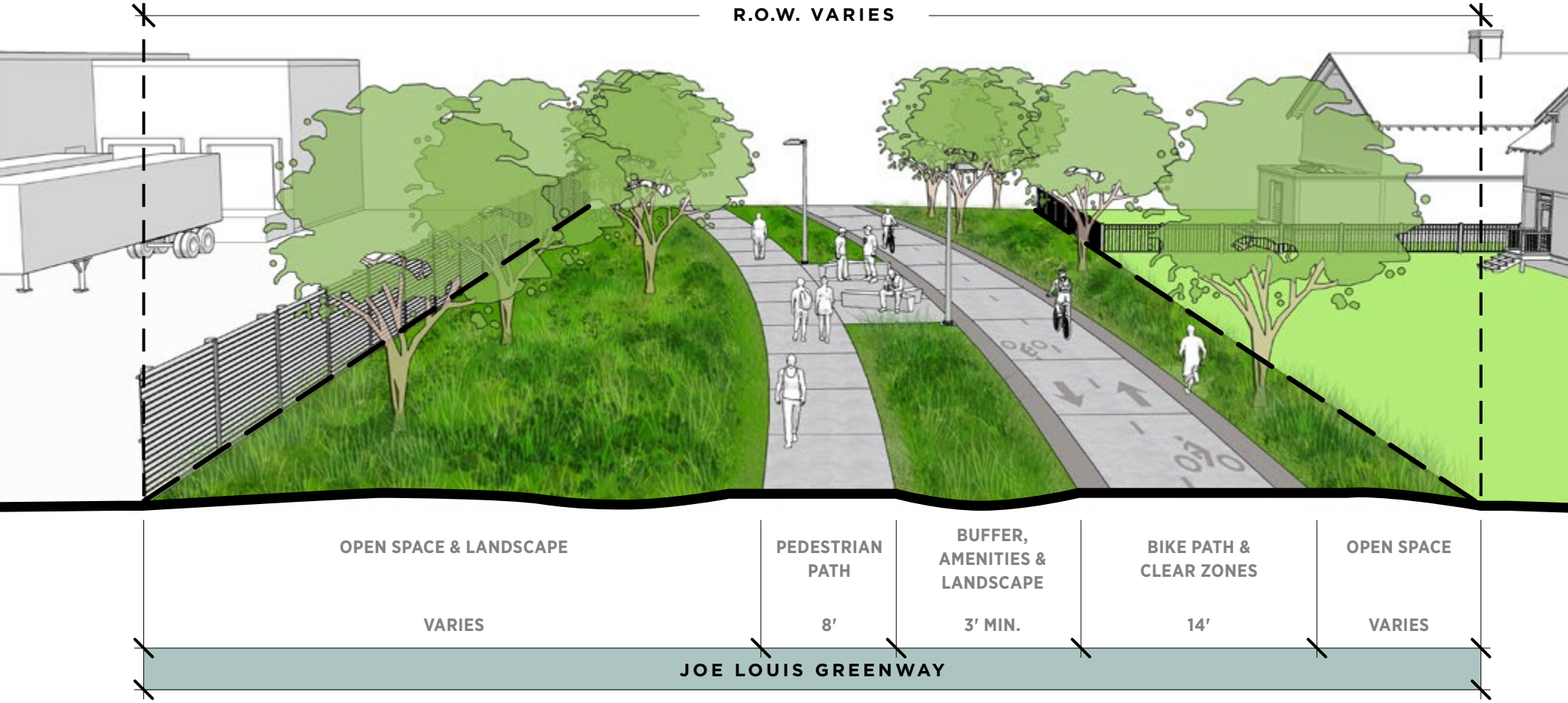
- **Greenway Configuration:** Bicycle and pedestrian paths separated by a lawn or landscape buffer.

CONSIDERATIONS

- **Space**: Constrained available space in some locations may significantly reduce the buffer between bikes and pedestrians, or in some cases require that the path become shared.
- **Environment:** Due to industrial contamination, there are concerns about environmental cap. A environmental cap will need to be provided to protect groundwater where contamination is present. See page 356 for more information.
- **Programming:** Greenway amenities may be integrated into separated paths. Public art, MoGo bike stations, education and gathering spaces may be incorporated into the greenway along its length.
- **Open Space:** Open space along the Conrail portion of the greenway can be actively programmed, reserved for flexible activities, planted with landscape or used to manage stormwater.
- **Connectivity:** The greenway will provide connections to existing amenities and destinations along its route, supported with signage and wayfinding to facilitate navigation.
- **Fencing & Screening:** Fencing and screening may be used in areas where private residential, commercial or industrial properties require barriers for safety or security.

"MAKE IT EASY FOR USERS TO STAY IN THEIR LANES. ON THE DEQUINDRE CUT, PEDESTRIANS ARE CONSTANTLY WALKING IN THE BIKE LANES AND CYCLISTS ARE OFTEN RIDING ON THE WRONG SIDE, EVEN THOUGH LANES ARE CLEARLY MARKED ON THE PAVEMENT."

—COMMUNITY MEMBER



VIEW LOOKING NORTH

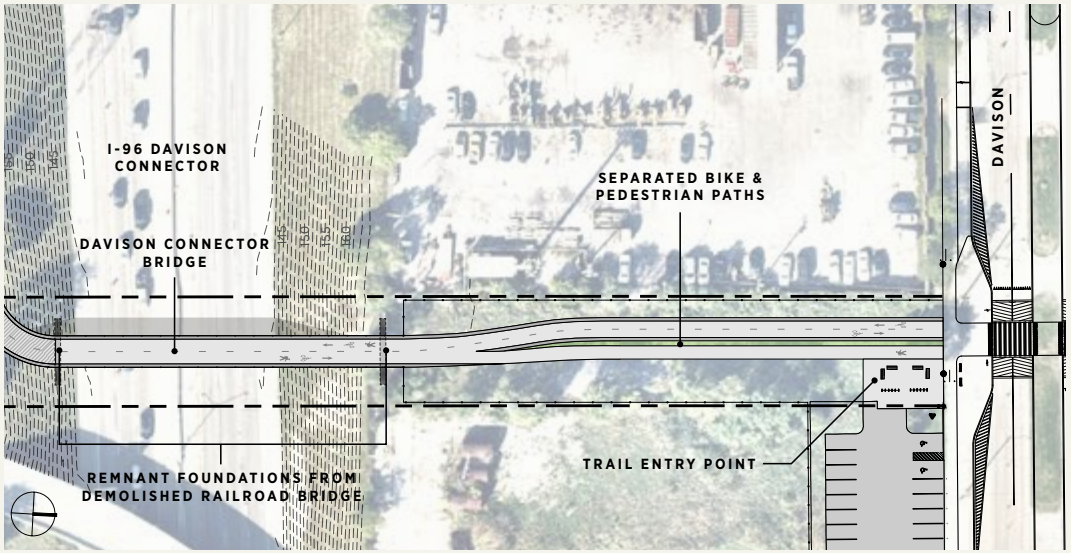
I-96 BRIDGE

From Conrail rail corridor at Davison Connector to Conrail at I-96 Jefferies Freeway

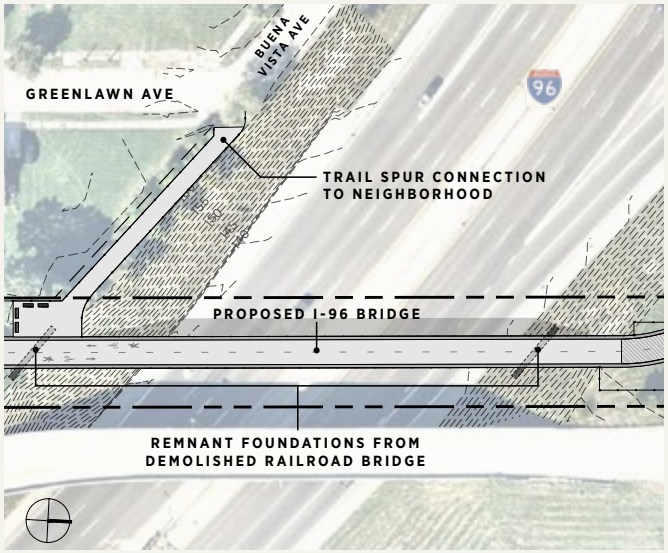
Proposed Bridges

Two new bridges will need to be constructed to enable greenway users to safely and efficiently cross Interstate 96 and the I-96 Davison Connector. To ensure an efficient bridge design—and to accommodate the limited space across the entire crossing area—the separated bike and pedestrian paths leading to the bridges will transition to a shared-use path

The high volumes of daily traffic traveling along I-96 and the Davison Connector provide a prime opportunity to highlight the identity of the Joe Louis Greenway on bridges. Designed to be iconic and innovative, the bridges will enhance recognition of the greenway and its important role in the development of non-motorized infrastructure in Detroit.



Proposed Bridge Over I-96 Davison Connector



Proposed Bridge Over Eastbound I-96

Rider Way Pedestrian Bridge over I-235 in Des Moines, Iowa
Source: Tony Webster via Flickr

GRAND RIVER AVENUE

From the Conrail Corridor to Oakman Boulevard

The implementation of the Joe Louis Greenway along Grand River has the potential to revitalize a struggling commercial corridor and connect to a major thoroughfare.

With these opportunities comes the need for additional design, process and implementation considerations.

This business and commercial corridor has the potential for future development, already visible with ongoing facade and building improvements on the south side of the street. This segment of Grand River is a relatively wide right-of-way with higher traffic volumes.

The building at 10670 Grand River Avenue is owned by the City of Detroit and is directly adjacent to the greenway corridor. The building presents a cost-effective opportunity that could house greenway facilities. What's more, its potential for adaptive reuse can catalyze and support business and commercial uses on the street. This building should be evaluated for mixed-use programming between the greenway and potential commercial and business services. Additionally, facade improvements and integrated art and murals could enhance the identity of the Joe Louis Greenway.

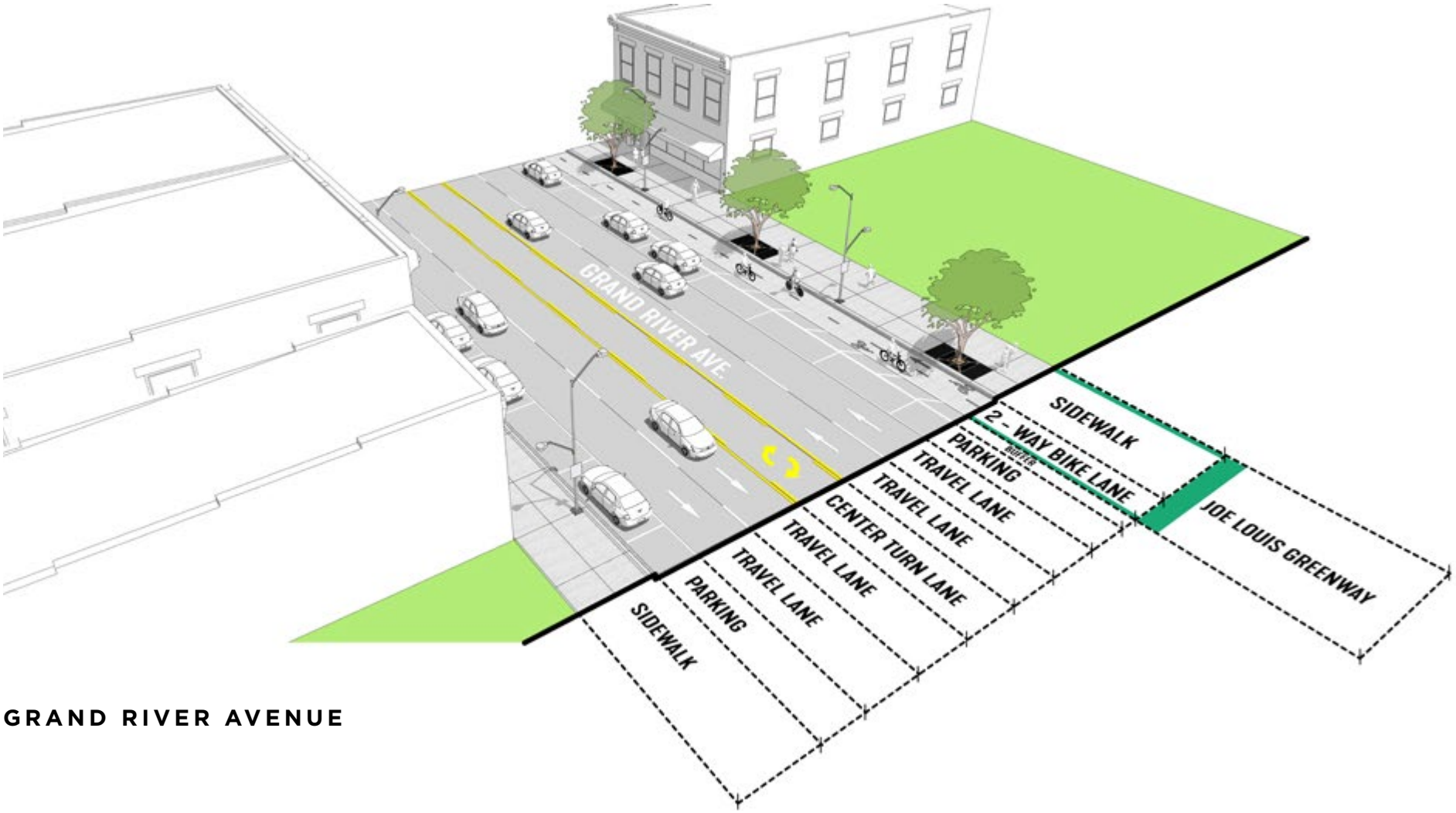
The Oakman Boulevard and Grand River intersection is a major bus stop transfer location between three major routes: the ConnectTen Route 03 for Grand River, the Key Route 38 for Plymouth and the Neighborhood Connector 15 for Chicago-Davison. As a result, the bus stops at this location see significant on-boarding and off-boarding volumes. Consideration should be given for the comfort and safety of bus riders and greenway users alike.

North of Grand River is a City-owned parcel that is currently being used by the Detroit Police Department for vehicle impoundments. This large parcel of property presents opportunities for shared green stormwater infrastructure that could benefit both the property itself and the greenway.

The design of the Grand River greenway segment is consistent with the improvements recently implemented further north along its stretch in Grandmont-Rosedale and Old Redford.

SEGMENT CHARACTERISTICS

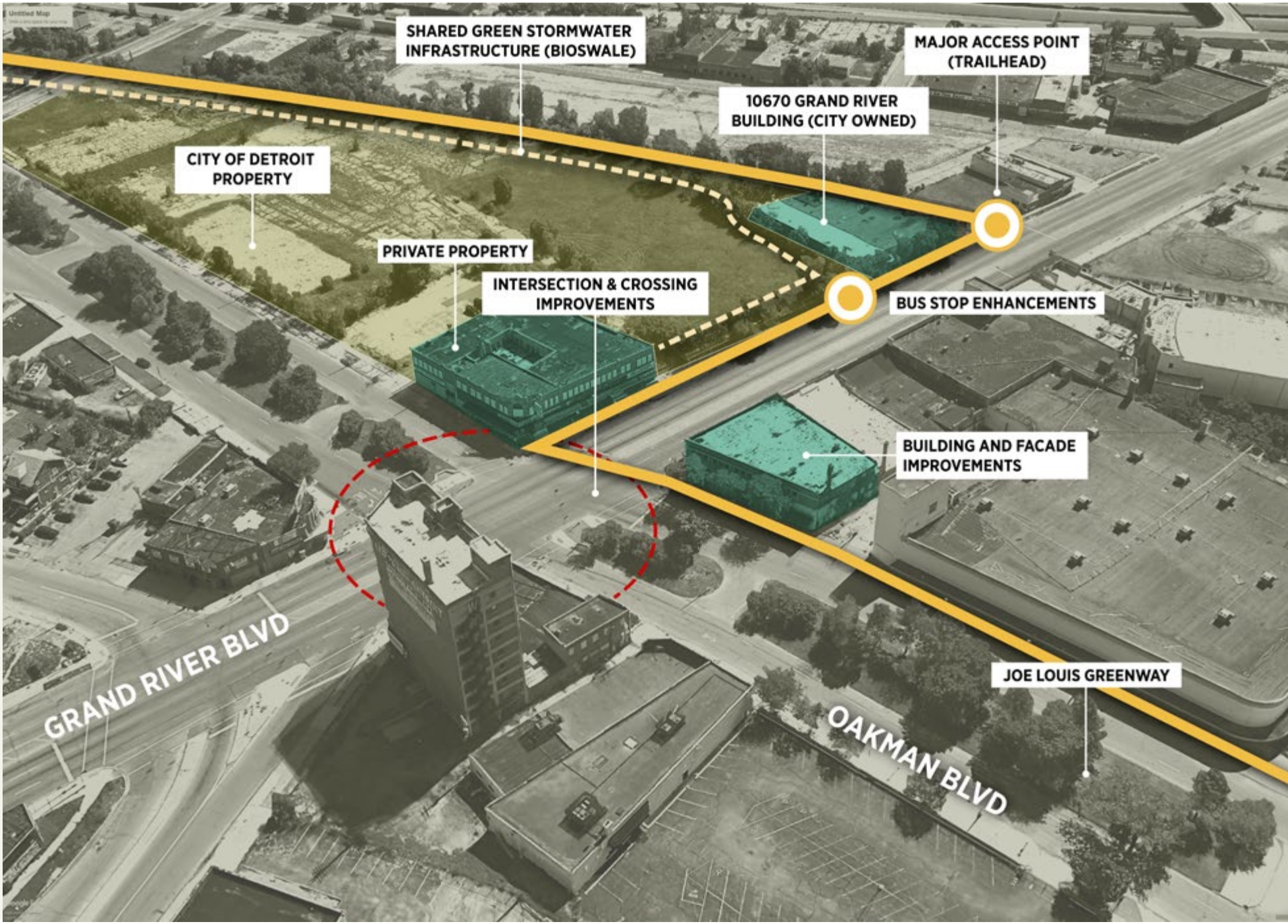
- **Greenway Configuration:** The greenway will consist of a two-way cycle track on the north side of Grand River separated from vehicular traffic with a buffer lane and on-street parking.
- **Pedestrian Path:** Pedestrian users of the greenway will use the sidewalk that is separated from vehicle traffic by the two-way cycle track, buffer lane and on-street parking.
- **Vehicular Travel:** Two vehicular lanes in each direction with center turn lane.



GRAND RIVER AVENUE

CONSIDERATIONS

- **Transit Integration:** Bus stop enhancements should be coordinated with DDOT and SMART to improve the experience and comfort of bus users. Direct access to the greenway should be provided for the high bus rider volumes and transfers. Bus stop enhancements will encourage transit ridership. Priority should be given to stops and stations with high ridership and transfers.
- **Commercial Corridor:** The greenway design should be integrated with and support the future improvement of the adjacent commercial district.
- **Access Point:** Grand River provides a great opportunity for a major greenway access point, providing key connections between public transit, vehicles, bike riders and pedestrians. Major access point improvements and amenities, including seating and respite locations, should be incorporated into design.
- **Stormwater:** Coordinate shared green stormwater improvements on greenway and Detroit-owned property.
- **Safety:** Coordinate greenway crossing and traffic signal improvements at the Oakman and Grand River Intersection.
- **Coordination:** Grand River Avenue is under MDOT jurisdiction. The design of the Grand River segment will meet both MDOT and City of Detroit standards and requirements. The detailed engineering and design will be jointly coordinated between MDOT and the City of Detroit.


SHARED GREEN STORMWATER INFRASTRUCTURE (BIOSWALE)
MAJOR ACCESS POINT (TRAILHEAD)
10670 GRAND RIVER BUILDING (CITY OWNED)
CITY OF DETROIT PROPERTY
PRIVATE PROPERTY
INTERSECTION & CROSSING IMPROVEMENTS
BUS STOP ENHANCEMENTS
BUILDING AND FACADE IMPROVEMENTS
GRAND RIVER BLVD
JOE LOUIS GREENWAY
OAKMAN BLVD

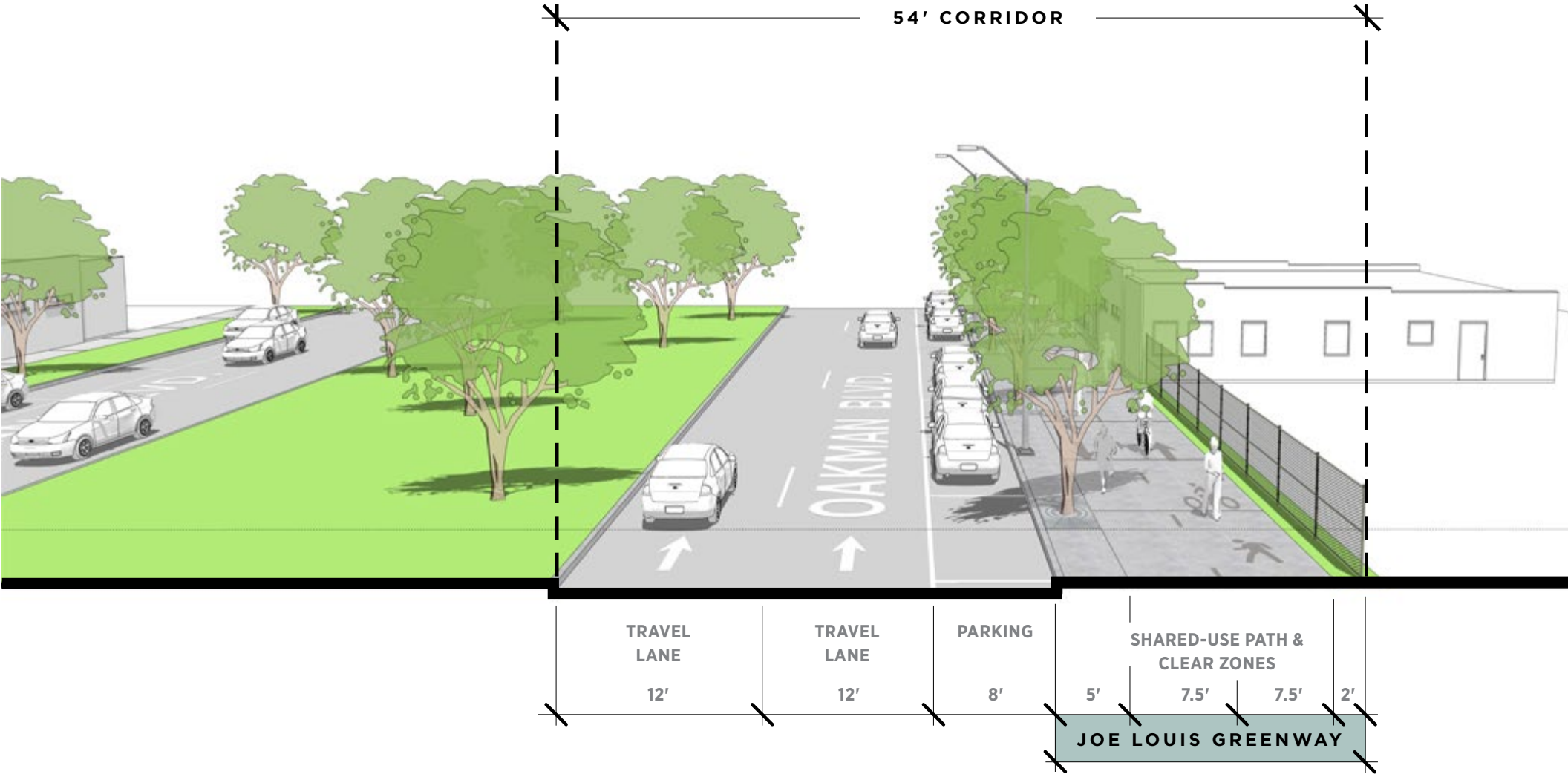
OAKMAN BOULEVARD

From Grand River Avenue to the Conrail Corridor

The off-street adjacent typology on Oakman Boulevard consists of a shared-use path along the east side of northbound traffic lanes.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Raised and protected two-way shared-use pedestrian and cycle track on east side of northbound street.
- **Vehicular Travel:** Two vehicular lanes in each direction with large center median.
- **Parking:** On-street parking incorporated as appropriate.



VIEW LOOKING NORTH

WARREN AVENUE

From Conrail Corridor to Lonyo Street

As a major thoroughfare in Detroit and Dearborn, Warren Avenue offers a wide right-of-way for the Joe Louis Greenway.

This on-street segment provides a major access point the Conrail portion of the greenway and transitions between on- and off-street greenway typologies. The alignment is situated to the northern side of Warren Avenue to avoid driveways and vehicular turning movements.

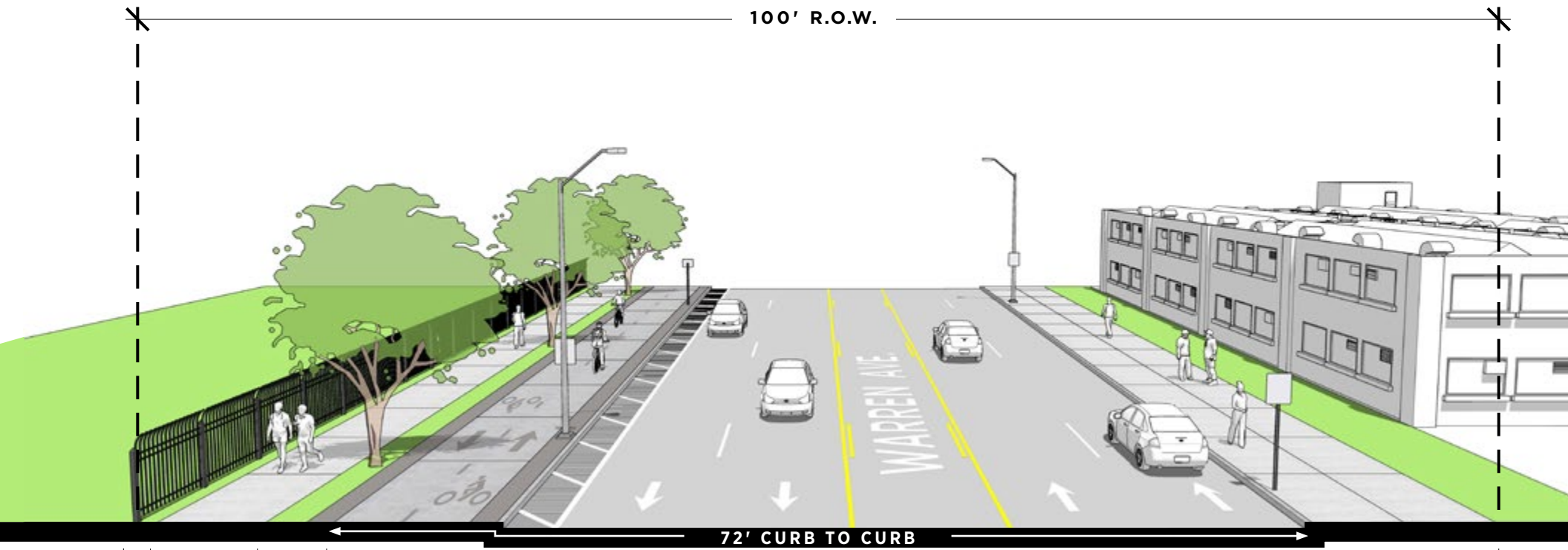
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** A raised two-way cycle track and pedestrian path on the north side of the street.
- **Pedestrian Path:** Sidewalks along north and south sides of street, with those along north side separated from cycle track with lawn or landscape buffer and trees.
- **Vehicular Travel:** Two vehicular lanes in each direction with center turn lane.
- **Buffer:** An intermittent raised curb buffer with landscape and striping with delineator posts separate and protect cyclists. A buffer of lawn with trees or landscaping separates the cycle track and pedestrian path.

CONSIDERATIONS

- **Railroad Viaducts:** Railroad viaducts along the Conrail provide limited vertical and horizontal space. Additional analysis, design and coordination should be done to prioritize a safe and comfortable experience.
- **Buffer:** Given the potential for high vehicular travel speeds along Warren Avenue, a more robust buffer such as curbed planters or planter boxes may be incorporated.
- **Safety:** Warren Avenue has a long, wide right-of-way, which encourages high speed traffic. Considerations for traffic calming and pedestrian and bicycle safety should be incorporated into the design and implementation.

- **Coordination:** The Cities of Detroit and Dearborn should continue to coordinate, and the Dearborn Multimodal Study should be referenced. Warren Avenue is under Wayne County's jurisdiction. The design of the Warren Avenue segment will meet both Wayne County and City of Dearborn standards and requirements. The detailed engineering and design will be jointly coordinated between Wayne County and the City of Dearborn.



	PEDESTRIAN PATH & BUFFER		BIKE PATH & RUMBLE STRIP BUFFER		TRAVEL LANE	TRAVEL LANE	CENTER TURN LANE	TRAVEL LANE	TRAVEL LANE	SIDEWALK & STREET EDGE
+/- 1′	8′	5′	12′	4′	11′	11′	11′	11′	11′	+/- 14′

JOE LOUIS GREENWAY

VIEW LOOKING EAST

LONYO STREET

From Warren Avenue to Radcliffe Street

This Lonyo Street segment of the Joe Louis Greenway is located in Dearborn, outside the City of Detroit limits.

The City of Dearborn owns six contiguous blocks of vacant land along the west side of the roadway and has offered a 30′ easement at the street edge of these parcels to support the greenway. This opportunity will allow for the greenway to be located behind the curb and significantly buffered.

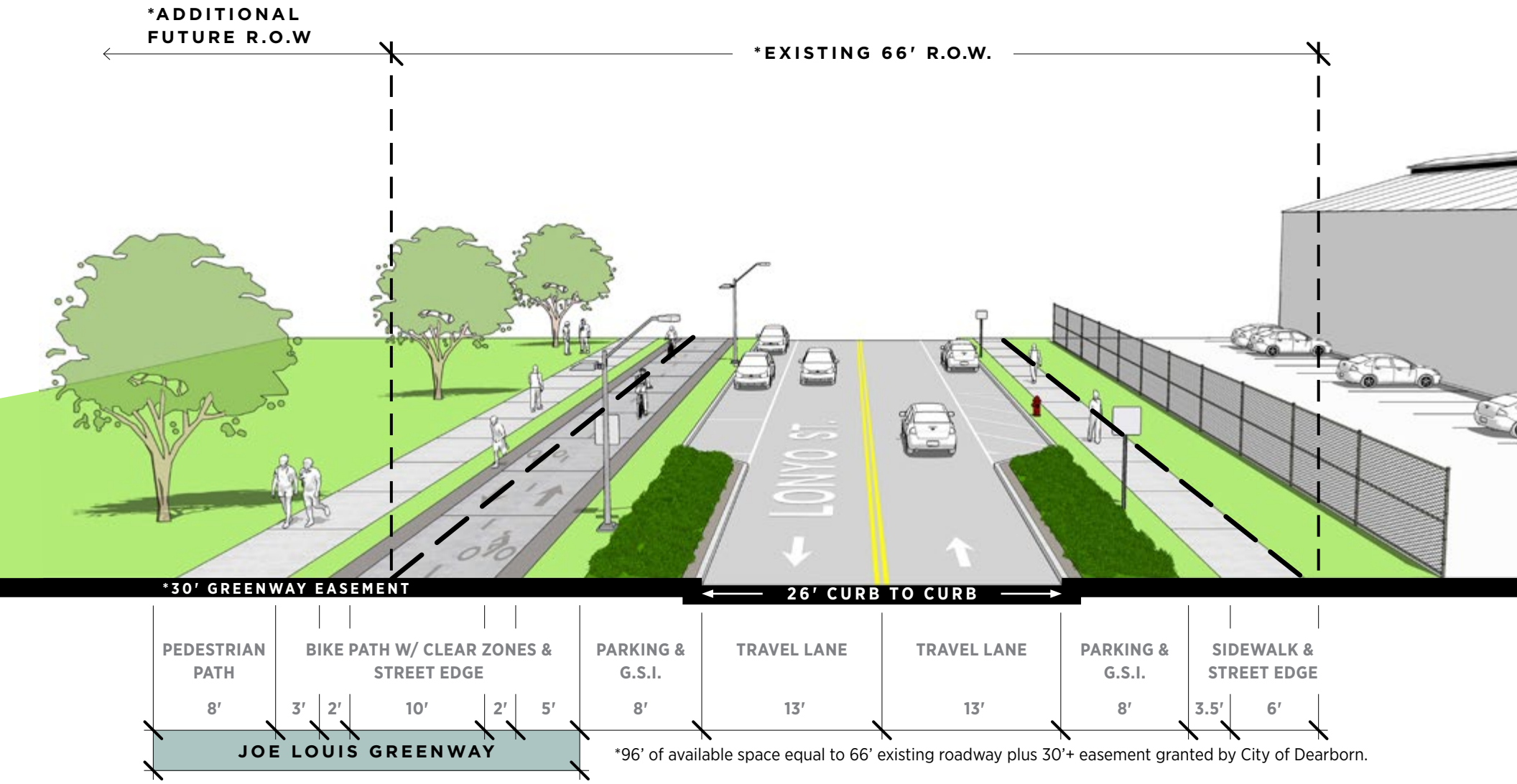
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** A separated two-way cycle track adjacent to west side of street.
- **Pedestrian Path:** Sidewalks along east and west side, separated from cycle track and roadway by lawn and landscape buffers.
- **Vehicular Travel:** One vehicular lane in each direction.
- **Buffer:** A buffer of lawn with trees or landscaping between the cycle track and pedestrian path, and at the street edge.
- **Parking:** New designated on-street parking.

CONSIDERATIONS

- **Space:** Dimension of easement offered by the city of Dearborn and impacts on space available for buffer between path and the roadway.
- **Land Uses:** Compatibility with greenway and future land use or development of the vacant land own by Dearborn.
- **Stormwater:** Potential for integration of green stormwater infrastructure, if greenway easement can accommodate.
- **Safety:** Lonyo's wide roadway creates a potential for high traffic speeds adjacent to the greenway. Bump-outs and parking areas promote traffic calming and provide space for green stormwater infrastructure.

- **Coordination:** The Cities of Detroit and Dearborn should continue to coordinate, and the Dearborn Multimodal Study should be referenced.
- **Connectivity:** The Lonyo Street segment provides connections to parks and recreation such as Graham Park.



*96' of available space equal to 66' existing roadway plus 30'+ easement granted by City of Dearborn.

VIEW LOOKING NORTH

LONYO STREET

From Radcliffe Street to Romanowski Park

The corridor along Lonyo Street between Romanowski Park and Radcliffe Street is characterized by moderately dense and intact residential neighborhoods.

In this segment, the bike facilities of the Joe Louis Greenway will be located on-street. This proposed design typology has been included in community engagement events to date. While some concerns about this segment have been raised, community members have also shared a desire for truck traffic calming and infrastructure improvements. Given the residential nature of this segment, additional outreach to homeowners will be needed during the next phase of design and construction documentation. The City will continue to coordinate with local groups to understand preferences and programming.

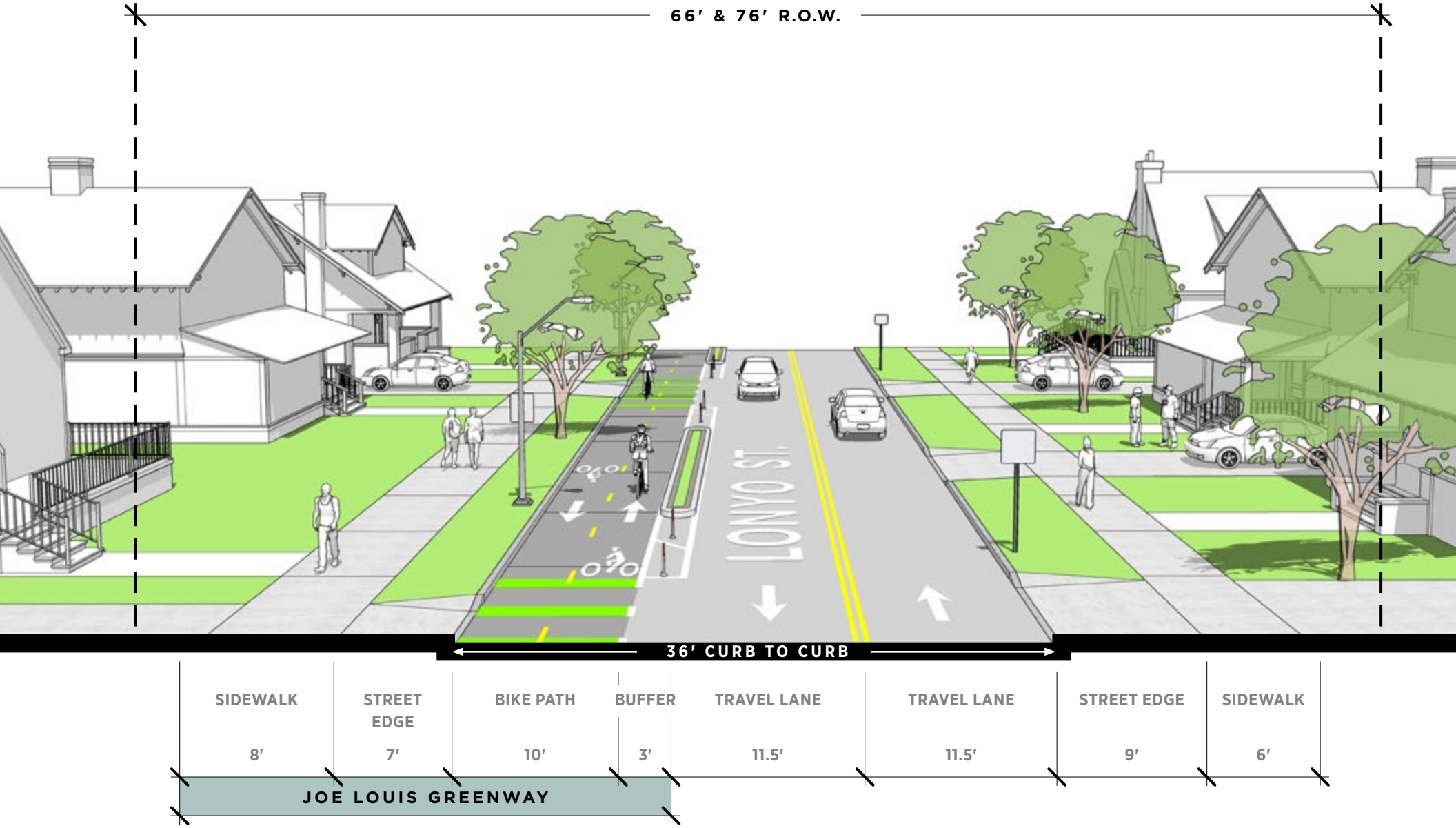
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Protected at-grade two-way cycle track on west side of street.
- **Pedestrian Path:** Sidewalks along the east and west sides of Lonyo Street are separated from cycle track and roadway by lawn and street trees.
- **Vehicular Travel:** One vehicular lane in each direction.
- **Parking:** No on-street parking will be available on residential right-of-way.
- **Buffer:** An intermittent raised curb buffer with landscape and delineator posts protects cyclists from vehicular traffic, while landscaping or lawn with trees separates the cycle track and pedestrian path.

CONSIDERATIONS

- **Residential Population:** Lonyo is densely populated with families along its route. Community engagement should be ongoing to ensure design solutions reflect the needs and desires of residents.
- **Driveways**: Access for vehicles entering and exiting residential driveways and reduction of conflicts with greenway users.

- **Space:** Right-of-way is constrained when crossing over I-94.
- **Truck Traffic:** Lonyo is located along a truck route. Additional study and coordination should be done to align with truck traffic and calm and separate traffic as needed.
- **Coordination**: The Southwest Truck Study should be referenced to guide design. Additional community engagement is required to confirm this is the appropriate design.
- **Existing Programming:** Community members shared issues regarding mail truck parking and trash bin locations. All issues should be explored during ongoing design, implementation and operations.
- **Safety:** A detailed review of the street geometrics and existing signage at the I-94 exit and entrance ramps should be completed to ensure safe circulation.



VIEW LOOKING NORTH

LONYO STREET

From Edsel Ford Service Drive to Michigan Avenue

Within the Lonyo Street segment, a pinch-point occurs where the greenway crosses over the I-94/Edsel Ford Freeway.

The narrow width of the bridge at this crossing creates potential conflicts between greenway users and truck traffic exiting the freeway and turning into the southbound lane on Lonyo Street.

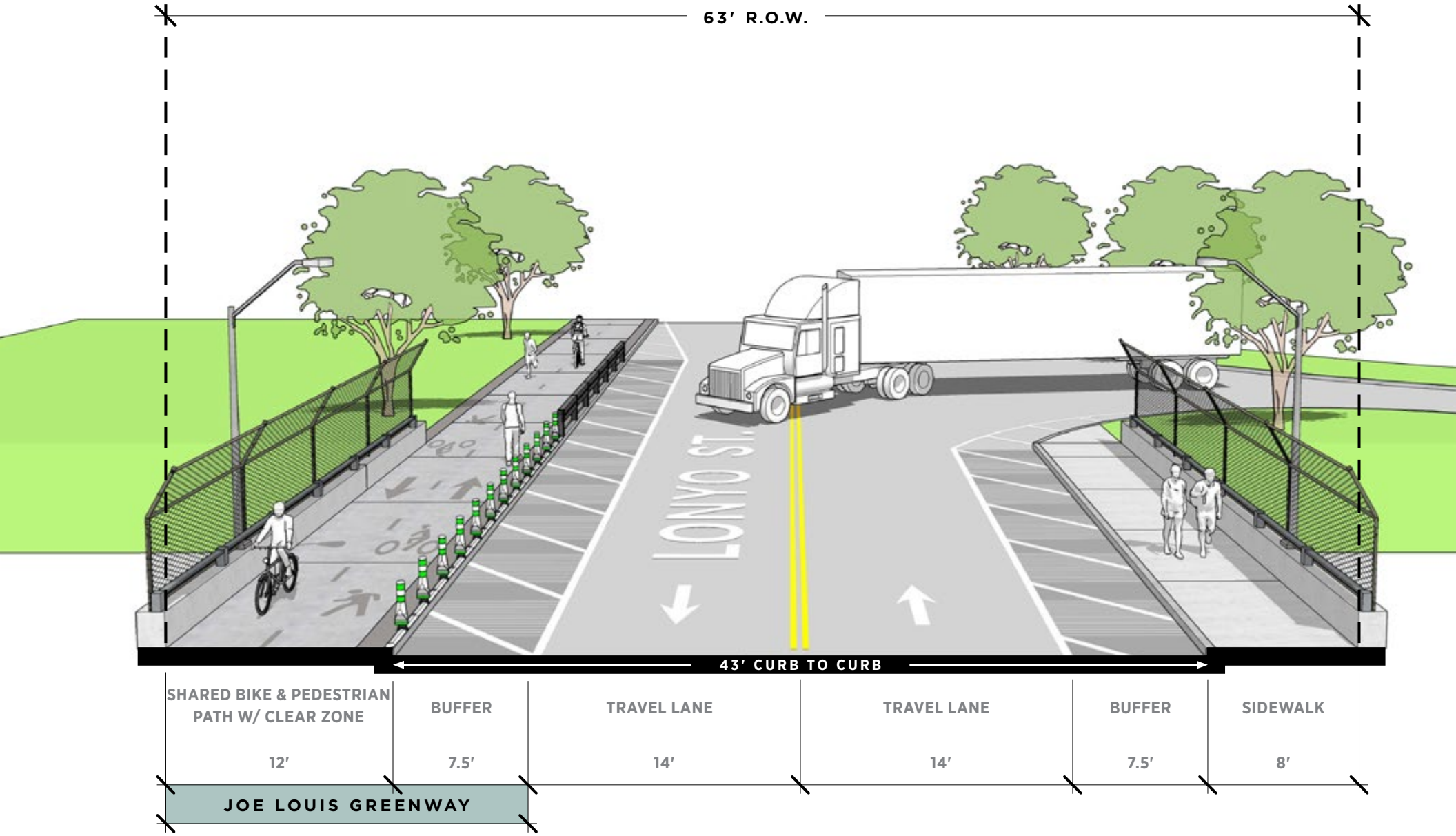
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Raised and protected two-way shared-use pedestrian and cycle track on west side of street.
- **Pedestrian Path:** Sidewalk maintained along east side of right-of-way with additional striped pavement markings and rumble strips to enhance pedestrian safety.
- **Vehicular Travel:** One vehicular lane in each direction.
- **Parking:** No on-street parking will be available on bridge.

CONSIDERATIONS

- **Safety:** A striped rumble strip buffer at road grade will alert trucks of their proximity to the greenway. Expansion of the shared path and striped rumble strip buffer beyond 12′ and 3′ wide, respectively, would put greenway users at increased risk of conflict with westbound trucks turning left onto Lonyo Street due to large truck turning radii.
- **Coordination:** Additional coordination will be needed with MDOT and the immediate community to confirm alignment and design as needed.

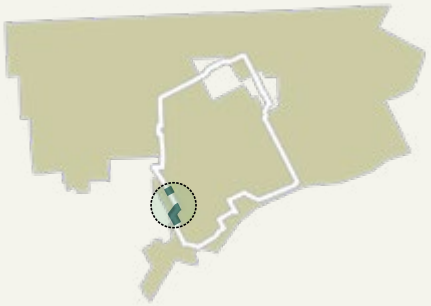
Dimensional constraints limit path width in this section. The proposed configuration allows adequate space for large trucks to maneuver while keeping greenway users safe. Rumble strips adjacent to the cycle track warn drivers of their proximity to the edge of the roadway, further enhancing user safety.



VIEW LOOKING NORTH

NEIGHBORHOOD PARKS

Romanowski Park and Patton Park



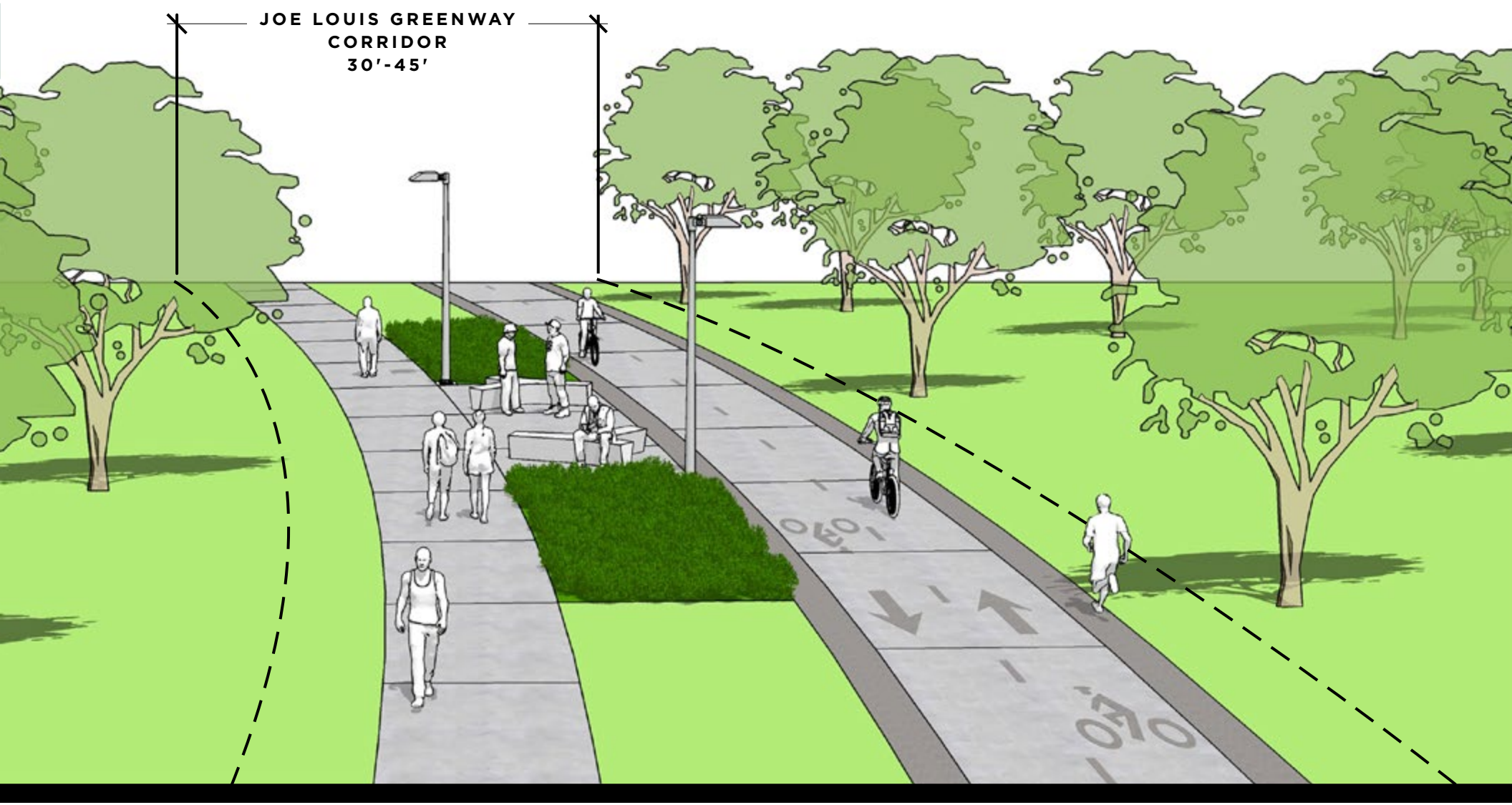
These sections pass through City of Detroit operated parks and will tie into existing park circulation patterns and amenities.

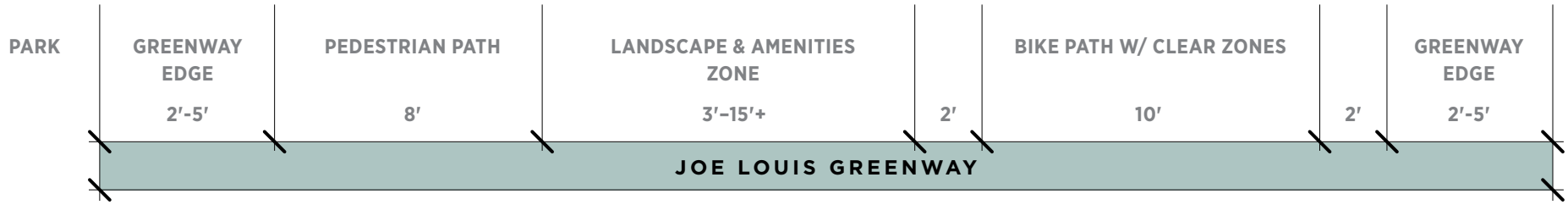
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Off-street two-way cycle track with decomposed fine aggregate shoulders, separated from pedestrian path by lawn or landscape buffer.
- **Buffer:** Bicycle and pedestrian paths separated by a lawn or landscape buffer.
- **Greenway Amenities:** Includes MoGo stations, seating areas and landscaping integrated into the corridor.

CONSIDERATIONS

- **Connectivity:** Connections to existing park facilities and amenities like pavilions or restrooms, as well as park gateways, existing circulation, parking areas and neighborhood points of interest such as schools and businesses.
- **Greenway Amenities:** Future planning in coordination with the City of Hamtramck is needed to add amenties such as seating areas, landscaping, wayfinding and public art.





VIEW LOOKING NORTH

LONYO STREET

From Romanowski Park to Dix Avenue

The corridor along Lonyo Street between Dix Avenue and Romanowski Park is characterized by industrial land uses and includes several wrecking or scrap yards and truck shipping facilities.

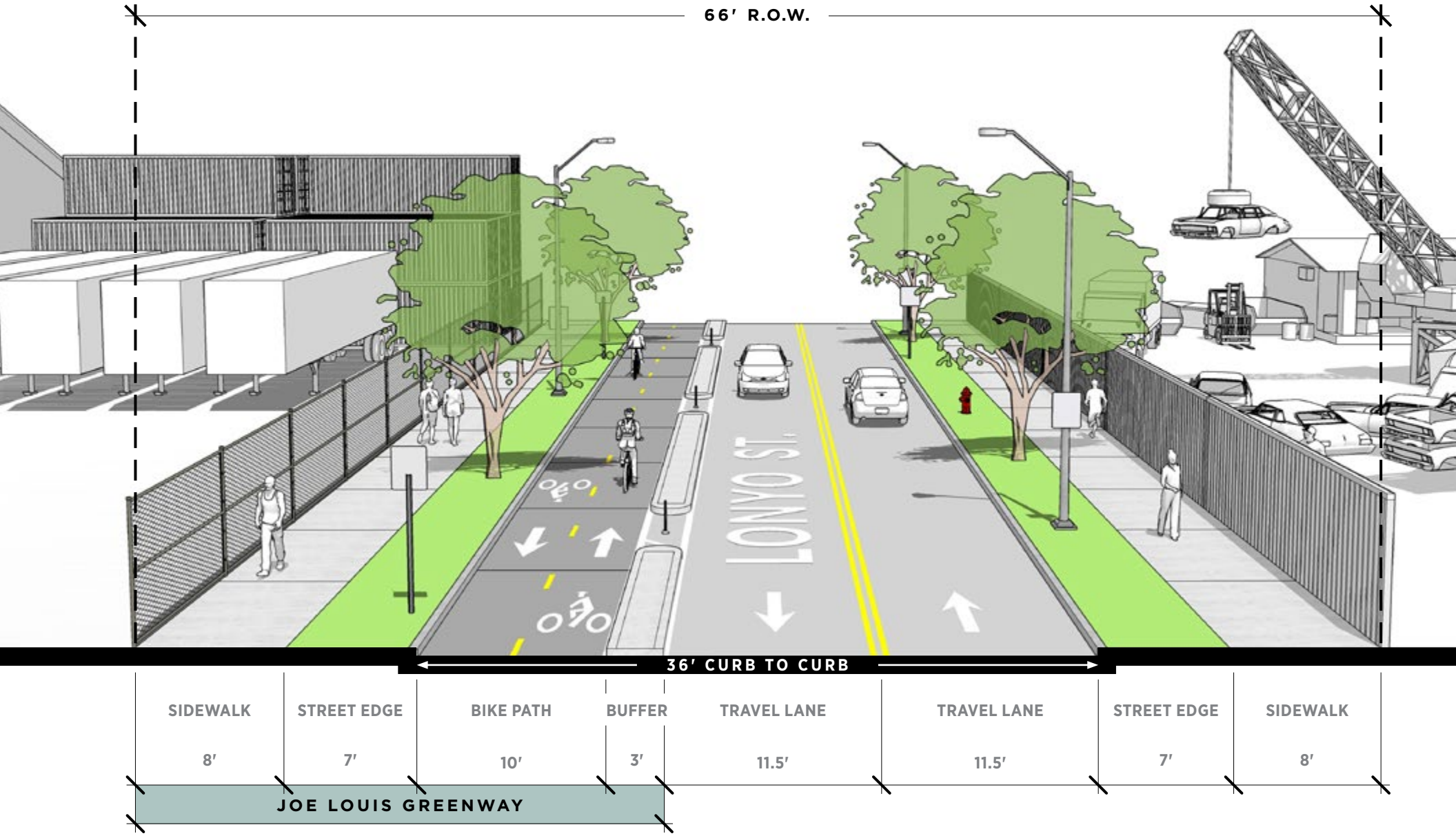
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Protected two-way cycle track on west side of street.
- **Separated Track:** A separated two-way cycle track and pedestrian path on the west side of the street. Cycle track to be located at grade, within the roadway and pedestrian path to be located behind the curb.
- **Vehicular Travel:** One vehicular lane in each direction.
- **Parking:** No on-street parking will be available on residential right-of-way.
- **Buffer:** A buffer of lawn with trees or landscaping between the cycle track and pedestrian path, at the street edge. To further separate and protect cyclists, a robust raised curb buffer with delineator posts should be installed.

CONSIDERATIONS

- **Fencing & Screening:** Incorporate fencing, screening and landscaping in order to buffer greenway users from unsightly, noisy or smelly adjacent land uses. These buffers will provide additional separation in areas where private commercial or industrial properties require barriers for safety or security. Fencing provides additional opportunities for beautification and creativity along the greenway.
- **Driveways:** Adjacent industrial uses such as wrecking and scrap yards may require driveway access for large trucks and machinery. Coordination should be done to ensure access is provided as needed and traffic does not conflict with greenway user experience and safety.

- **Railroad Viaducts:** Railroad viaducts along Lonyo provide limited vertical and horizontal space. Additional analysis, design and coordination should be conducted to prioritize a safe and comfortable experience.



VIEW LOOKING NORTH

WOODMERE STREET

From West Vernor Highway to Dearborn Street

The Woodmere Street segment of the Joe Louis Greenway runs along the historic Woodmere Cemetery and has been planned by the City of Detroit as part of general streetscape improvements.

These proposed improvements will connect in a safe, logical and characteristically similar way with non-motorized facilities of the rest of the greenway corridor.

During community engagement, resident explored alternative routes such as John Kronk or Central. They voiced a preference for this route as a way to take advantage of existing greenspace and to reach additional parks and recreational opportunities.

Local residents and stakeholders indicated that Woodmere is often used for drag racing. Drivers race along this street, usually at night, causing concerns for safety and occasionally damaging fences and infrastructure. Care should be taken to respond to the desires of residents and stakeholders by calming traffic speeds near the Joe Louis Greenway and enhancing visibility of greenway users and infrastructure.

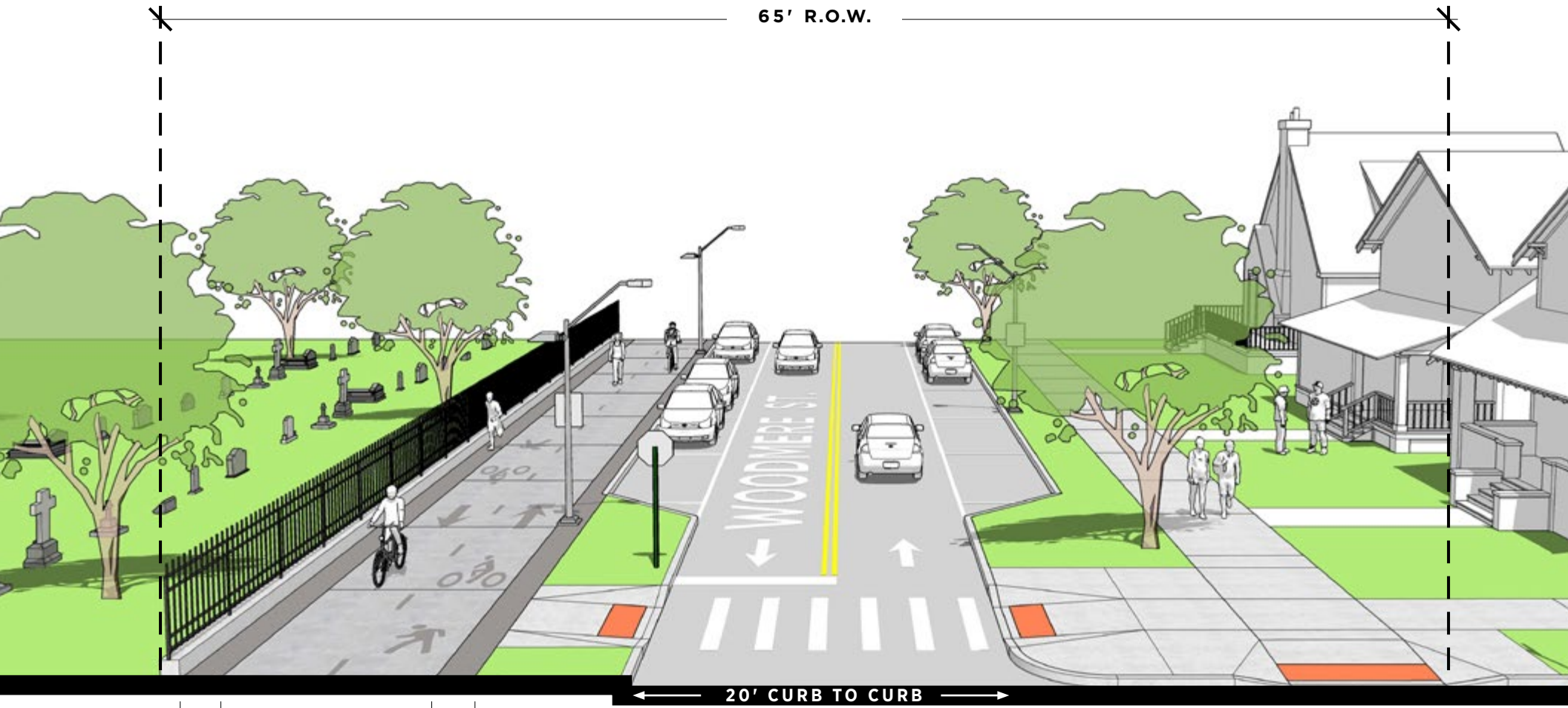
In conversations with the Southwest Detroit Business Association, stakeholders emphasized their preference that parking be maintained on both sides of the street. It was also suggested that this space may be used for future events and programming such as a Day of the Dead run. The City will continue to coordinate with local groups to understand preferences and programming.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Raised two-way shared cycle and pedestrian path adjacent to west side of street.
- **Pedestrian Path:** Sidewalk along the east side of Woodmere Street should be widened to meet City walkability standards and encourage pedestrian use.
- **Parking:** On-street parking on both sides of street. Parking provides a buffer for pedestrian and bicycle infrastructure and slows traffic speeds.
- **Vehicular Travel:** One travel lane in each direction.

CONSIDERATIONS

- **Pedestrian Safety:** Traffic calming measures such as bump-outs should be incorporated along Woodmere Street and intersecting side streets in order to discourage drag racing and enhance pedestrian safety.
- **Stormwater Management:** Green stormwater infrastructure may be incorporated into green buffer along eastern street edge as necessary.
- **Utilities**: Coordinate fire hydrant locations with greenway improvements and locate in a way that avoids conflicts with vehicle traffic.
- **Fencing & Screening:** Concrete wall and fence along west side of Woodmere Street will be repaired as part of design and implementation for this segment of the greenway.



SHARED BIKE & PEDESTRIAN PATH W/ BUFFER			PARKING LANE	TRAVEL LANE	TRAVEL LANE	PARKING LANE	STREET EDGE	SIDEWALK
3′	10′	2′	8′	10′	10′	8′	6′	8′

JOE LOUIS GREENWAY

VIEW LOOKING NORTH

DEARBORN STREET (SHORT TERM)

From Woodmere Street to Jefferson Avenue

The Dearborn Street segment responds to the community's desire to connect to the Delray Recreation Center, while also providing a valuable greenway connection in southwest Detroit.

During community engagement, residents shared a desire for separated bike and pedestrian paths, enhanced safety and parks and recreation space.

While this segment passes through a high vacancy residential neighborhood and is adjacent to industrial land uses, the City of Detroit owns several parcels along the southwest side of Dearborn Street which provide opportunities for new commercial, residential or public green space development. However, the space available for a standard trail layout is limited by a narrow 12'-13.5' dimension on the southwest side of the street between the street edge and occupied private parcels.

Future development conditions within this corridor are unknown due to ongoing shifts in land control. The short-term recommendations for the Dearborn portion of this section include:

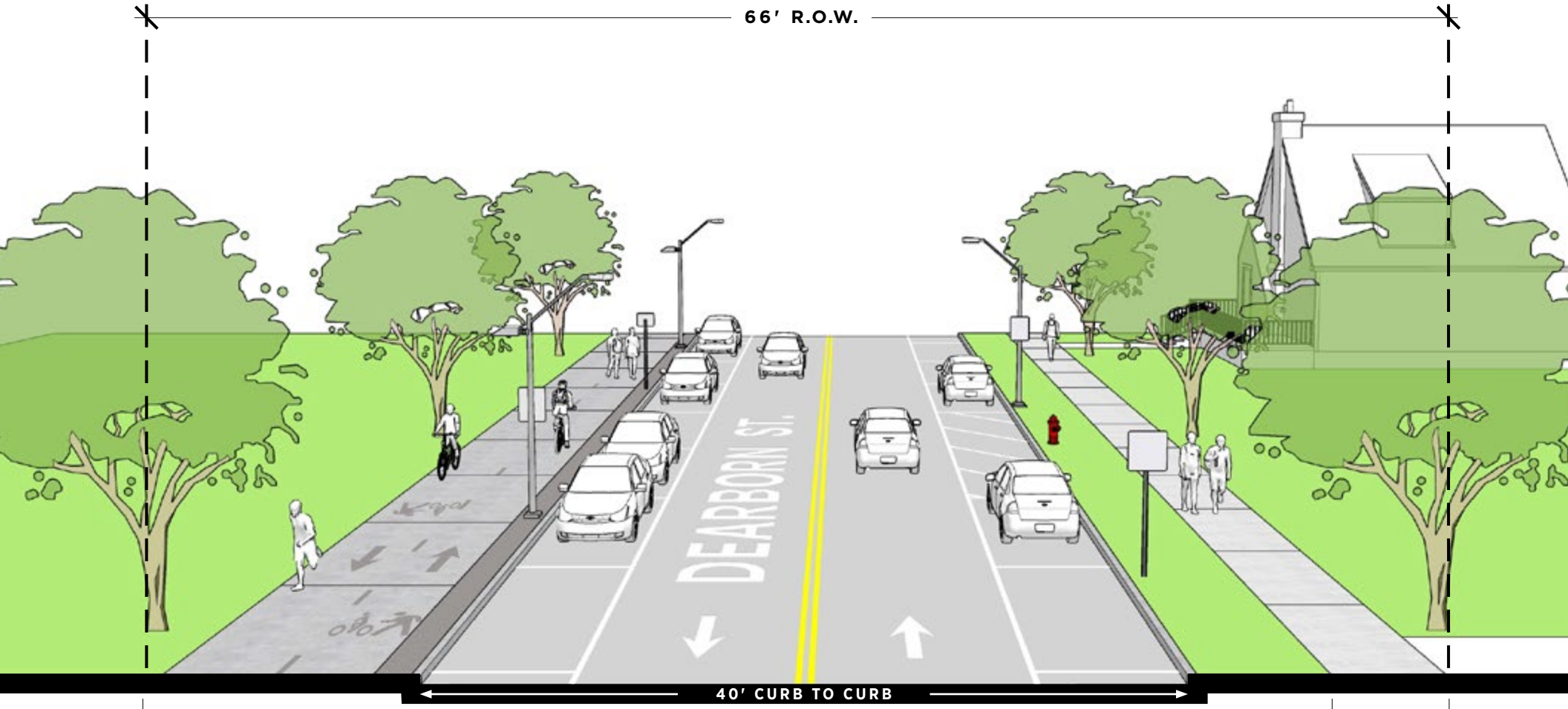
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Raised two-way shared cycle and pedestrian path adjacent to southwest side of street.
- **Vehicular Travel:** One travel lane in each direction.
- **Parking:** New on-street parking on both sides of street. Parking will provide a buffer for pedestrian and bicycle infrastructure, will slow traffic and will support future economic development.

CONSIDERATIONS

- **Utilities**: The location of existing utilities along the southwest side of the road may interfere with the safe use of the shared-use path. Further analysis and design will be conducted to ensure a safe and comfortable experience.

- **Safety**: This typology proposes a curb relocation along the southwest side of the street in order to provide the standard recommended width for the shared-use or separated path.
- **Coordination**: The Delray Framework Plan is currently underway by the City of Detroit. Additional coordination will be needed to conform to the Framework Plan—to confirm alignment and design as needed.
- **Environment:** Zug Island, truck traffic and other industrial sites may negatively impact air and environmental quality. Care should be taken to understand these issues, to design for mitigation and promote environmental justice within the Joe Louis Greenway.



* Available right-of-way for shared-use path is limited. Recommend additional right-of-way be acquired for shared-use path.

VIEW LOOKING NORTHWEST

DEARBORN STREET (LONG-TERM)

From Woodmere Street to Jefferson Avenue

The Dearborn Street portion passes through a high vacancy residential neighborhood and is adjacent to industrial land uses.

The City of Detroit owns several parcels along the southwest side of Dearborn Street which provide opportunities for new commercial, residential or public green space development. However, the space available for a standard trail layout is limited by a narrow 12′-13.5′ dimension on the southwest side of the street between the street edge and occupied private parcels.

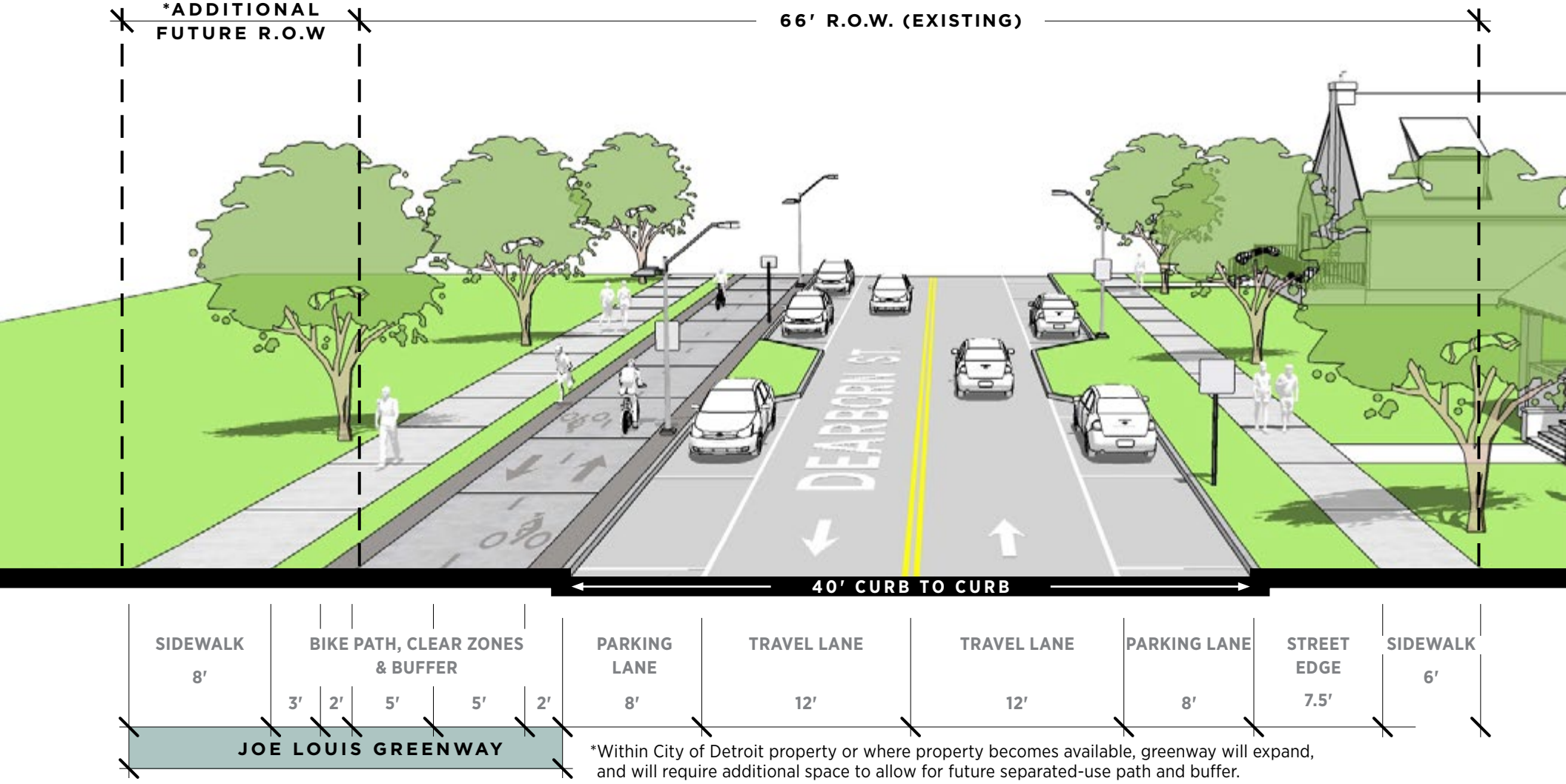
Were the City of Detroit be able to require the few remaining private parcels along the southwest side of Dearborn Street, long-term recommendations for the Dearborn portion of this section include:

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Raised two-way cycle track adjacent to southwest side of street.
- **Pedestrian Path:** Pedestrian path at curb to maximize area outside greenway available for new commercial, residential or public green space development.
- **Vehicular Travel:** One travel lane in each direction.
- **Parking:** New on-street parking on both sides of street. Parking will provide a buffer for pedestrian and bicycle infrastructure, will slow traffic and will support future economic development.
- **Safety & Buffers:** Bicycle and pedestrian paths separated by a lawn or landscape buffer. Bump-outs to slow traffic and enhance pedestrian safety.

CONSIDERATIONS

- **Right-of-way:** Relocating the curb along the southwest side of the street widens the available right-of-way to accommodate a separated-use path.
- **Environment:** Zug Island, truck traffic and other industrial sites may negatively impact air and environmental quality. Care should be taken to understand these issues, to design for mitigation and promote environmental justice within the Joe Louis Greenway.



*Within City of Detroit property or where property becomes available, greenway will expand, and will require additional space to allow for future separated-use path and buffer.

VIEW LOOKING NORTHWEST

JEFFERSON AVENUE

From Dearborn Street to West End Street

This typology section generally applies to both Jefferson Avenue and to Dearborn Street due to similar rights-of-way and existing conditions along both roadways. Specific recommendations for each individual street are outlined in the following pages.

The Jefferson Avenue portion has been planned to connect in a safe, logical and characteristically similar way with non-motorized facilities of the Gordie Howe International Bridge project.

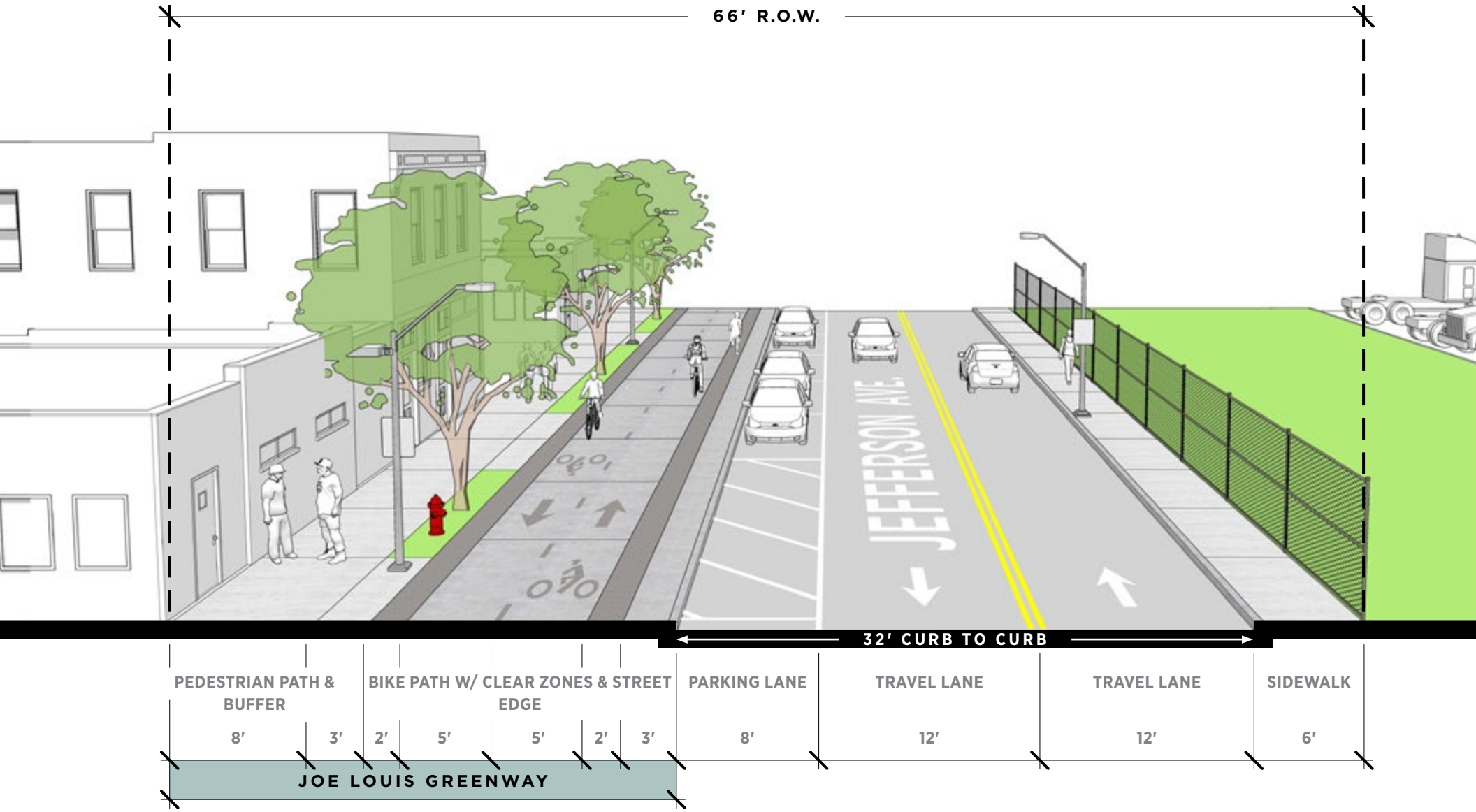
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Raised two-way cycle track along north side of street.
- **Pedestrian Path:** 14′ sidewalk separated from cycle track with 3′ amenity zone.
- **Vehicular Travel:** One travel lane in each direction.
- **Parking:** New designated on-street parking on north side of street. This accommodates future development and commercial opportunities associated with the future Gordie Howe International Bridge.
- **Amenity Zone and Buffer:** Amenity zone should include streetscape elements such as lawn or landscape, seating, signage and street trees.

CONSIDERATIONS

- **Greenway Buffer:** Add curb bump-out or buffer to provide additional separation at protected intersections where possible. Provide physical barriers or increased distance between greenway and traffic to enhance safety and improve comfort.
- **Pedestrian Safety:** Crosswalks and signage to be used as traffic calming and pedestrian safety infrastructure. Pedestrian refuge islands may also be added at crossings where necessary.
- **Amenity Zone:** Buffer should include intermittent paving panels between bike and pedestrian paths to provide access to buildings. Permeable pavement may be used instead of lawn or landscape in areas where space is limited. Amenities may be enhanced over time to meet the needs of local businesses and greenway users. Hardscape clear zone and street edge may include utilities.

- **Fencing & Screening:** Defining fencing in areas where private commercial or industrial properties require barriers for safety or security.
- **Truck Traffic:** The Gordie Howe International Bridge is expected to bring increased truck traffic. Ongoing coordination between this project, the Joe Louis Greenway and the Southwest Truck Study are necessary.
- **Environment:** Zug Island, truck traffic and other industrial sites may negatively impact air and environmental quality. Care should be taken to understand these issues, to design for mitigation and promote environmental justice within the Joe Louis Greenway.



VIEW LOOKING EAST

JEFFERSON AVENUE (GHIB)

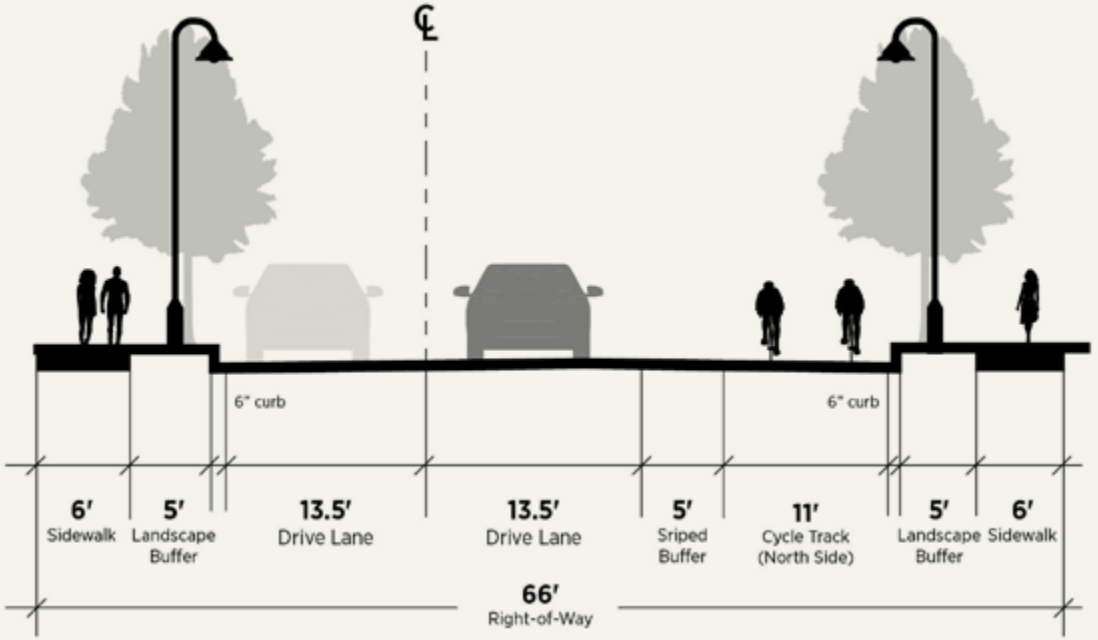
From West End Street to Campbell Street

This segment of Jefferson Avenue is located within the extent of the Gordie Howe International Bridge project area and will be planned and implemented by the City of Detroit and the Windsor-Detroit Port Authority.

The Joe Louis Greenway and planned Gordie Howe Bridge non-motorized facilities should connect in a safe, logical and characteristically similar manner to maintain the overall consistency of safety and accessibility of the Joe Louis Greenway.

SEGMENT CHARACTERISTICS

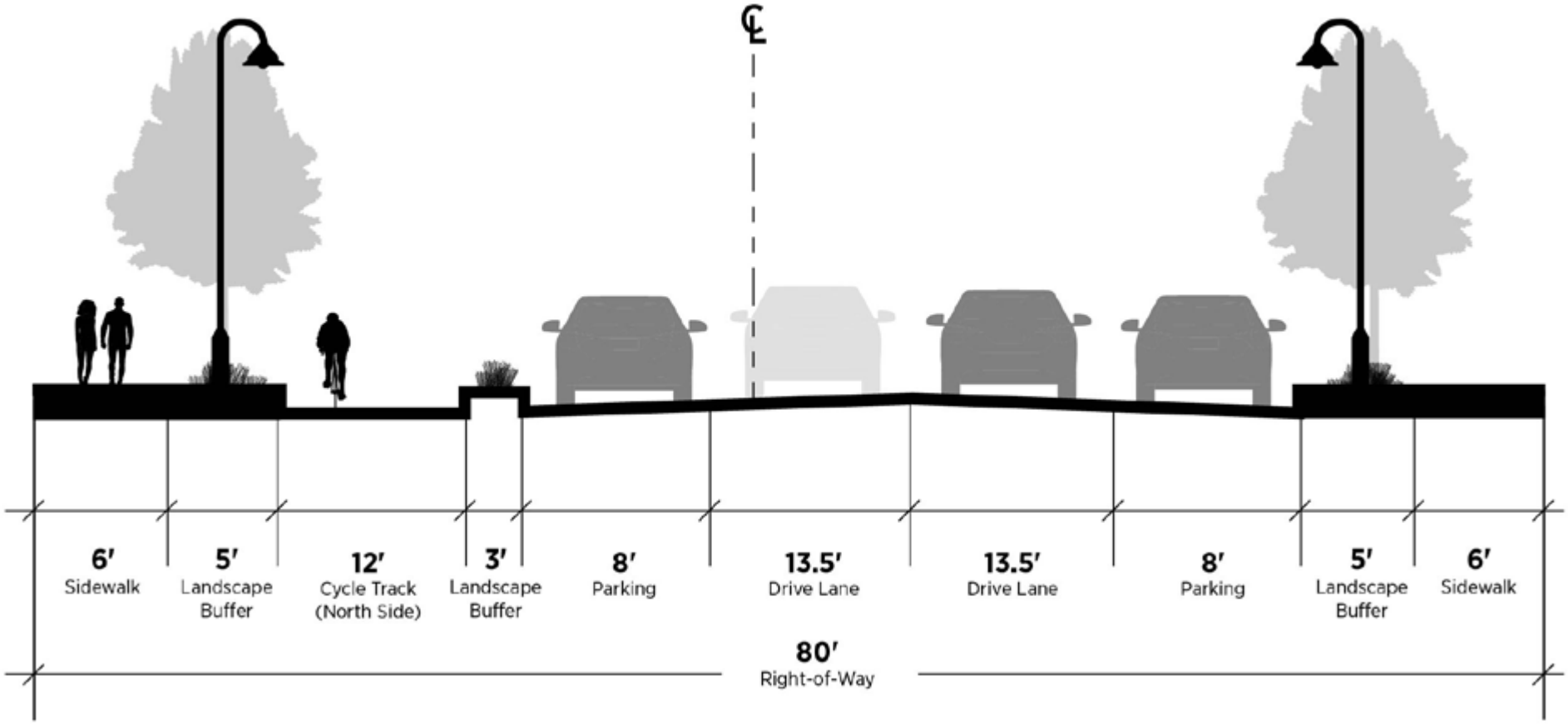
- **Greenway Configuration:** Two-way cycle track along north side of street with a striped buffer from West End Street to Green Street and a raised landscape buffer from Green Street to Campbell Street.
- **Pedestrian Path:** 6′ sidewalks on each side of street separated from roadway by landscape buffers.
- **Vehicular Travel:** One travel lane in each direction from West End Street to Green Street and from Green Street to Campbell Street.
- **Parking:** New designated on-street parking on each side from Green Street to Campbell Street. This accommodates future development and commercial opportunities associated with the future Gordie Howe International Bridge.



WEST END STREET TO GREEN STREET

Jefferson Avenue Cycle Track

Cross Section Source: GHIB



GREEN STREET TO CAMPBELL STREET

Jefferson Avenue Cycle Track

Cross Section Source: GHIB

CAMPBELL STREET

From Jefferson Avenue to Fort Street

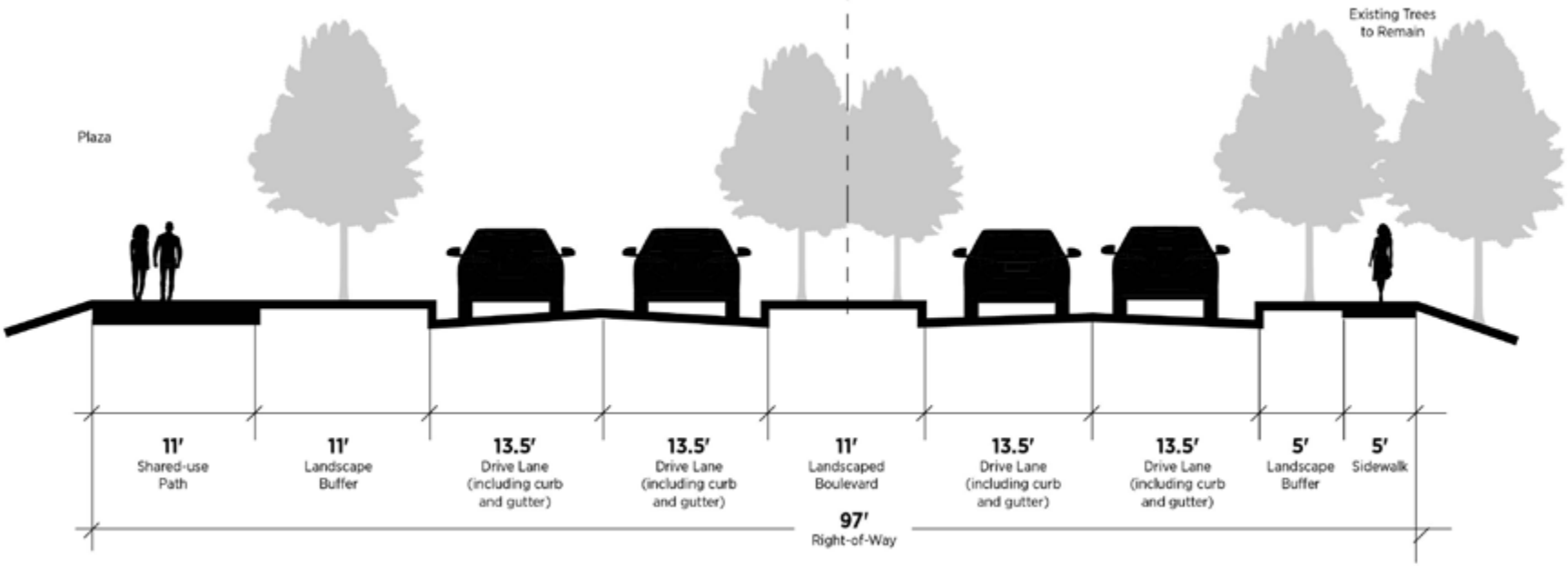
The Campbell Street segment of the trail is located within the extent of the Gordie Howe International Bridge project area and will be planned and implemented by the City of Detroit and the Windsor-Detroit Port Authority.

The Joe Louis Greenway and planned Gordie Howe Bridge non-motorized facilities should connect in a safe, logical and characteristically similar manner to maintain the overall consistency of safety and accessibility of the Joe Louis Greenway.

Rendering of the Gordie Howe International Bridge
Source: Gordie Howe International Bridge

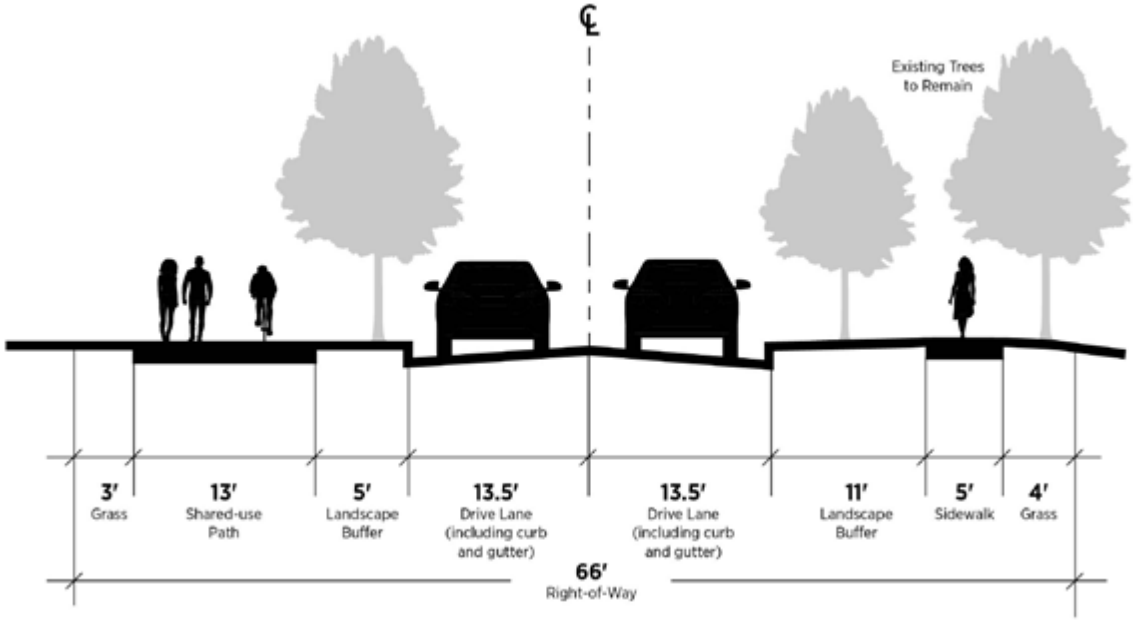
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Two-way shared-use path with a landscape buffer.
- **Pedestrian Path:** 5′ sidewalks on opposite side of street as shared-use path, separated from roadway by landscape buffers.
- **Vehicular Travel:** Two travel lanes in each direction from from Jefferson Avenue to the North/South Railroad and one travel lane each direction from North/South Railroad to Fort Street.



JEFFERSON AVENUE TO NORTH/SOUTH RAILROAD—FOUR LANES

Campbell Street Trail



NORTH/SOUTH RAILROAD TO FORT STREET—TWO LANES

Campbell Street Trail

Cross Section Source: GHIB

FORT STREET

From Campbell Street to West Grand Boulevard

The future completion of the Gordie Howe International Bridge is anticipated to bring new commercial opportunities and amenities to Fort Street. These destinations will help support the greenway by attracting local, regional and international greenway users.

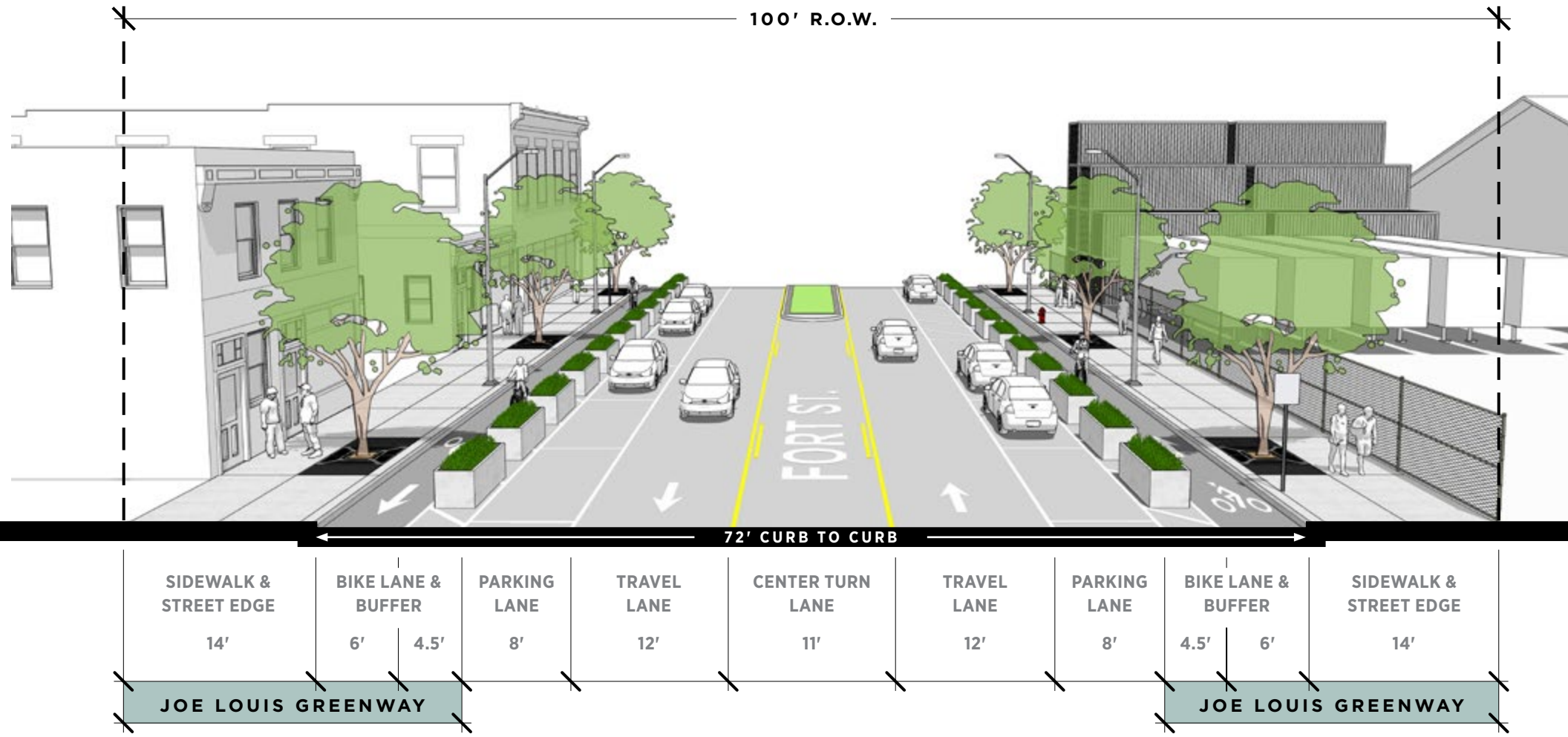
While the benefits the Gordie Howe Bridge will support the greenway in many ways, it will also bring increased volumes of vehicular and truck traffic. This section of the Joe Louis Greenway will ensure the needs and safety of all traffic types through streetscape design and the development of supporting amenities.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** On-street protected bike lanes with physical buffer such as planter between bicycle and vehicular traffic, matching the non-motorized infrastructure to be constructed by the Windsor-Detroit Port Authority between Campbell and Junction.
- **Pedestrian Path:** 14′ sidewalk and amenity zone with streetscape elements such as seating, signage and street trees. Amenity zone to be enhanced over time.
- **Safety Infrastructure:** Center landscape and pedestrian refuge islands, crosswalks and signage as traffic calming and pedestrian safety infrastructure.
- **Vehicular Travel:** One travel lane in each direction with center turn lane.
- **Parking:** Maintain parking on both sides of street.

CONSIDERATIONS

- **Coordination:** Fort Street is under MDOT's jurisdiction. The design of the Fort segment will meet both MDOT and City of Detroit standards and requirements. The detailed engineering and design will be jointly coordinated between MDOT and the City of Detroit.



VIEW LOOKING EAST

WEST GRAND BOULEVARD

From Riverside Park to Bagley Street

The tree-lined W. Grand Boulevard will connect neighborhoods with the Detroit Riverfront.

This wide right-of-way provides ample space for vehicles and greenway users, connecting Vernor Highway to the north and Riverside Park to the south.

The West Grand Boulevard route was selected in favor of an alternate route on Clark Avenue based on community feedback. Through a number of meetings and events, including Clark Park Community Meeting, Living Arts Festival, Corktown Block Party, Springdale Woodmere Block Club Potluck, Celebración de la Independencia de México and one-on-one conversations, residents shared their wishes and concerns for this segment. Through these conversations, it was determined that, while a spur connection to Clark Park may be desirable, concerns about traffic and parking along Clark Avenue make West Grand Boulevard a preferred option. It will be important to continue to engage community groups and residents throughout design and implementation to ensure that the greenway meets their needs and desires.

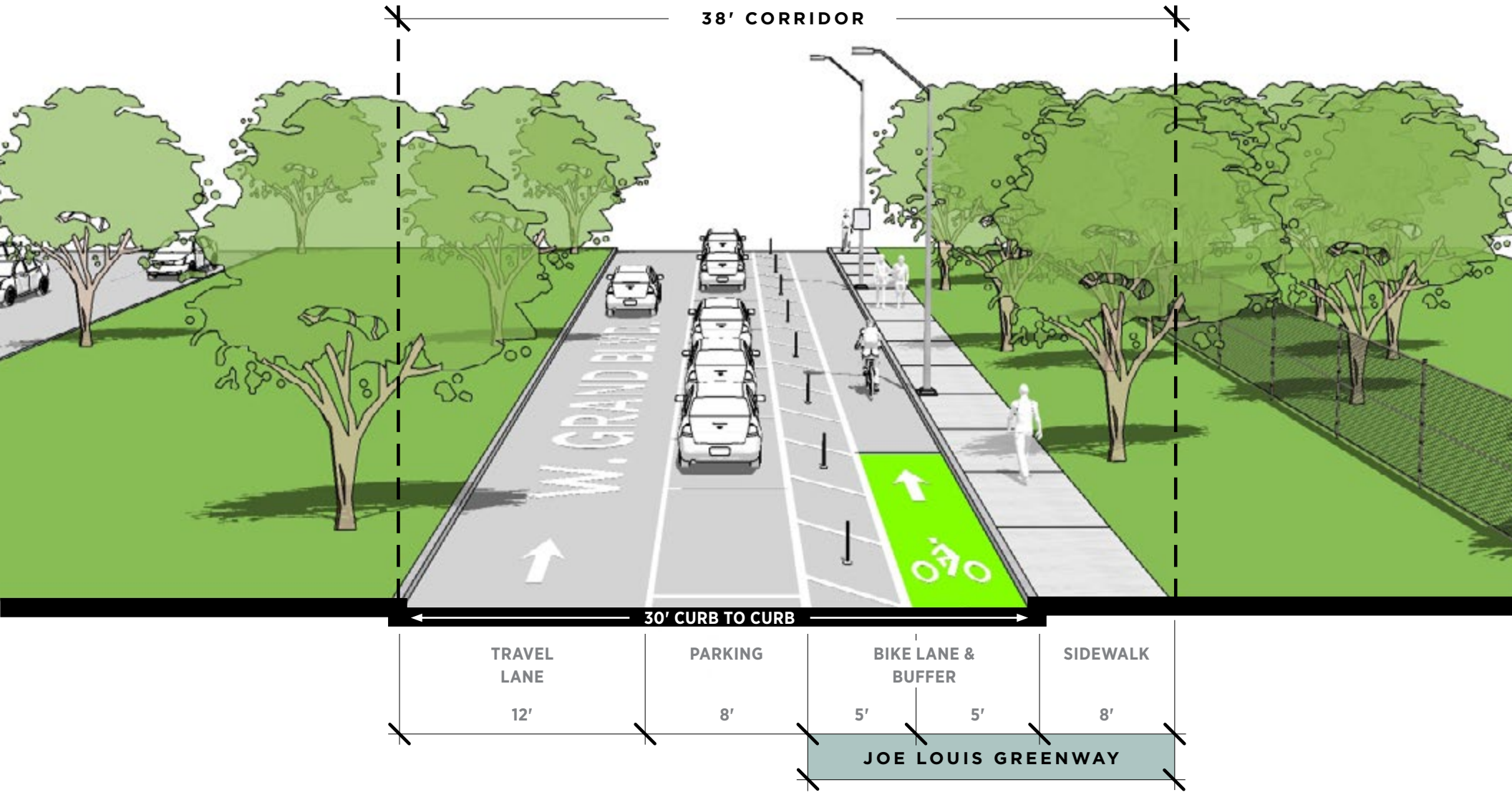
SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Wide green median with vehicular travel adjacent. Parking along travel lane as needed and as space allows. Striped Buffer and one-way bike lanes outside of parking lanes.
- **Vehicular Travel:** Between Bagley Street and Fort Street, there is one vehicular travel lane in each direction. Between Fort Street and Riverside Park, there are two vehicular travel lanes in each direction.
- **Parking:** Parking will be maintained on both sides of the W. Grand River Avenue right-of-way.

CONSIDERATIONS

- **Coordination:** Hubbard Farms and Hubbard Richard neighborhoods will be closely consulted on the final design.
- **Trees:** Existing trees should be maintained as much as possible to preserve the character of West Grand Boulevard and provide shade and comfort to greenway users.
- **Greenway Configuration:** The boulevard was initially considered as a possible location for a shared use path. The typology was altered due to the following: 1) Complicated street geometrics at train tracks south of Fort Street and at the I-75 crossings, 2) Numerous comments from residents in Hubbard Farms and Hubbard Richard neighborhoods advocating for preservation of the tree-lined street and 3) Respect for the historic character of the street.[1]

1 In 1877, Bela Hubbard lobbied for the creation of the wide tree-lined boulevard



VIEW LOOKING NORTH

BAGLEY STREET (WEST SEGMENT)

From West Grand Boulevard to 24th Street

The Shared Street typology allows cyclists and vehicles to travel together along the street.

This segment is located along a residential streetscape on Bagley Street between West Grand Boulevard and 24th Street. This typology is recommended in dense residential locations and builds on the exisiting segment implemented between 24th Street and 21st Street.

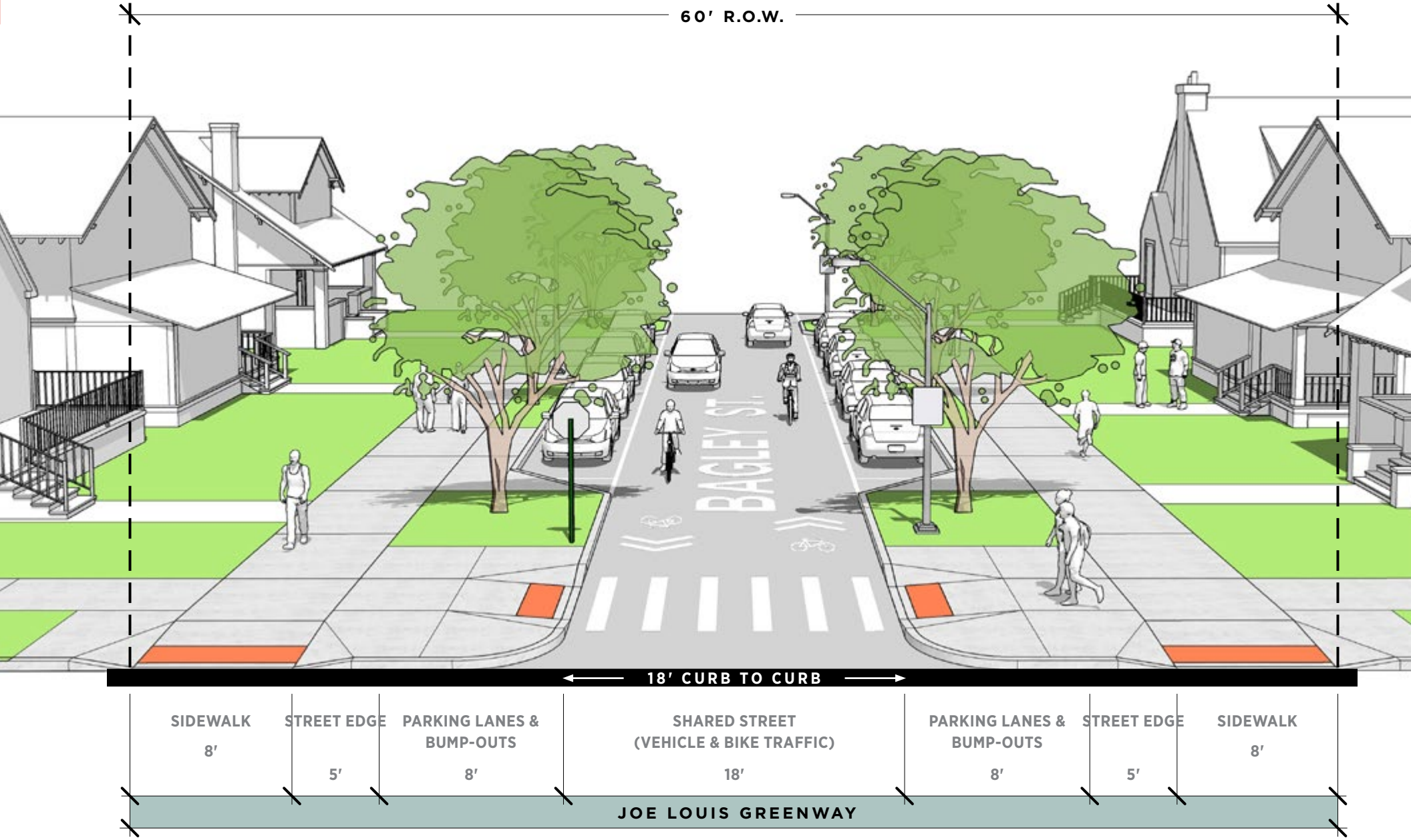
Design interventions must be considered for balancing both vehicular and bicycle traffic. Additionally, features of the existing street—such as mature street trees and landscaped areas at the street edge—should be maintained, and proposed improvements should be coordinated with existing conditions.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Bikes share roadway with vehicular traffic.
- **Pedestrian Path:** 8′ minimum sidewalks behind curb for pedestrian use.
- **Vehicular Travel:** The car is an invited guest in narrow drive lanes. Bump-outs at the entrance of Bagley from cross-streets restrict traffic speed and increase pedestrian and cyclist safety.
- **Parking:** Residential parking is maintained on both sides of street with bump-outs, signage and crosswalks to improve pedestrian safety

CONSIDERATIONS

- **Residential Impact:** Disturbance to local residences is an important consideration for this segment of greenway. The limited number of residential driveways along this short connection minimizes conflict with adjacent properties. Coordination with residents along Bagley will continue as this project moves forward.
- **Driveways:** Any existing driveways may remain in operation. New driveways and curb cuts will not be introduced. This will limit potential conflicts between bicycle, pedestrian and vehicular traffic.
- **Visual Identity:** Super graphic pavement markings or change in materials may be used to clearly delineate the shared street.
- **Coordination:** The segment from 24th Street and 21st Street has already been completed under the direction of the City of Detroit Department of Public Works. This work and newly proposed improvements should be coordinated with City departments and existing infrastructure. Additionally, work should align with Strategic Neighborhood Fund Neighborhood Plan recommendations.
- **Design & Implementation:** This segment has limited right-of-way space and may require additional improvements or modifications to meet travel requirements. Detailed street geometrics and turning movements will be developed as part of next phase of construction documents and implementation, and engagement with local residents will continue.
- **Parking:** Parking areas will be delineated by curb extensions. This design increases pedestrian safety by narrowing street crossings, while also preventing vehicles from driving in the parking lane.



VIEW LOOKING EAST

BAGLEY STREET (WEST SEGMENT AND PEDESTRIAN BRIDGE)

From 24th Street to 21st Street

The unique Shared Street provides a versatile corridor that accommodates vehicles, bikes and pedestrians and can transform into a lively plaza for special events.

This segment is located along an existing commercial streetscape on Bagley Street between 24th Street and 21st Street. This segment also includes an existing bike and pedestrian bridge that crosses over I-96 and I-75.

Bagley Pedestrian Bridge. Source: SmithGroup

SEGMENT CHARACTERISTICS

- **Streetscapre Configuration:** Curb-less street serves vehicular, bike and pedestrian traffic. Amenities include enhanced lighting, decorative brick paving, and landscape plantings. Designated parking is provided to support access to local businesses. Safety features such as protective bollards and raised landscape beds restrict vehicle access to designated areas.
- **Pedestrian Bridge:** The existing bike and pedestrian bridge provides a critical and safe non-motorized connection between the neighborhoods of southwest Detroit and the greater downtown area. Proposed improvements should be coordinated with City departments and existing infrastructure, as well as with the appropriate county, state and federal agencies.

Bagley Shared Street
Source: City of Detroit

BAGLEY STREET (EAST SEGMENT)

From 21st Street to 16th Street

On Bagley Street, between 21st and 16th Streets, the greenway will be on-street within the right-of-way.

Due to the narrow width of Bagley Street, the dimensions of greenway facilities in this segment will diverge from typical recommendations, and reductions of dimensions below the minimum standards may be needed to accommodate proposed infrastructure.

In a number of community engagement events—including the Clark Park community meeting, Living Arts Festival, Corktown Block Party and Hubbard Richard Block Club meeting—participants shared a desire to connect to amenities and destinations along Bagley Street. While an alternative route along Vernor Highway was explored, there was concern about the volume and type of traffic along that route. Therefore, despite the limited right-of-way, Bagley has been designated as the preferred route.

SEGMENT CHARACTERISTICS

- **Greenway Configuration:** Protected two-way cycle track along south side of street.
- **Pedestrian Path:** Pedestrian sidewalks on both sides of street, behind curb.
- **Buffer:** Railing and utility zone separate vehicular and bicycle traffic.
- **Vehicular Travel:** One vehicular lane in each direction.
- **Parking:** Existing on-street parking will be removed. While no on-street parking will be available on this portion of Bagley Street, off-street parking is available throughout the neighborhood, and there is a large parking lot behind the Secretary of State Building. Additional signage and wayfinding may be incorporated to facilitate access to off-street parking.

CONSIDERATIONS

- **Bus Routes:** Bagley Street has existing bus routes that require 11′ vehicular drive lanes. The engineering and design of roadways with bus routes will be evaluated and designed to accommodate bus turning movements as part of the detailed construction documents of the Bagley Street segment. Given the unique cultural character of this segment, the buffer may reflect the cultural and artistic character of the surrounding neighborhood. This may include decorated curbed planters or planter boxes—or raised curbs with decorative rails.
- **Safety:** Given the narrow right-of-way and volume of bus traffic along Bagley, railings will need to be considered for crash worthiness in order to protect cyclists. Additionally, anchoring mechanisms will require review and materials will need to be stocked to accommodate repairs and minimize bufer disruptions.
- **Sidewalks:** The diagram included here represents a prototypical condition. Sidewalk widths on the south side of the street range 6–9′ in width (5–6′ on north side). An 8′ minimum sidewalk width is desired along the Joe Louis Greenway. Specific conditions will need to be addressed as planning and design progresses.
- **Lighting, Signage & Wayfinding:** Street lighting and signage will need to be integrated into buffer at street edge. Provide bike riders warning signs for pedestrian bridge over I-75 at Bagley.

VIEW LOOKING EAST

SOUTHWEST GREENWAY

From Bagley Street to Ralph C. Wilson Jr. Centennial Park

The Southwest Greenway is an off-street trail undergoing planning and implementation by the Detroit Riverfront Conservancy.

Located within a partially vacated rail corridor, it will provide a critical link between the Detroit RiverWalk and Detroit's Downtown and the rest of the Joe Louis Greenway.

SEGMENT CHARACTERISTICS

Greenway Configuration: Two-way shared-use path for bicycles and pedestrians with unobstructed "clear zones" on each side of the path

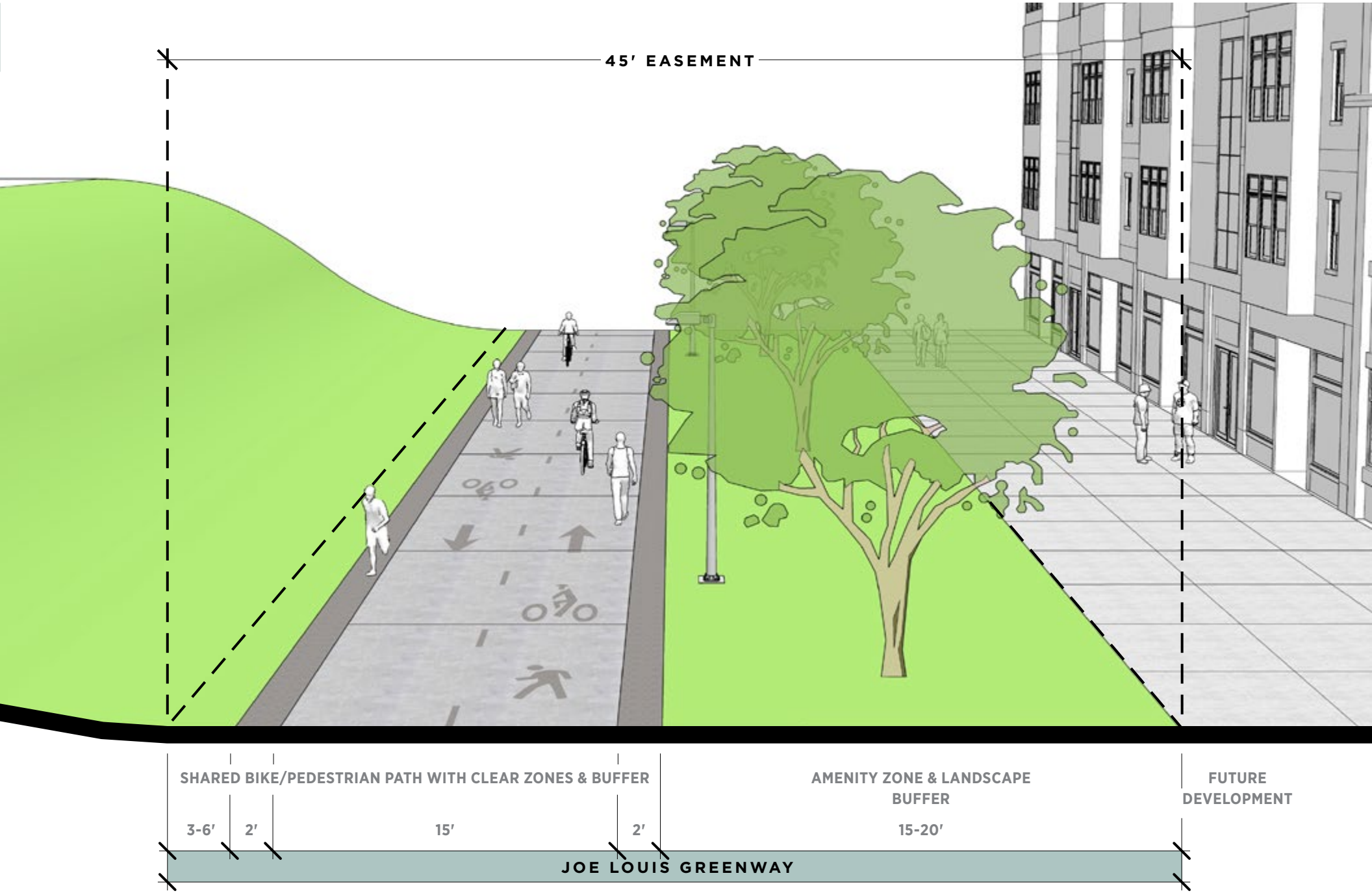
Pedestrian Path: Pedestrian circulation is integrated into the shared-use path; additional pedestrian infrastructure may be accommodated within private development along the Southwest Greenway corridor.

CONSIDERATIONS

Connections: Connections to Ralph C. Wilson, Jr. Centennial Park and Michigan Central Station

Economic Development: Recent activity in Corktown presents an opportunity for residential or commercial development

Vacated Southwest Greenway Rail Corridor. Source: SmithGroup



VIEW LOOKING NORTH

Source: SmithGroup

2

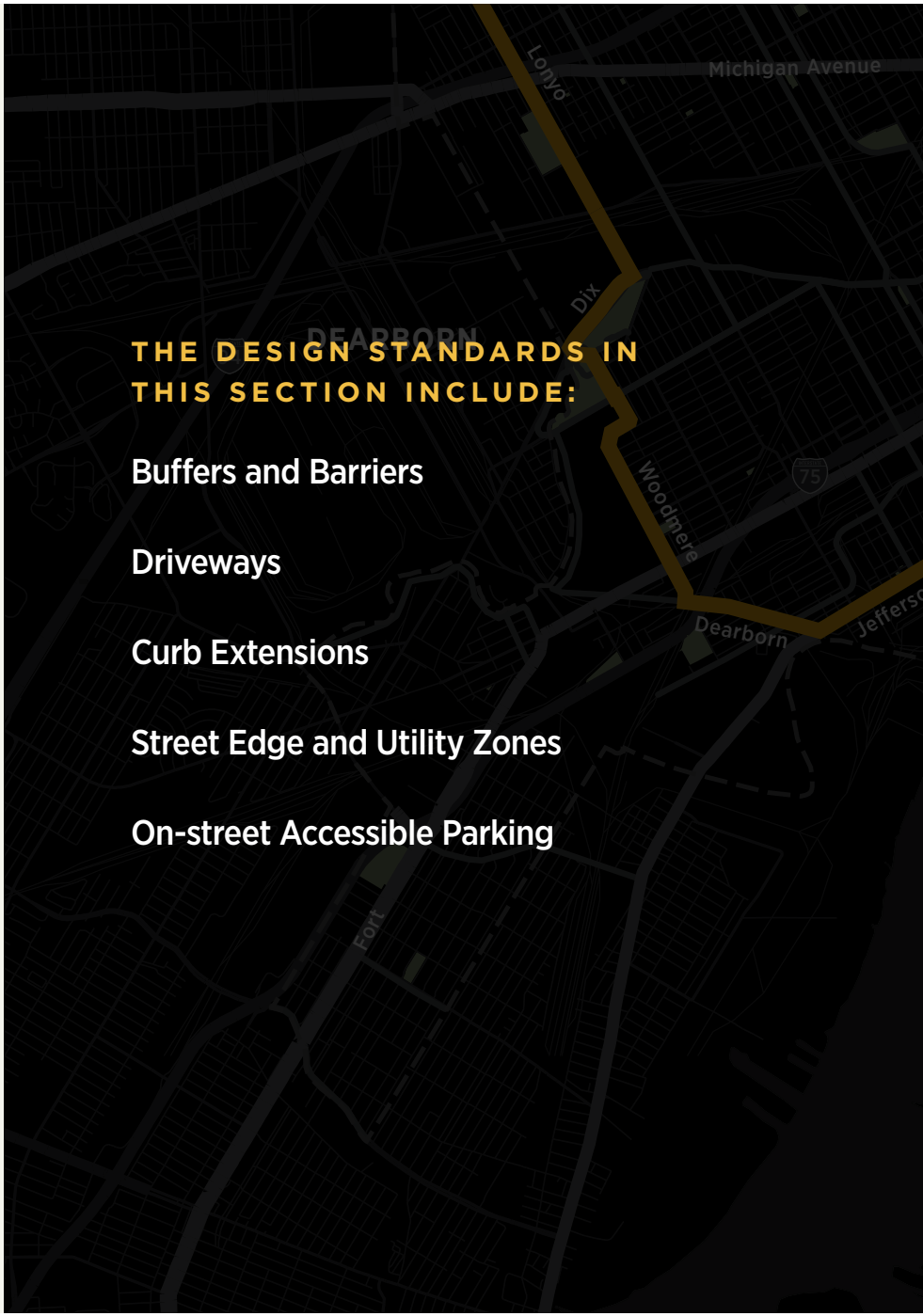
DESIGN DETAILS

DESIGN DETAILS

COMPONENTS OF GREENWAY TYPOLOGIES

The safety and comfort of greenway users is a top priority for the Joe Louis Greenway.

The recommended design details included in this section set a high standard for user safety and comfort and will guide the future planning, design and implementation of the greenway typologies throughout the full length of the Joe Louis Greenway.



THE DESIGN STANDARDS IN THIS SECTION INCLUDE:

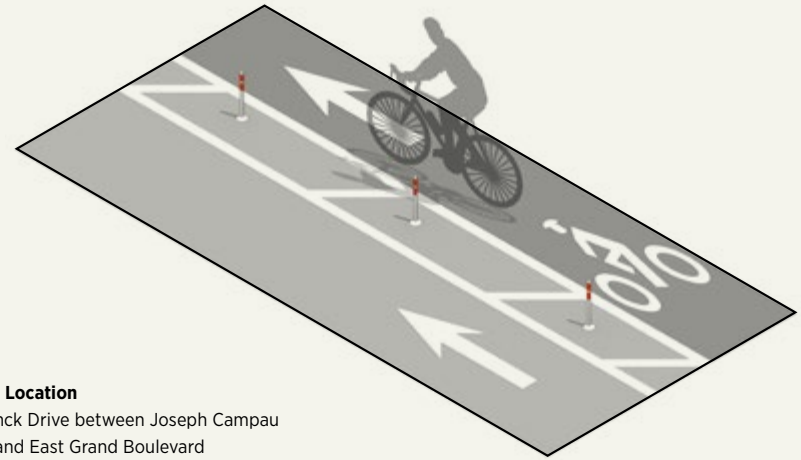
- Buffers and Barriers
- Driveways
- Curb Extensions
- Street Edge and Utility Zones
- On-street Accessible Parking


ONLY
BUS
ONLY
BUS
ONLY
BIKE LANE

BUFFERS & BARRIERS

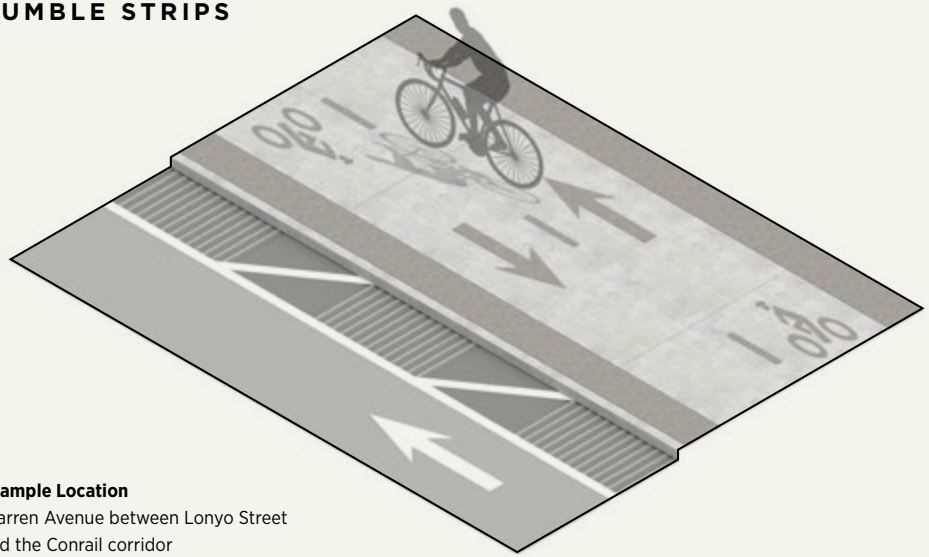
During community engagement, residents identified safety for cyclists and pedestrians and the creation of a "family-friendly" path as major priorities for the design of the Joe Louis Greenway.

FLEXIBLE DELINEATOR POSTS



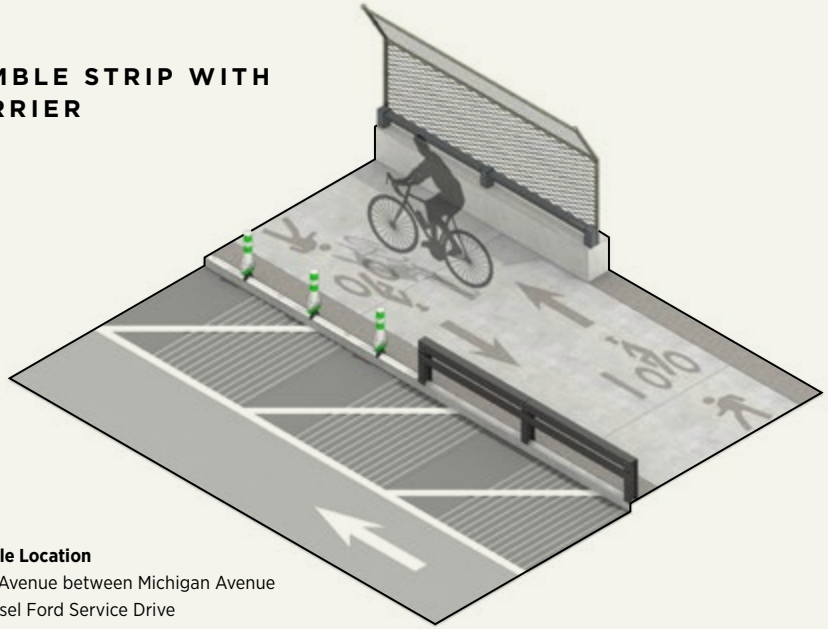
Example Location
Hamtramck Drive between Joseph Campau Avenue and East Grand Boulevard

RUMBLE STRIPS



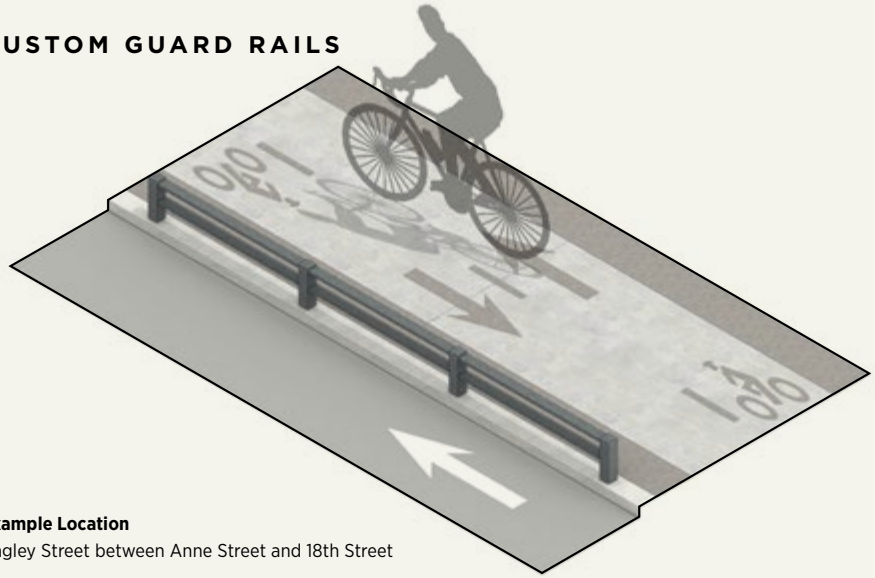
Example Location
Warren Avenue between Lonyo Street and the Conrail corridor

RUMBLE STRIP WITH BARRIER



Example Location
Lonyo Avenue between Michigan Avenue and Edsel Ford Service Drive

CUSTOM GUARD RAILS



Example Location
Bagley Street between Anne Street and 18th Street

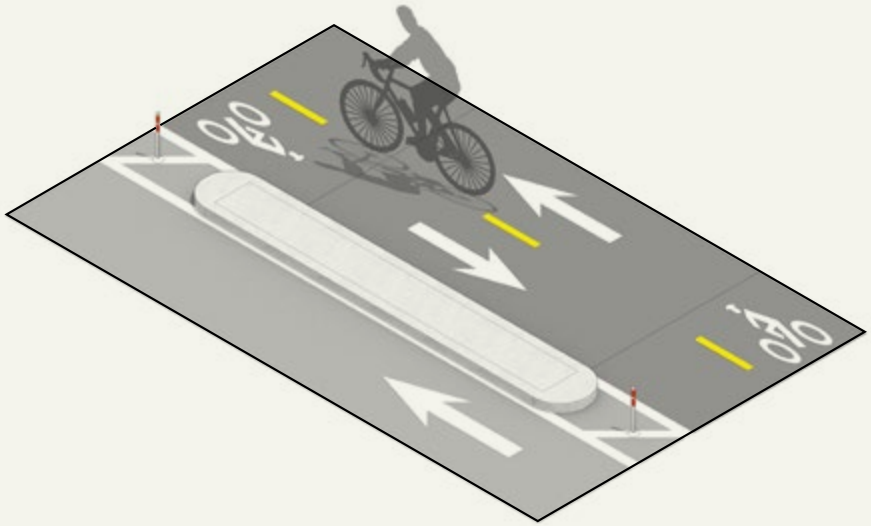
Most of the greenway route is off-street, responding to this community input. In cases where the path and roadway meet, protection of greenway users must be provided with a physical buffer between pedestrians, cyclists and vehicles.

A review of best safety practices and community input identified several types of potential buffers, and residents' feedback further focused these options. These buffers and barriers vary depending on local community desires, available right-of-way and vehicular traffic volume. These include flexible delineator posts, raised curbs, custom guard railings, planter boxes, rumble strips and rumble strips with physical barrier.

The following pages describe these buffers and the considerations that should be taken into account in their design. Any pavement markings or raised barriers along the Joe Louis Greenway will be subject to approval by the DPW Traffic Engineering Division and CED.

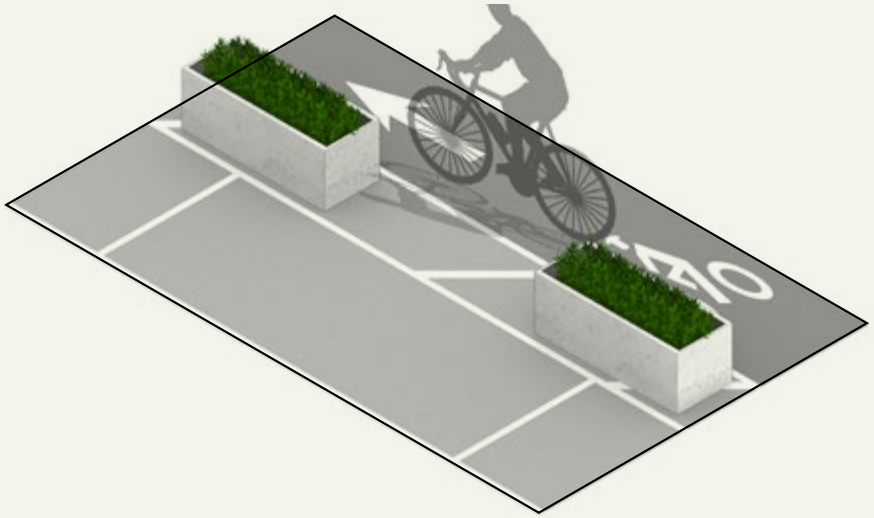
City of Detroit PDD and DPW have established policy for the design and implementation of "family friendly" bike and pedestrian infrastructure in the City of Detroit. Coordination with these departments should continue, and all standards should be reviewed with the appropriate road jurisdiction such as Wayne County, MDOT and Detroit Public Works.

RAISED MEDIANS



Example Location
Lonyo Avenue between Dix Avenue and Radcliffe Street

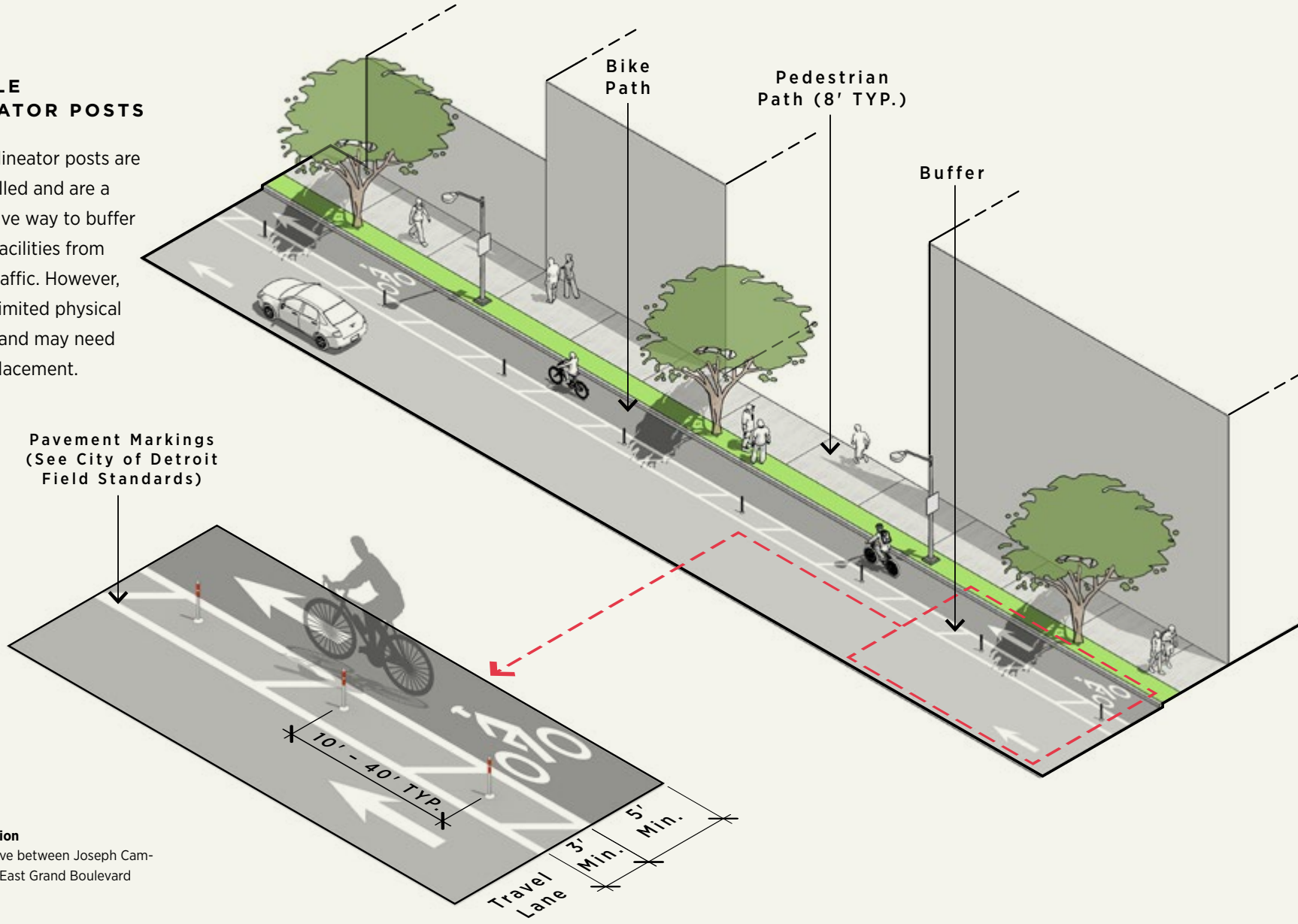
RAISED PLANTERS



Example Location
Fort Street between West Grand Boulevard to Campbell Street

FLEXIBLE DELINEATOR POSTS

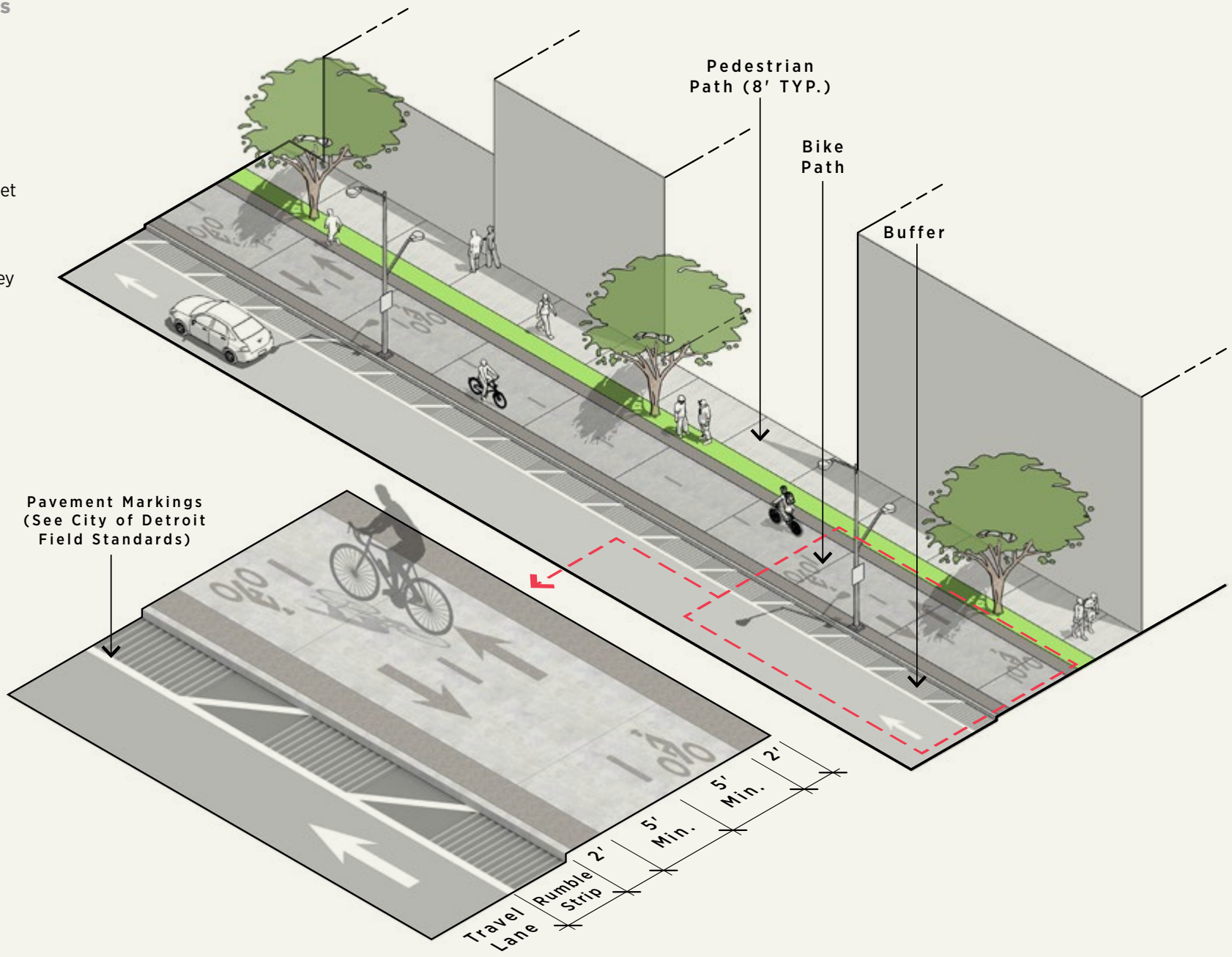
Flexible delineator posts are easily installed and are a cost-effective way to buffer greenway facilities from vehicular traffic. However, they offer limited physical protection and may need regular replacement.



Example Location
Hamtramck Drive between Joseph Campau Avenue to East Grand Boulevard

RUMBLE STRIPS

On wide roads where bike and pedestrian facilities are off-street adjacent, rumble strips can be used as an added measure of protection to warn drivers if they are too close to the greenway. This is an inexpensive and low-maintenance buffer treatment.



Example Location
Warren Avenue between Lonyo Street and the Conrail corridor

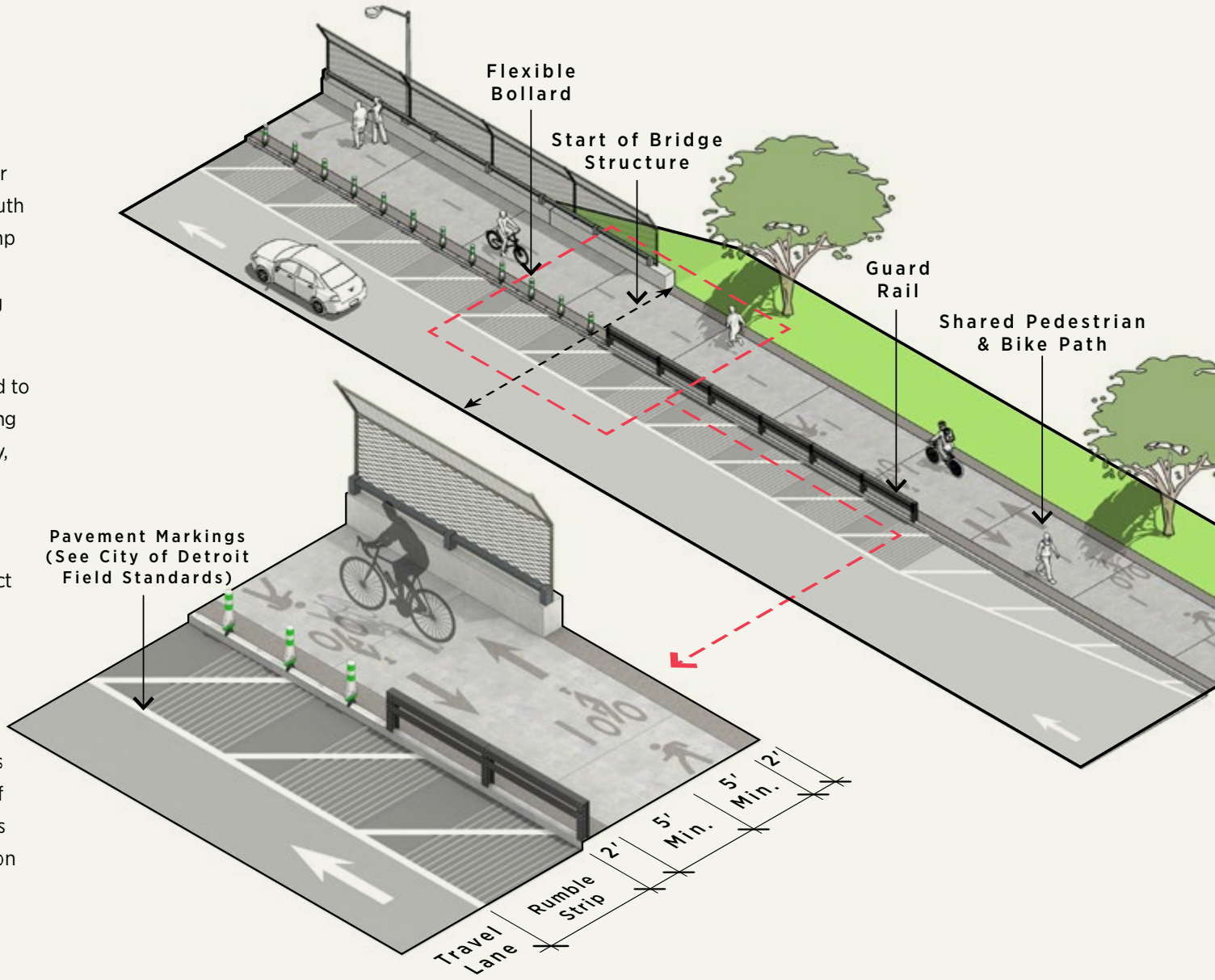
RUMBLE STRIPS WITH BARRIER

Where Lonyo Street passes over Interstate 94, trucks turning south off the westbound I-94 exit ramp pose a direct risk to greenway users because of a tight turning radius.

A wide rumble strip is proposed to warn trucks that they are nearing the greenway path. Additionally, a sturdy guard rail should be installed and extend along the greenway for the length of the intersection to physically protect greenway users.

Because attaching new guard rails to the bridge structure would require federal review and permitting, flexible bollards should be installed at the top of the curb where the path crosses the bridge to enhance separation from truck traffic.

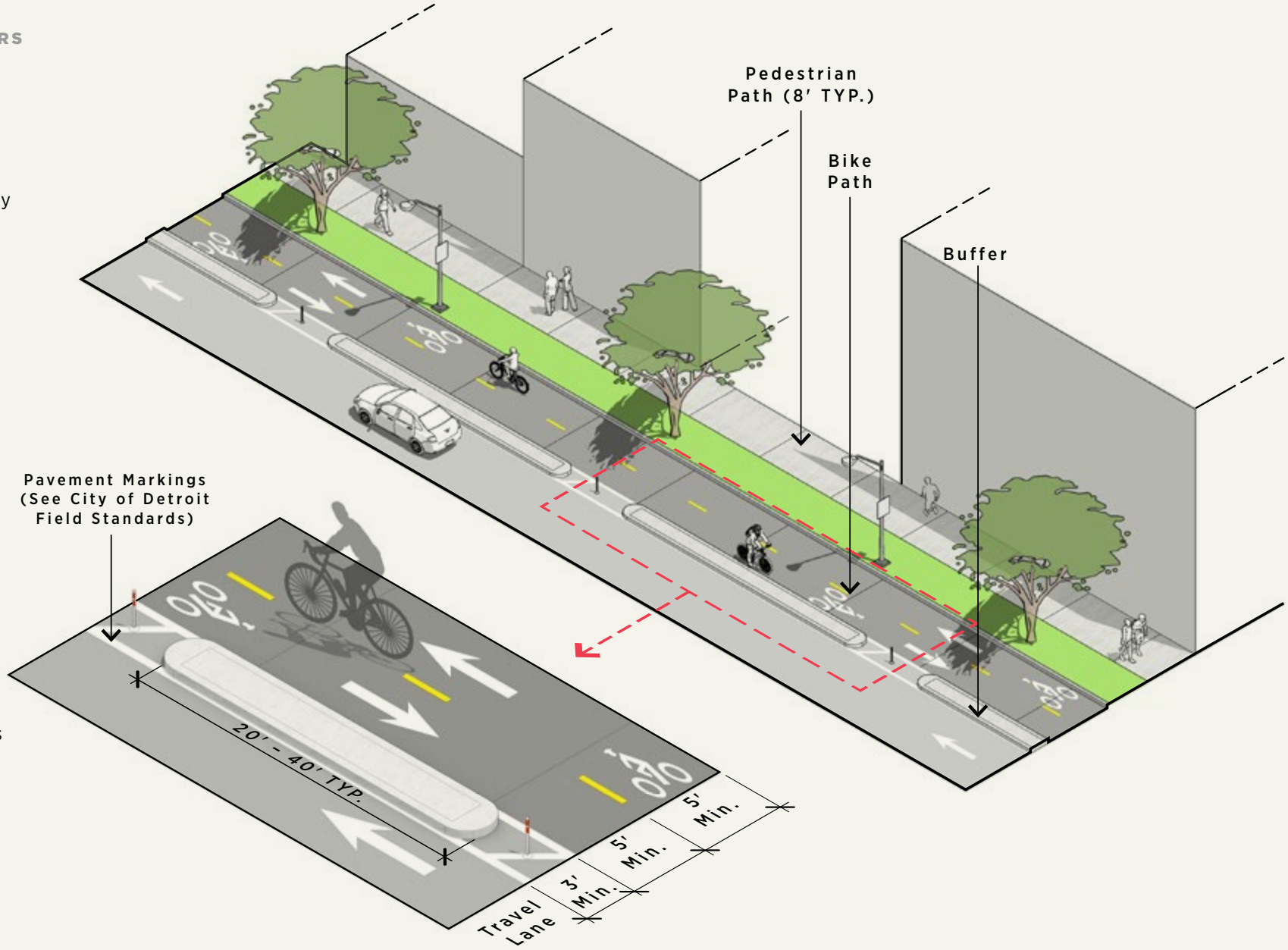
Example Location
Lonyo Avenue between Michigan Avenue and Edsel Ford Service Drive



RAISED MEDIANS

Where the Joe Louis Greenway bike path is located within the vehicular roadway, raised medians offer additional protection for cyclists and pedestrians. Raised concrete medians can be precast or cast in place. Although the installation of these buffers may be higher cost than other options, raised medians require little long-term maintenance.

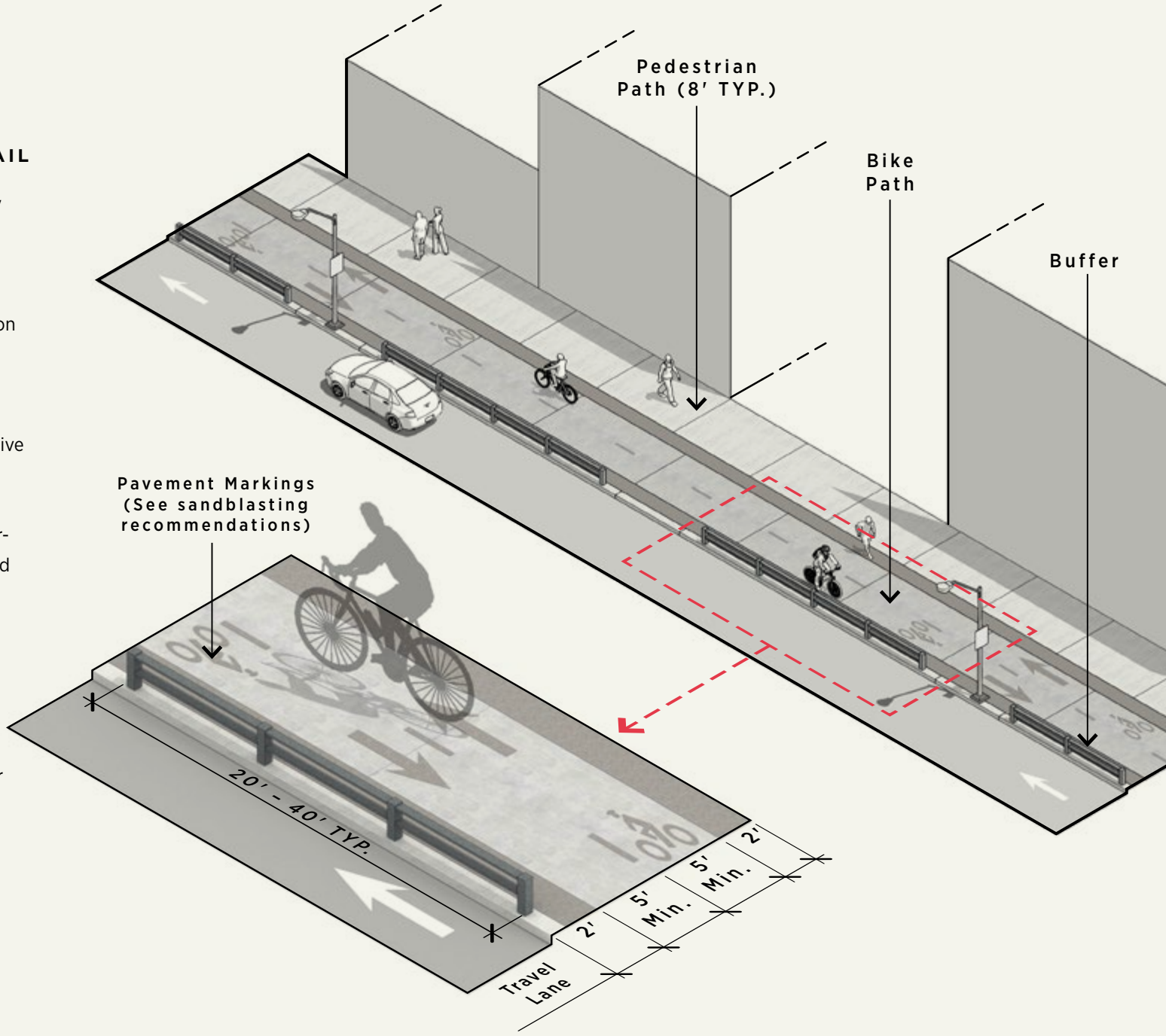
To support stormwater drainage within the right-of-way, drainage gaps should be incorporated into the design of raised medians. These gaps should be no more than six feet in length to discourage vehicular encroachment between medians.



Example Location
Lonyo Avenue between Dix Avenue and Radcliffe Street

CUSTOM GUARD RAIL

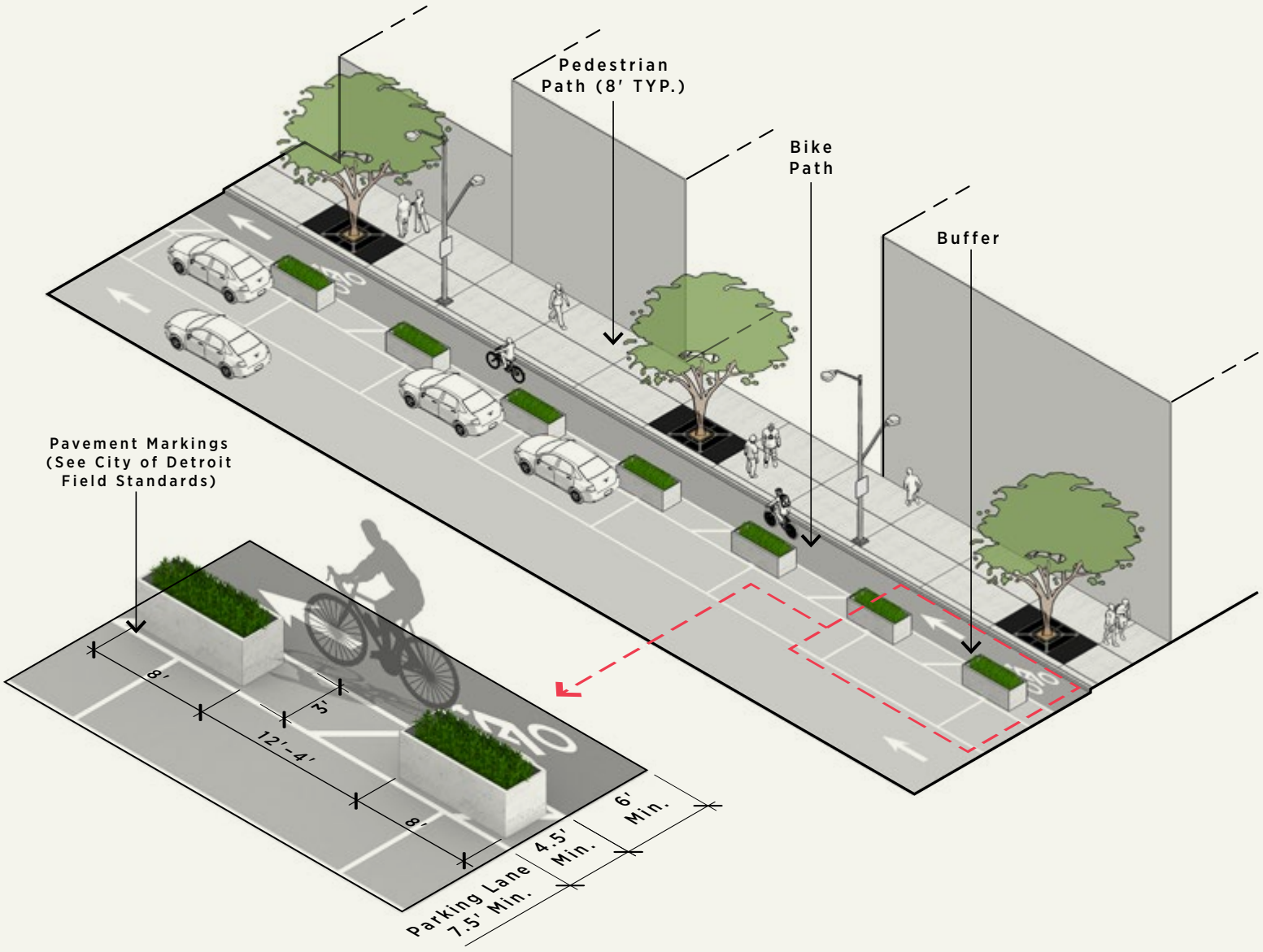
In areas where right-of-way width is constrained—such as Bagley Street from Anne Street to 18th Street—a railing should be installed on top of the curb to enhance separation from vehicular traffic. Custom metalwork guard rails or other decorative type railing may reflect the local community culture, character or art. This higher-cost buffer treatment should be implemented sparingly. Low-speed commercial corridors where enhanced pedestrian protection is needed are ideal for this type of barrier. Consider crash protection devices for the ends of the rail.



Example Location
Bagley Street between Anne Street and 18th Street

PLANTER BOXES

Planter boxes provide enhanced physical separation for cyclists where the bike path is in the roadway. They also add an aesthetic streetscape element, although they require more frequent maintenance than other treatments. Along Fort Street, the bike path will be further buffered by on-street parking between planter boxes and vehicular traffic.



Example Location
Fort Street between West Grand Boulevard and Campbell Street

Source: SmithGroup

DRIVEWAYS

Along parts of the Joe Louis Greenway that are not off-street, driveways represent potential points of conflict between greenway users and turning vehicles.

These conflicts arise from obstructed sightlines resulting from parked cars, landscaping and other obstacles—or when drivers experience unexpected movements like contra-flow direction of travel on two-way cycle tracks.

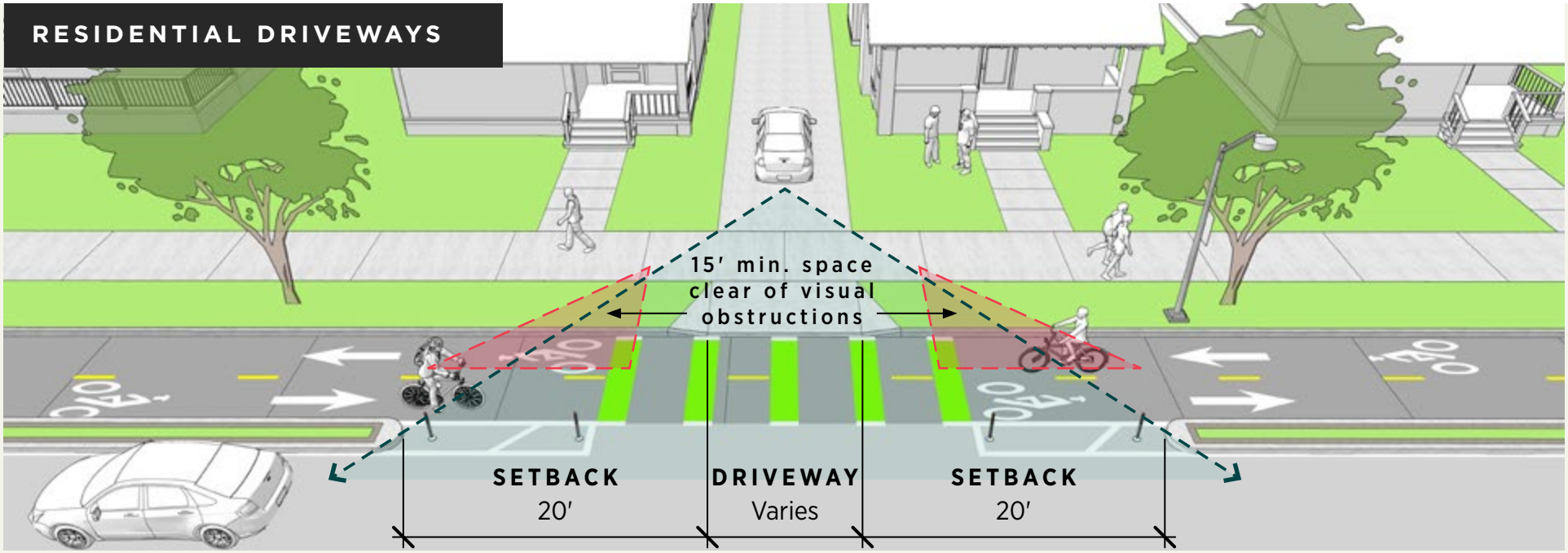
These conflicts can be minimized through design strategies that improve visibility and expected behaviors and via driveway consolidation to reduce points of conflict.[1]

DESIGN RECOMMENDATIONS

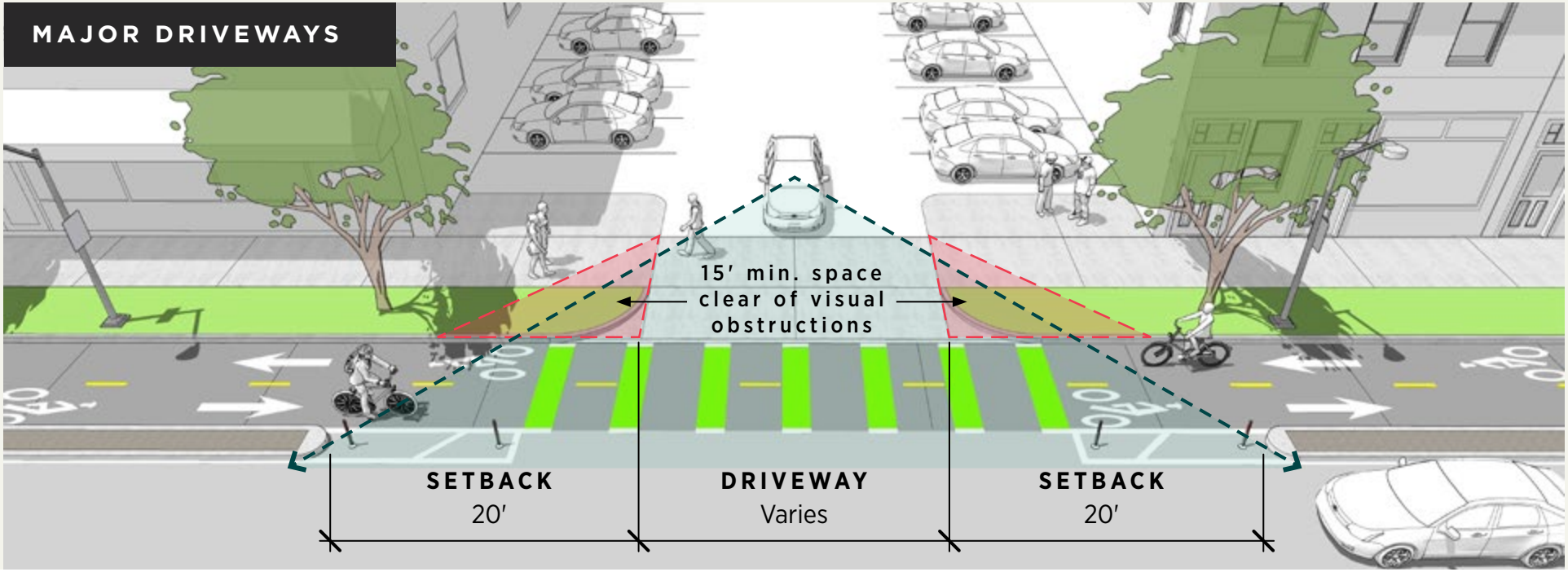
- Where on-street parking is present, prohibit parking a minimum of 20 ft. from the edge of a driveway
  - Establish this setback using pavement markings such as striping as the minimum treatment.
  - Parking restrictions are not required on downstream side of driveways on one-way streets.
- Bring crossing vehicles up to sidewalk, and in the case of off-street adjacent path typologies, the bike path up to grade to enhance visibility of greenway users.
- Provide signage directing drivers to look both ways for cyclists and pedestrians.
- Prohibit landscaping or other streetscape elements that may obstruct sight distances within 15 feet of driveway edges.
- Use dashed green pavement markings in areas of bike and vehicle mixing or potential conflict to alert drivers.
- Provide signage to deter vehicles from accidentally entering two-way cycle tracks.
  - A “DO NOT ENTER EXCEPT BICYCLES” sign or a “BIKE LANE” sign (MUTCD R3-17) may be used.
- Resources may not be available for frequent enforcement in prohibited parking areas.
  - Delineator posts or concrete curb extensions can be implemented to ensure setback remains clear.

1 FHA, Separated Bike Lane Planning and Design Guide, 2015

RESIDENTIAL DRIVEWAYS



MAJOR DRIVEWAYS

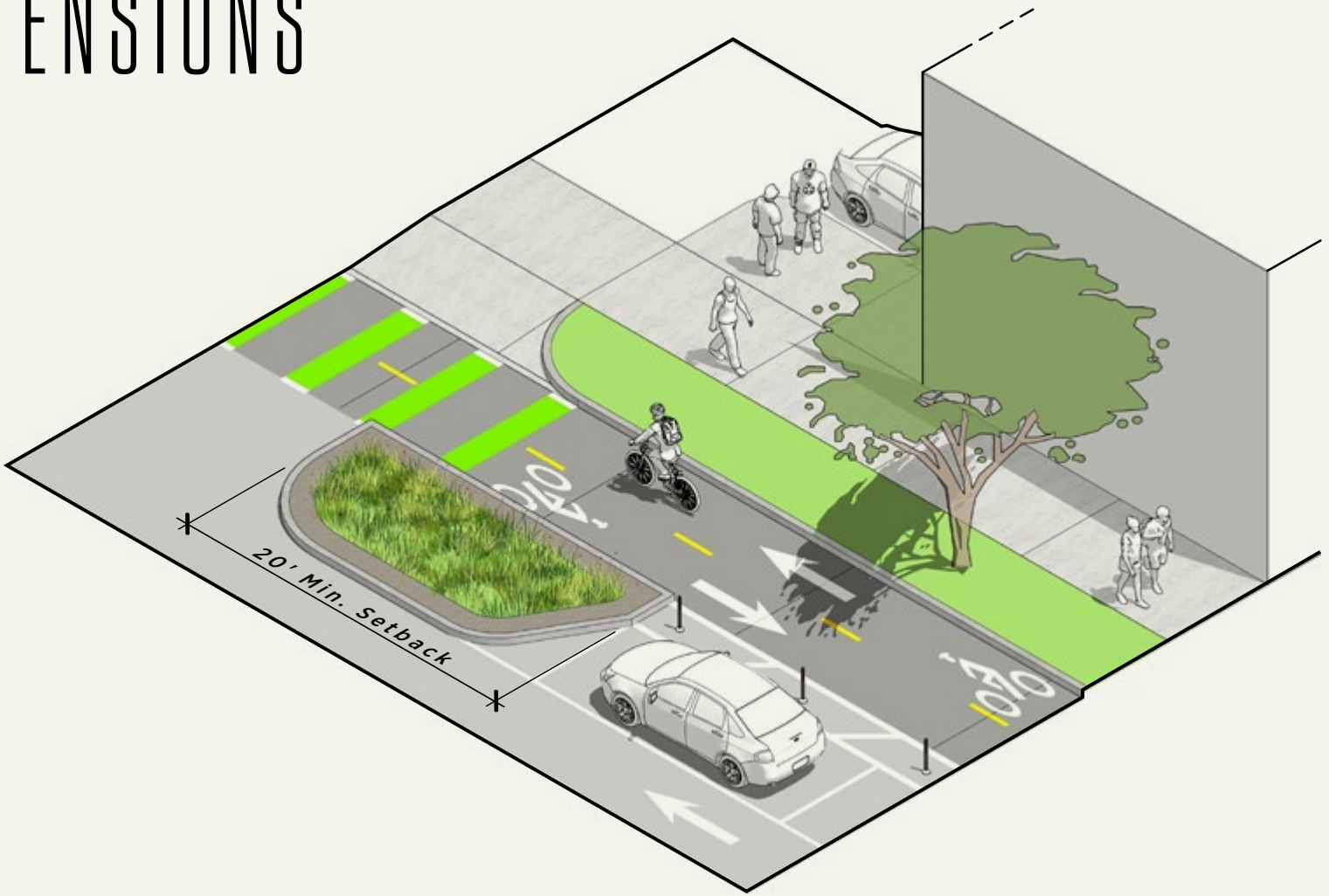


CURB EXTENSIONS

AT DRIVEWAYS

Curb extensions at driveways provide extra protection to cyclists from turning vehicles when the bike path is at road grade.

This treatment may be used to prevent vehicles from parking in areas where obstructed sight lines endanger greenway users.



AT MIDBLOCK

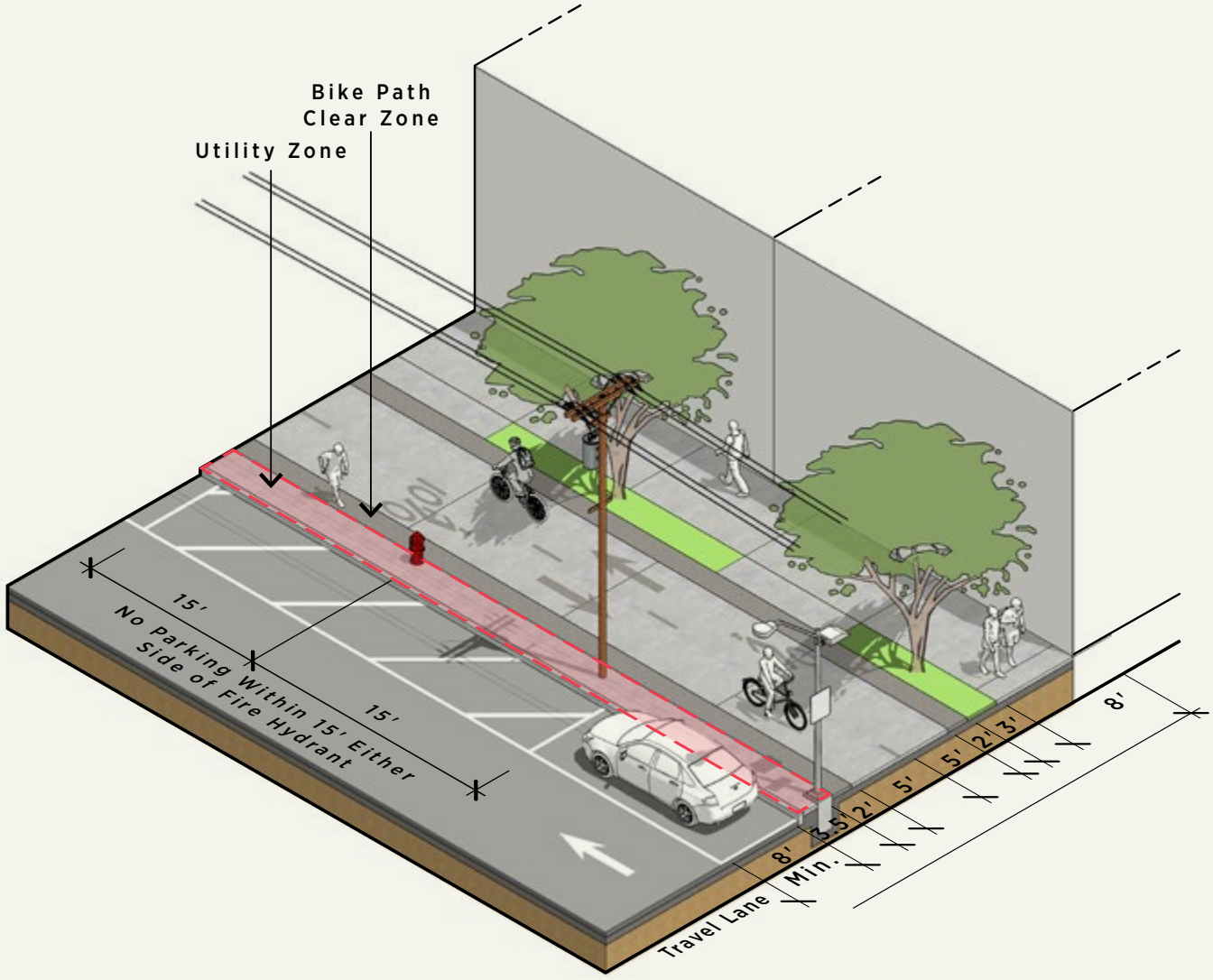
By visually and physically narrowing the roadway midblock curb extensions can have a traffic calming effect.

These curb extensions can also increase the space available for street furniture, seating elements, plantings or street trees and green stormwater infrastructure.

STREET EDGE & UTILITIES

Existing utilities within the right-of-way are common in urban areas and may pose a challenge when designing greenway facilities that meet best practice standards for dimensioning and safety. The relocation of existing utilities may have an impact on the overall cost of implementation of right-of-way modifications. Consideration should be given to the location of utilities, cost of relocation and dimensions of bike, pedestrian and vehicular facilities.

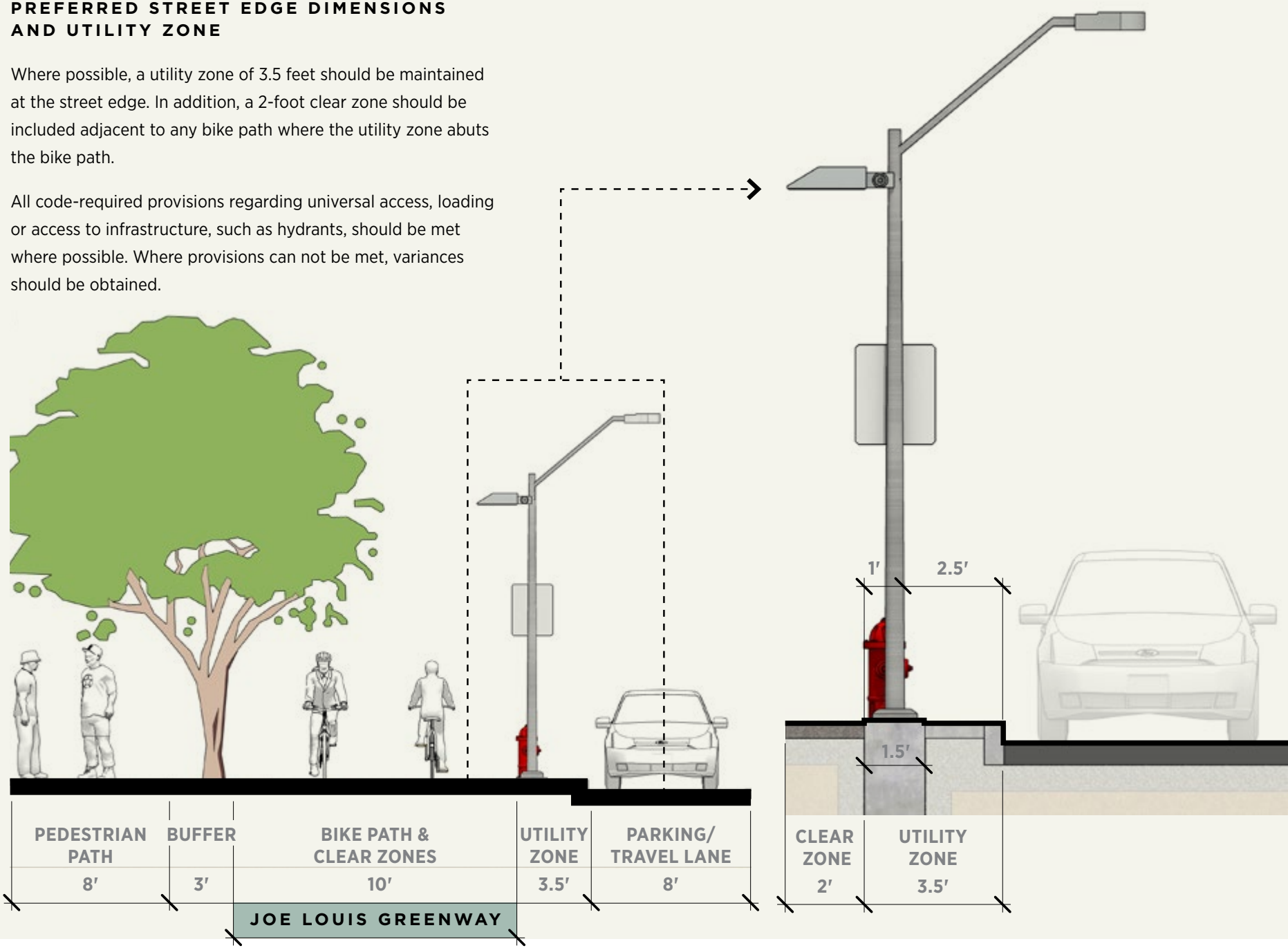
Storm sewers typically sit beneath the roadway, while electrical and franchised utilities are usually found under the sidewalk behind the curb. Position light posts to meet City of Detroit lighting requirements. In some cases street lights may need to be relocated behind the sidewalk.



PREFERRED STREET EDGE DIMENSIONS AND UTILITY ZONE

Where possible, a utility zone of 3.5 feet should be maintained at the street edge. In addition, a 2-foot clear zone should be included adjacent to any bike path where the utility zone abuts the bike path.

All code-required provisions regarding universal access, loading or access to infrastructure, such as hydrants, should be met where possible. Where provisions can not be met, variances should be obtained.



COMMUNITY SUGGESTIONS FOR EQUAL ACCESS

Community members suggested a number of strategies for promoting equitable and inclusive access:

VISUAL OR MEMORY

- Use high-contrast colors.
- Make sure all signage is posted in visible areas, especially for children and wheelchair users.
- Make sure all signage is written in an accessible font, appropriate for those with limited vision or vision impairments.
- Partner with technology that provides users with directions and information regarding stoppage or traffic via smart phones.
- Provide braille on handrails and where helpful at rest stops and on signage.

MOBILITY

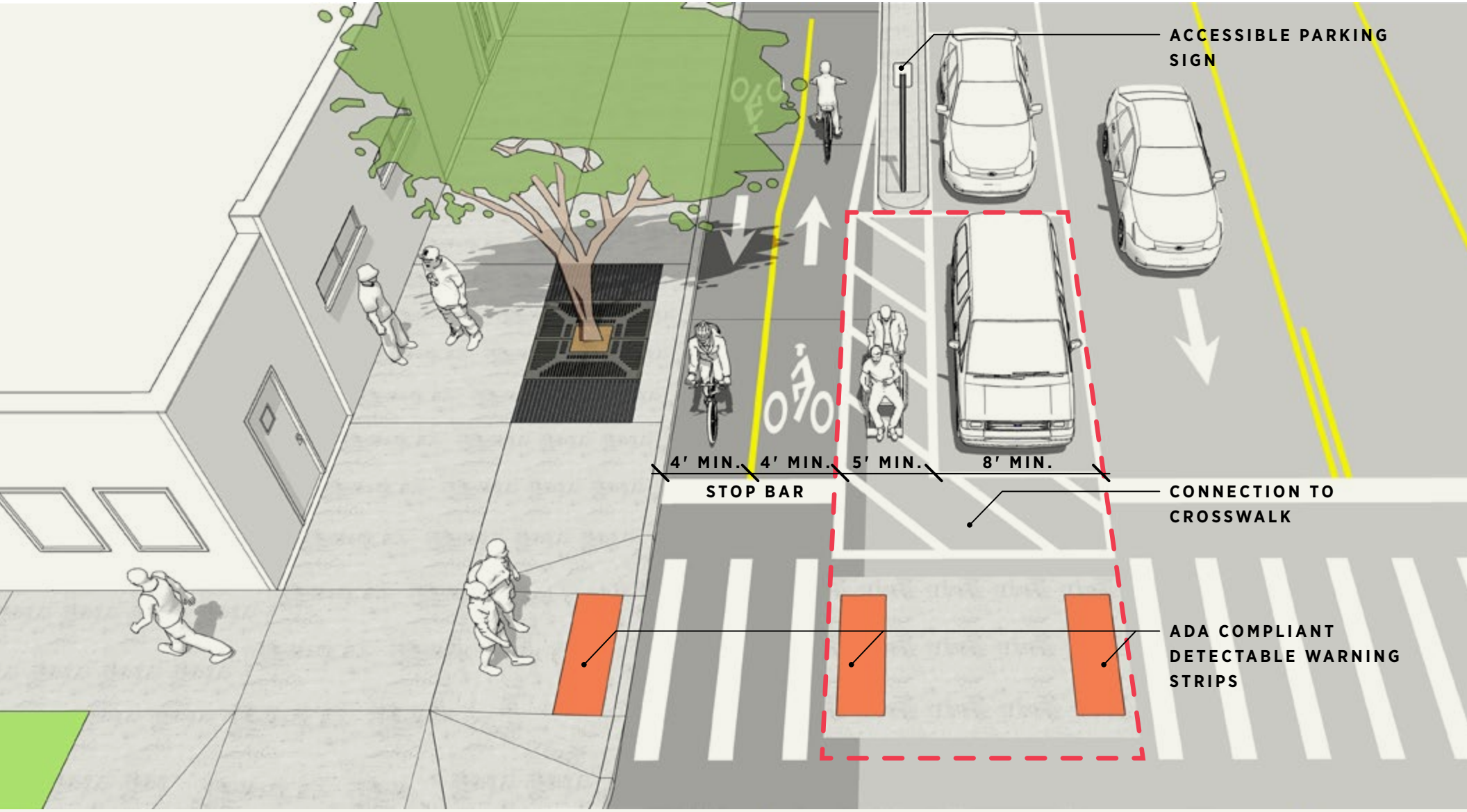
- Where seating is available, give wheelchair users priority seating and viewing.
- Design without stairs and steps. Where steps may be needed, prioritize ramp access.
- Ensure greenway access entry and egress rest areas accommodate wheelchair users and their caregivers, friends, company and family.
- Provide accessible parking on site for people with disabilities and off-street parking options to allow wheelchair drivers to exit their vehicles.
- Provide charging stations for powered wheelchairs and ebikes.
- Design amenities to be correct height and width for wheelchair users.
- Incorporate wider entrances and tactile guidance for feel at steps.
- Add railings to intersection stops for users to hold onto and/or foot rests for people to rest their right foot on for rest and stability.
- Where restrooms are available, ensure they are wheelchair accessible

SENSORY SENSITIVITY

- Create a sense of calmness at all stops and rest areas for everyone, especially people on the autism spectrum.

HEARING

- Incorporate hearing induction loops (audio or direction) at stops for those with hearing aids.
- Use flashing beacons to facilitate safe pedestrian roadway crossings.


ACCESSIBLE PARKING SIGN
4′ MIN.
4′ MIN.
5′ MIN.
8′ MIN.
STOP BAR
CONNECTION TO CROSSWALK
ADA COMPLIANT DETECTABLE WARNING STRIPS
PEDESTRIAN PATH
STREET EDGE
TWO-WAY CYCLE TRACK
ACCESSIBLE PARKING SPACE & ACCESS AREA
JOE LOUIS GREENWAY

"PRIORITIZE PEOPLE AND THEIR INDIVIDUAL IDENTITIES WHILE INCORPORATING LOCAL CULTURE AND COMMUNITY ACCESSIBILITY."

—COMMUNITY MEMBER

ON-STREET ADA PARKING

Street segments with market or metered on-street parking must also provide accessible parking spaces.

Where there is no conflict with on-street bike facilities, accessible parking can and should be provided mid-block.

Where bike facilities conflict, accessible parking should be provided at the start of blocks where there is the greatest flexibility to integrate parking with bike facilities to avoid conflicts.[1]

These recommendations serve as a guide for accessible on-street parking along the Joe Louis Greenway. Ultimately, State of Michigan[2] and City of Detroit policy and departmental review and approval will determine the design and implementation of this parking.

1 The 2010 ADA Standards and the U.S. Access Board's Public Rights of Way Accessibility Guidelines can be referenced for more information (FHA, Separated Bike Lane Planning and Design Guide, 2015).

2 Michigan Vehicle Code Act 300 of 1949—Section 257.674: http://legislature.mi.gov/doc.aspx?mcl-257-674

DESIGN RECOMMENDATIONS

Dimensions: The minimum dimensions for a parking space is 8 feet wide and 20 feet long.

Access Aisle: A 5-foot wide (minimum) access aisle at street level, extending the full length of the parking space, shall be provided and will connect to an accessible route. Best practices recommend a 3-foot front and rear aisle for ease of parking. No obstructions shall be placed within the accessible parking space buffer.

Crossings: A crosswalk and curb ramp shall connect access aisle to sidewalk. Yield pavement markings or a stop bar may be placed before the crosswalk. A "YIELD HERE TO PEDESTRIANS" (MUTCD R1-5) sign shall be placed at crosswalks.

Source: SmithGroup

CROSSINGS & INTERSECTIONS

"THE STREET CROSSING ON WEST GRAND BOULEVARD IN SOUTHWEST DETROIT WILL NEED SPECIAL FOCUS TO STOP CROSS TRAFFIC. A LOT OF PEOPLE RUN STOP SIGNS HERE."

—COMMUNITY MEMBER

DESIGN STANDARDS

This section contains multiple treatment examples for midblock road crossings and intersections.

The examples are based on real-world locations, but design concepts extend to similar contexts. Treatments are meant to prioritize greenway user safety and flow and include pavement markings, signage, raised speed tables, curb extensions and refuge islands, among other options.

The first spreads in this section contain common design standards, along with those unique to mid-block or intersection crossings. Location-based example plans fill out the majority of the section.

PAVEMENT MARKINGS

Pavement markings should generally follow City of Detroit standards, with exceptions for the greenway noted here. Where additional direction is needed, consult American Association of State Highway and Transportation Officials (AASHTO) guidance documents and the Michigan Manual of Uniform Traffic Control Devices (MMUTCD).[1]

Transitions from proposed pavement markings, bike lanes, buffers and other features may be required to tie back into existing conditions beyond each crossing.

1 https://mutcd.fhwa.dot.gov/resources/state_info/michigan/mi.htm

Crosswalk Markings should be high visibility through the full length of the greenway. Use zebra (longitudinal) striping with 12″ wide bars and 2′ gaps. Do not use transverse lines. Stripe length varies from the City of Detroit standard to match path width. Paint stripes parallel to the direction of traffic flow per MMUTCD standards.

Bike Conflict Markings should be 2′ wide solid green bars capped with 12″ wide white dashes on each end per City standards. Gaps between the bars should be 4′ wide—a slightly smaller spacing than called for by City standards—to ensure visibility. Yellow center lines should be striped in the center of each green bar.

Path Markings guide greenway users and vary by typology and context in their dimension and style.

Stop Lines are 18″ wide and should be set at least 4′ in advance of crosswalks. Use engineering judgment to evaluate stop line placement on truck routes.

Yield Lines should be installed per MMUTCD standards in advance of all midblock crossings and in advance of the greenway as it crosses non stop-controlled intersections. At intersections, yield lines should be placed on non stop-controlled lanes 4–30′ in advance of the intersecting travelway or crosswalk edge. Place yield lines 20–50′ in advance of midblock crossings, setting lines back farther (40–50′) in multi-lane conditions or where speeds are 35+ mph. Prohibit parking between the yield line and crosswalk.

CURB RAMPS AND DETECTABLE WARNINGS

Design curb ramps and flush sidewalk/roadway transitions following the 2011 Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). Use City standard brick red color for tactile detectable warnings, although alternative colors may be used for greater contrast, subject to approval by the DPW Traffic Engineering Division. Install detectable warnings that cover the full width of pedestrian and bike crossings crossing at midblock locations as shown in the examples.

SIGHTLINES: USER AND SIGNAL VISIBILITY

To maintain pedestrian, cyclist and vehicular safety, sightlines between oncoming travel lanes and bike paths should be maintained. Care should be taken to preserve sightlines of both greenway users and drivers when locating and maintaining trees and vegetation, signage and other features.

In order to maintain sightlines and minimize crossing distance for greenway users, pedestrian and bike paths should meet vehicular streets at a perpendicular angle. No minimum dimension is required for how long the paths should run perpendicular before the crossing, but cyclists should be able to see the roadway from at least 150 feet away.

Ensure that all bike, pedestrian and vehicular signs and signal faces are visible to the designated user, placing advanced warnings and repetitive signs and signals where necessary.

TYPICAL ROAD SIGNAGE

Use signage to increase driver awareness of greenway users. Mount at heights specified in the MMUTCD.

R1-5 alt

Place modified R1-5 signs with pedestrian and bike symbols adjacent to yield lines 20–50′ from midblock crossings. This will be the closest sign to the crossing if an RRFB is not present.

W17-1
W13-1p

For speed tables at midblock crossings, install W17-1 & a 25 MPH (W13-1p) advisory speed plaque at least 100′ in advance of the R1-5 alt sign, increasing distance according to MMUTCD guidance on sign placement.

W11-15
W16-9p

Install a W11-15 & W16-9p/ supplemental speed sign assembly at least 100′ in advance of uncontrolled midblock and intersection crossings and other warning signage. Increase placement distance up to 500′ as site conditions require.

W10-11a

Prevent dangerous movements by installing W10-11a signs at all signalized intersections where right turns will be made over the greenway.

R1-1

R1-1 Stop sign at standard intersections.

CROSSING TYPOLOGIES

Places where vehicle, cyclist and pedestrian traffic intersect can be major points of access for the greenway. They can also pose a greater mobility hazard. These intersections should be carefully designed for visibility and safety through signage, pavement markings, minimizing visual obstructions, clearly-delineated turning movements and road geometries.

These guidelines explore two types of intersections:

Midblock Crossings—These crossings occur when an off-street portion of the greenway crosses a vehicular roadway. Here, infrastructure must be robust enough to alert drivers to the presence of a pedestrian crossing.

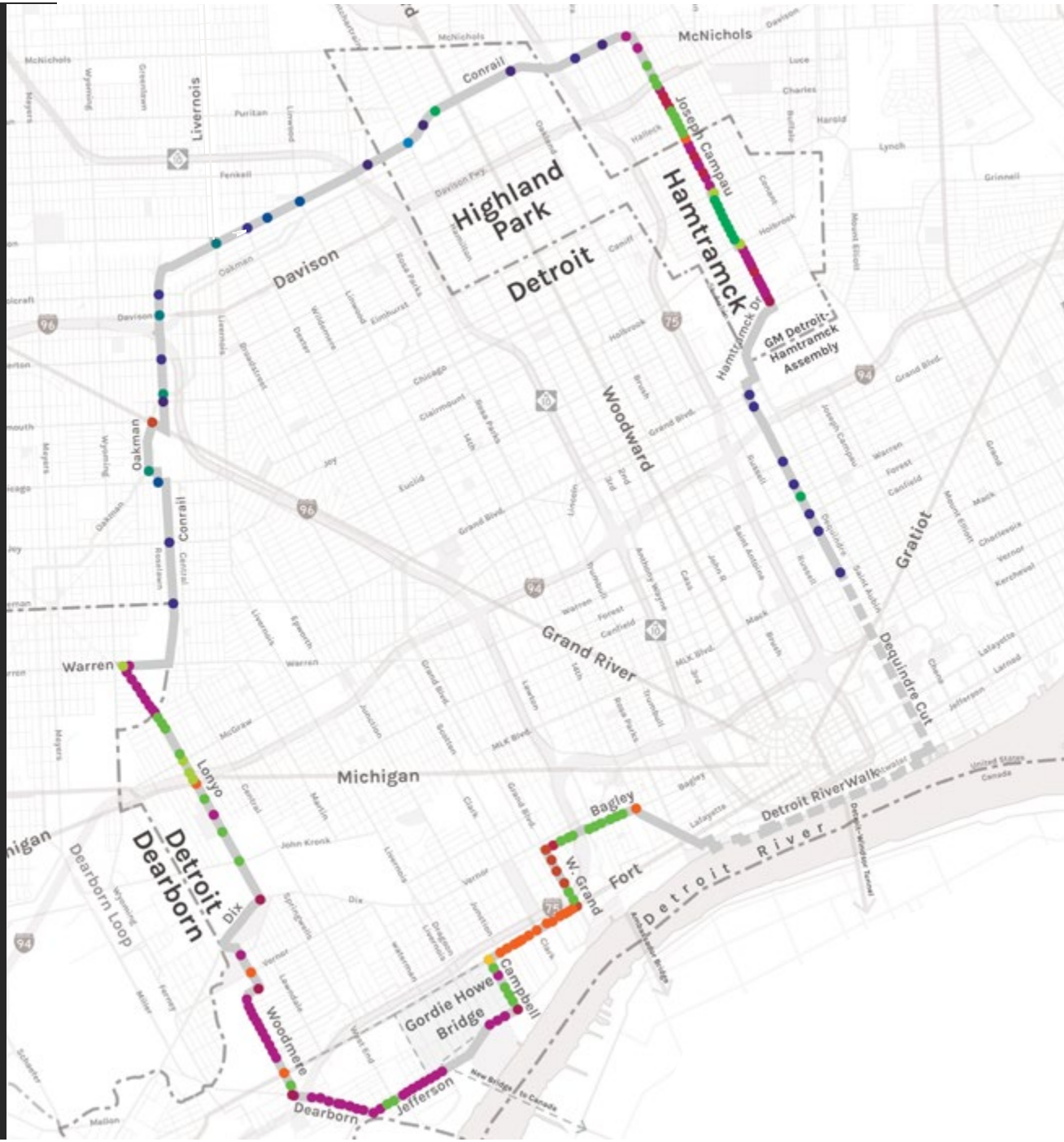
Intersections—These crossings occur when a bike path is on-street or adjacent to a street. In these scenarios, bicycles cross with traffic, and consideration must be

given for cross-traffic patterns, as well as turning vehicular movements.

To ensure the highest level of safety and comfort, the following recommendations provide guidance on where and which type of crossing treatment should be applied. These typological intersection designs will need to take into account site-specific conditions, which should be assessed during design development.

MIDBLOCK CROSSING TYPOLOGIES

INTERSECTION TYPOLOGIES



MIDBLOCK CROSSING

Midblock crossings should be designed for high visibility to oncoming vehicular traffic as well as the comfort and safety of greenway users.

Maintain separation between pedestrians and faster greenway users through each crossing to prevent conflicts.

Raised speed tables are recommended for use at midblock crossings on local or neighborhood streets and lower traffic volume collector streets. Generally these will be streets with speed limits of 30 mph or less and an average annual daily traffic (AADT) of 9,000 vehicles or fewer. Raised speed tables make greenway users more visible and encourage motor vehicles to slow.

Install speed tables per City of Detroit and MMUTCD standards. Pedestrian and bike paths should converge to cross the intersection together with a buffer of 3 feet between the edges of the pedestrian path and bike path clear zone. The width of the level table top should encompass the full width, usually 23 feet, of the pedestrian and bike crossing markings. Speed table locations will need to be reviewed and approved by DPW Traffic Engineering Division.

Bike lane symbols should be used where bike lanes exist on cross streets. Approaching the greenway crossing, the bike lane symbol should be on a green background to highlight the crossing to drivers. Add a yield line that lets on-road cyclists know they should yield to greenway users. Green is not needed on the far side of the crossing, but a bike symbol will clarify the intended use for greenway users.

Engineering judgment should prevail in the selection of traffic control measures to accompany the given example. For when to apply measures such as Rectangular Rapid Flashing Beacons (RRFBs), pedestrian hybrid beacons or standard signals, refer to City of Detroit standards and the 2018 Federal Highway Administration (FHWA) report: FHWA-SA-17-072 Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.

MIDBLOCK CROSSING TYPOLOGIES

- Two-way street with one travel lane in each direction and no on-street parking.
- Two-way street with one travel lane in each direction with on-street parking.
- One travel lane in each direction with center turn lane and protected bike lanes.
- One travel lane in each direction with center turn lane, on-street parking and protected bike lanes.
- Two or more travel lanes in each direction with center median with or without bike lanes.
- Two travel lanes in each direction with bike lanes and wide median.
- Alley crossing one-way street with on-street parking (applies to non-alley midblock crossings of one-way streets with one or more lanes with or without parking).

INTERSECTIONS

Examples are provided for the following intersection crossing types:

- Four-way intersection (one travel lane in each direction with parking).
- Four-way intersection (one travel lane in each direction, center turn lane, with parking).
- Four-way intersection (two or more travel lanes in each direction with dedicated turn lanes).
- Four-way intersection (two or more travel lanes in each direction with dedicated turn lanes and parking).
- "T" intersection.
- Offset intersection.

The greenway crosses some one-way roads that are not included among these examples. However, the same treatments may be applied to one-ways, with traffic volume, number of lanes and speed continuing to determine treatment type.

In all cases, intersection treatments separate the greenway from vehicular traffic through buffers that include paint and flexposts, raised concrete curb, planters or other features, based on context.

BIKE SIGNAL HEADS AND PROTECTED BIKE PHASES

People on bikes are physically separated from motorists and mostly traveling in two-way bike paths along the greenway. Existing traffic signal heads may not be visible to cyclists where the greenway route is proposed. For all these reasons, consider adding bike signal heads on the greenway.

Also consider separate bike phasing due to two-way bike movements, where unique or high volume bike movements occur and in locations with high volumes of turning traffic. See the table at right for when to add bike phases based on vehicular turning thresholds.

VOLUME OF TURNING MOTOR VEHICLES

Motor vehicles turning across separated bike lanes per hour (thresholds for bicycle signal phase)

	TWO-WAY STREET			ONE-WAY STREET
	RIGHT TURN	LEFT TURN		RIGHT OR LEFT TURN
		ACROSS ONE LANE	ACROSS TWO LANES	
ONE-WAY SEPARATED BIKE LANE	150	100	50	150
TWO-WAY SEPARATED BIKE LANE OR SHARED-USE PATH	100	50	0	100

Note: Some intersections may require separate bicycle signals due to the volume of motor vehicles turning over the bikeway. This table describes traffic thresholds indicating when to add bike signals.

INTERSECTION TYPOLOGIES

- Four-way intersection (one travel lane in each direction or at one-way service drives) with or without parking.
- Two-way cycle track at four-way intersection (one or more travel lanes in each direction with dedicated turn lanes).
- One-way directional bike lanes on both sides of street at four-way intersection (two or more travel lanes in each direction with dedicated turn lanes).
- Four-way intersection (one or more travel lanes in each direction with dedicated turn lanes and/or parking and/or bike lanes).
- Boulevard Intersection.
- Off-set intersection.
- "T"-Intersection (where greenway intersects a cross street and turns to follow that street).
- "T"-Intersection (where greenway passes an intersecting street and continues), "Y"-Intersection and acute angle intersections.

TWO-WAY STREET

PROTOTYPE

GODDARD STREET

Midblock Conrail crossing south of McNichols Road

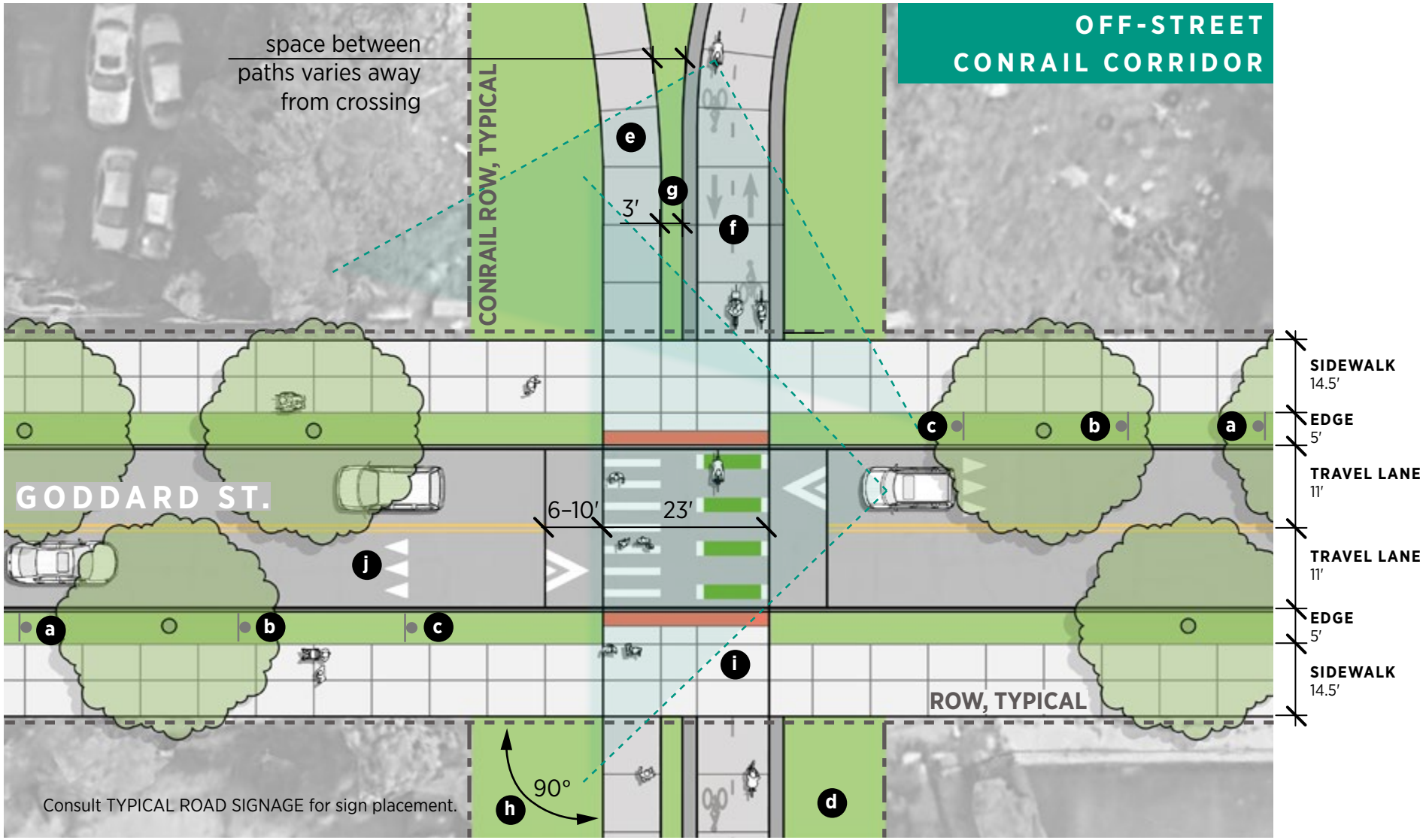
A raised speed table is recommended at Goddard Street and for midblock crossings across similar local and low-volume collector streets. The raised crossing will make the greenway path and users more visible, reducing vehicular speeds.

SEGMENT RECOMMENDATIONS

A raised speed table treatment is recommended at Goddard Street to increase greenway user visibility and to reduce vehicular speeds.

SIGNS AND SIGNALS

Consult the Design Standards and Typical Road Signage section for sign applications and placement. Note the addition of signage for the raised speed table and in advance of greenway intersections.



a Sign—W11-15 & W16-9P, Pedestrian and bike Crossing Ahead

b W17-1 (speed hump) and W13-1P (advisory speed 25) signs

c Sign—modified R1-5, Yield to Pedestrians and Bikes

d Landscape / stormwater / amenity zone, typical

e 8′ pedestrian path, typical

f 14′ bike path including clear zones, typical

g Converge paths near crossing

h Crossing to be 90 degrees to roadway

i Maintain accessible path behind PROWAG sidewalk ramp, typical

j Yield line to be 20′ to 50′ from midblock crossing, typical

Clear sightline zone

Scale: 1″ = 20′ – 0″

TWO-WAY STREET WITH ON-STREET PARKING

PROTOTYPE

DEXTER AVENUE

Midblock Conrail crossing north of Doris Street

This midblock crossing intersects with a two-way vehicular road with one travel lane in each direction and on-street parking.

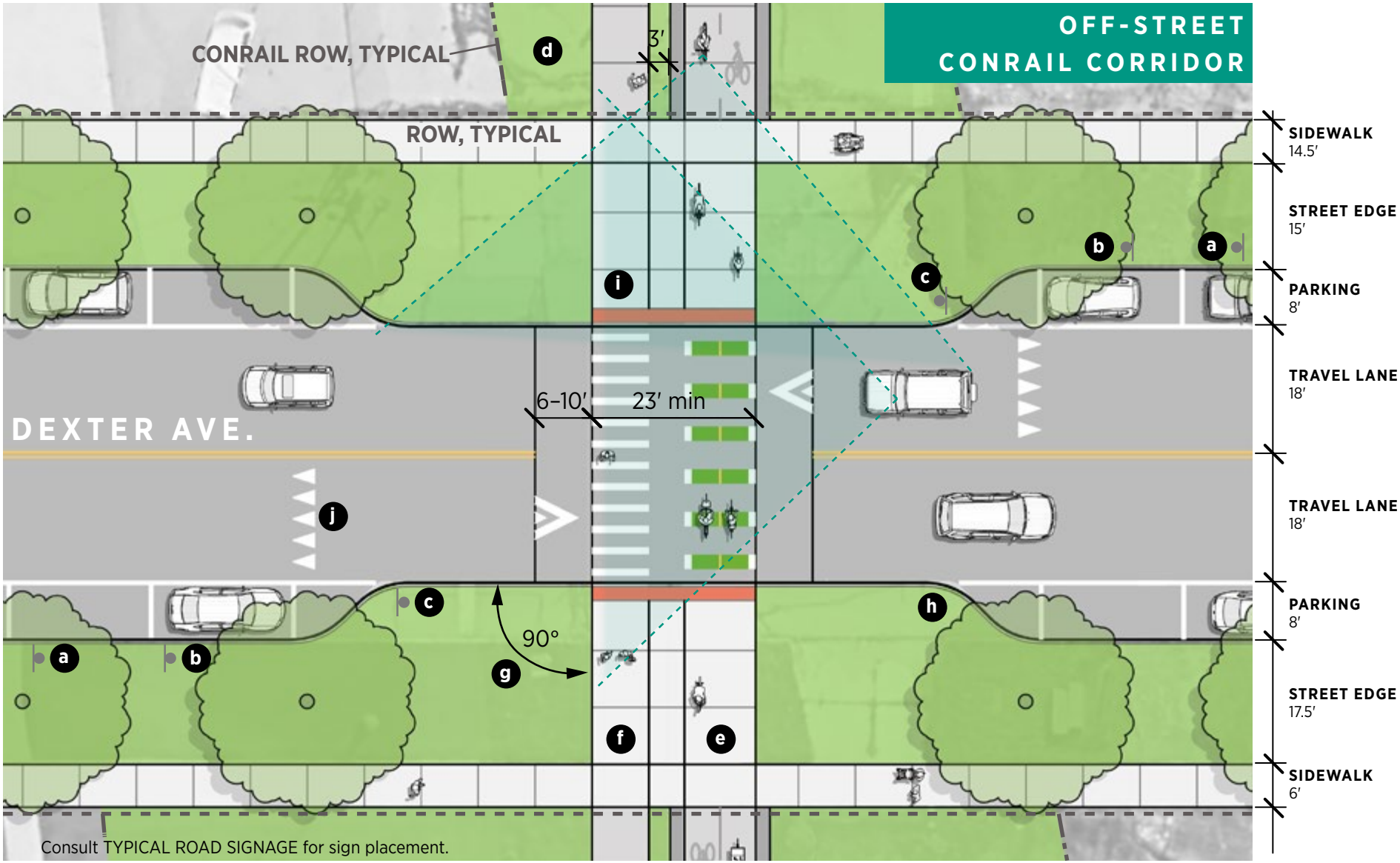
SAFETY

Install curb extensions to reduce pedestrian travel distance across the intersection. Curb extensions restrict parking close to the greenway, increasing visibility of greenway users.

In areas of wide travel lanes or long, clear roadways, drivers may travel at higher speeds. A raised speed table should be used at local and lower-volume collector streets to reduce vehicular speeds and increase greenway user visibility.

SIGNS AND SIGNALS

Yield signs should be placed 40–50′ from the crossing at the edge of the curb extension.



- **a** Sign—W11-15 & W16-9P, Pedestrian and Bike Crossing Ahead
- **b** W17-1 (speed hump) and W13-1P (advisory speed 25) signs
- **c** Sign—modified R1-15, Yield to Pedestrians and Bikes
- **d** Landscape / stormwater / amenity zone, typical
- **f** 8′ pedestrian path, typical
- **e** 14′ bike path including clear zones, typical
- **g** Crossing to be 90 degrees to roadway
- **h** Curb extensions for on-street parking
- **i** Maintain accessible path behind PROWAG sidewalk ramp, typical
- **j** Yield line to be 20′ to 50′ from midblock crossing, typical
- Clear sightline zone

Scale: 1″ = 20′ – 0″

TWO-WAY STREET WITH BIKE LANES AND CENTER TURN LANE

PROTOTYPE

CONRAIL CROSSING AT LINWOOD STREET

Midblock Conrail crossing north of Doris Street

At this midblock intersection, the Joe Louis Greenway crosses a two-way street with one vehicular travel lane in each direction, a center turn lane and protected bike lanes.

REFUGE ISLANDS

Treatments with pedestrian refuge islands will generally apply to collector and arterial streets at any speed limit.

Install pedestrian refuge islands in the center turn lane to reduce the crossing distance for greenway users, to prevent use of the lane by motor vehicles and to allow greenway users to reduce multi-directional traffic navigation caused by crossing two-way streets. Where medians start or stop, curb lines should be configured to increase visibility. Median vegetation to be low growing to maintain sightlines.

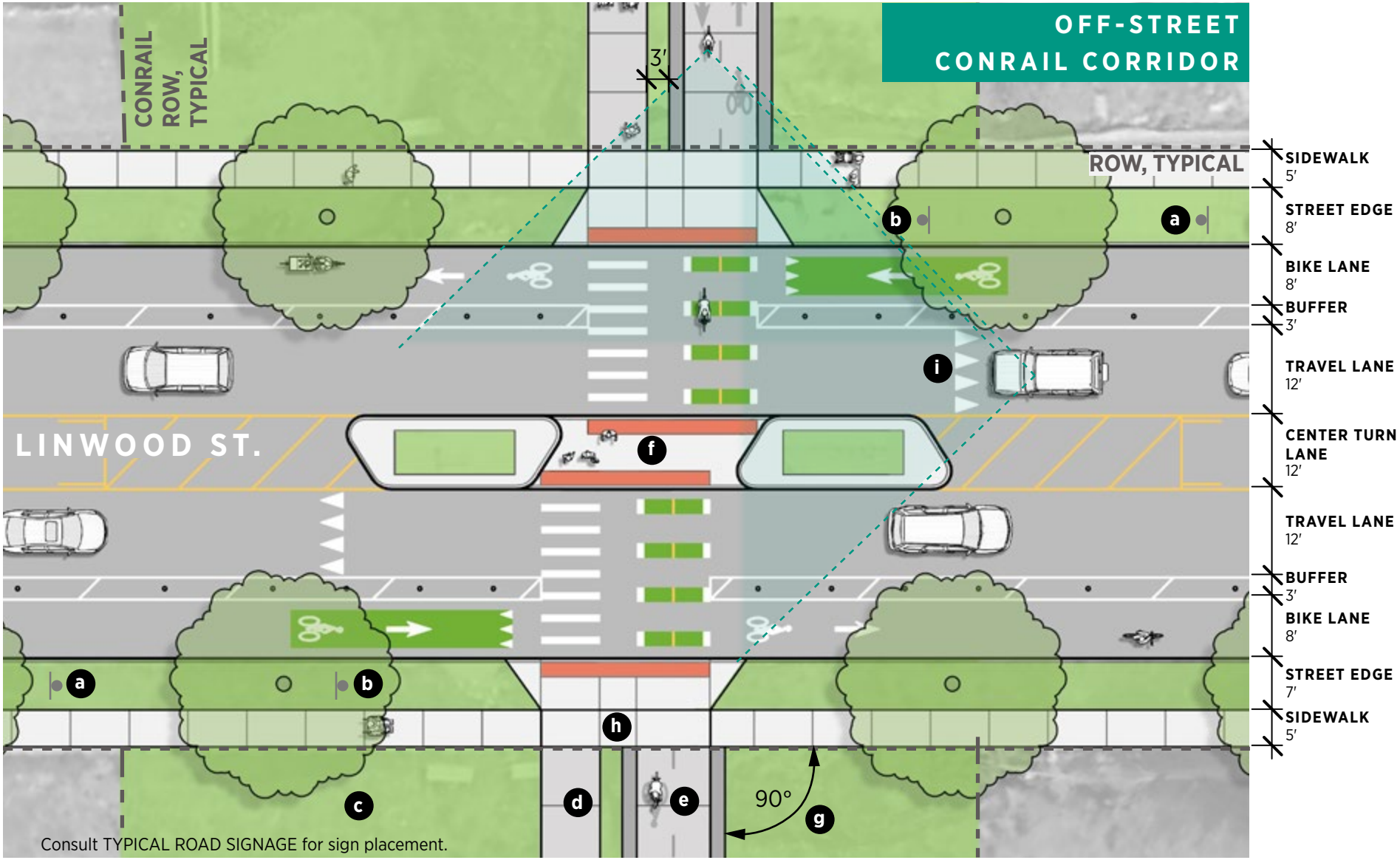
As space allows, provide an offset crossing to the median and angled crossing within. Greenway users will be more likely to look in the direction of oncoming traffic.

BIKE LANES

Future Linwood Street bike lanes should be buffered with flexposts extending 100–150 feet from the crossing with spacing per City of Detroit standards.

SIGNS AND SIGNALS

Consider installing RRFBs as warranted by motor vehicle traffic volumes, speeds, expectations for high volumes of greenway users and crossing visibility.



- **a** Sign—W11-15 & W16-9P, Pedestrian and Bike Crossing Ahead
- **b** Sign—modified R1-15, Yield to Pedestrians and Bikes
- **c** Landscape / stormwater / amenity zone, typical
- **d** 8′ pedestrian path, typical
- **e** 14′ bike path including clear zones, typical
- **f** 10′ pedestrian refuge island
- **g** Crossing to be 90 degrees to roadway
- **h** Maintain accessible path behind PROWAG sidewalk ramp, typical
- **i** Yield line to be 20′ to 50′ from midblock crossing, typical
- Clear sightline zone

Scale: 1″ = 20′ – 0″

TWO-WAY STREET WITH BIKE LANES, CENTER TURN LANE AND PARKING

PROTOTYPE

CONRAIL CROSSING AT HAMILTON AVENUE

Midblock Conrail crossing north of Mabel Street

In this midblock intersection, the Joe Louis Greenway crosses a two-way street with one travel lane in each direction, a center turn lane, on-street parking and parking-protected bike lanes.

TRANSIT CONNECTIONS

At Hamilton Avenue, nearby bus stops are proposed in-lane on the far sides of the greenway crossing. This will help connect different modes of travel while using space efficiently. Design bus stops per DDOT standards and provide landscaped curb extensions in parking lanes on the near side of the crossing.

REFUGE ISLAND

Construct a pedestrian refuge island in the center turn lane as funding allows.

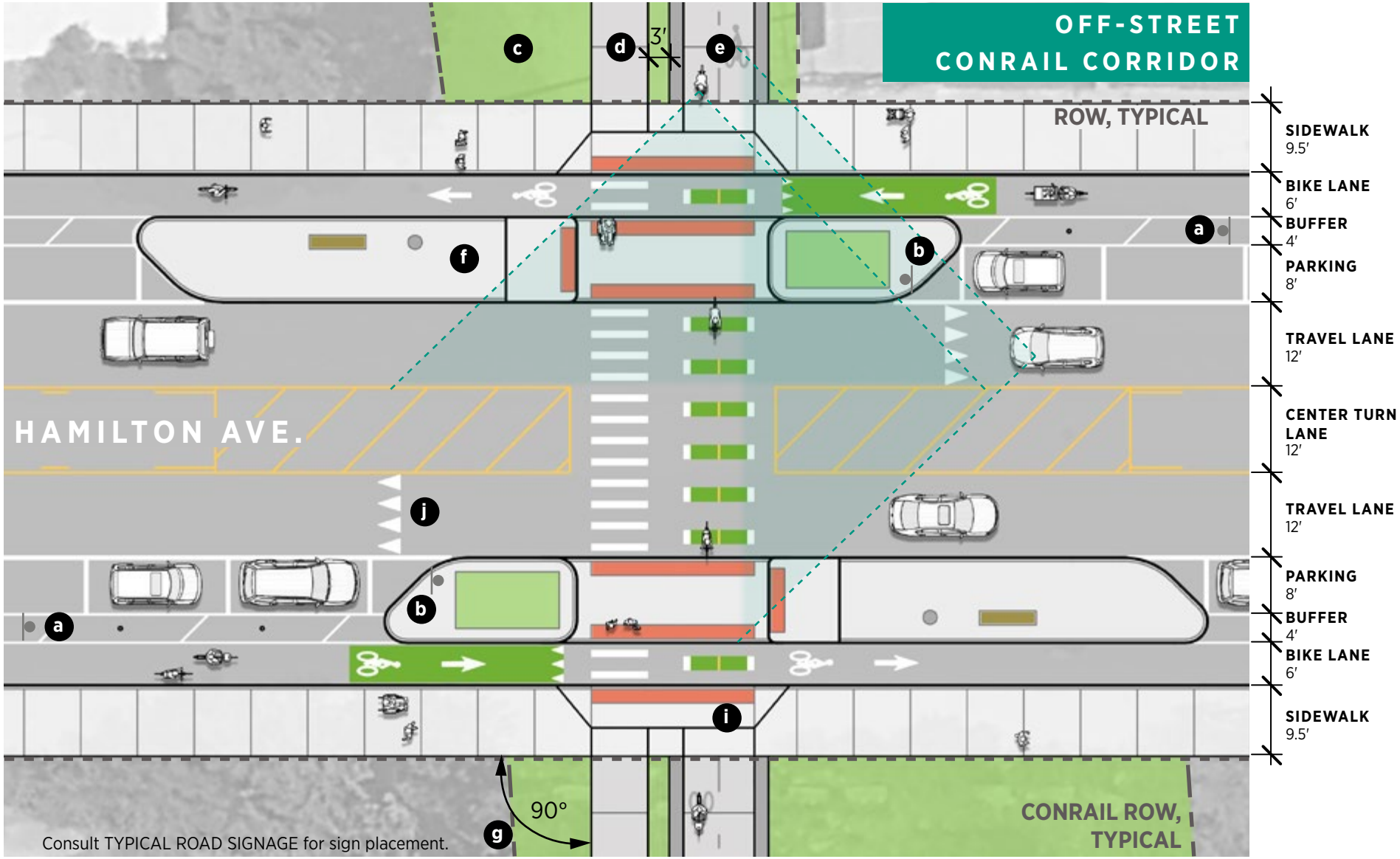
BUFFERS AND BARRIERS

Future Hamilton Avenue bicycle lanes to be buffered. Add flexposts 100–150′ out from the crossing, with spacing per City of Detroit standards.

SIGNS AND SIGNALS

Consider installing RRFBs as warranted by motor vehicle traffic volumes, speeds, expectations for high volumes of greenway users and crossing visibility.

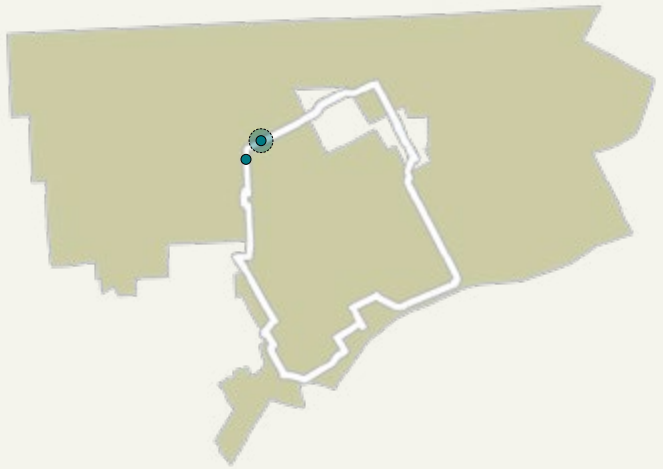
Warning signage should be located within the bike buffer and on concrete islands to increase visibility to drivers.



- **a** Sign—W11-15 & W16-9P, Pedestrian and Bike Crossing Ahead
- **b** Sign—modified R1-15, Yield to Pedestrians and Bikes
- **c** Landscape / stormwater / amenity zone, typical
- **d** 8′ pedestrian path, typical
- **e** 14′ bike path including clear zones, typical
- **f** 12′ in-lane bus stop island
- **g** Crossing to be 90 degrees to roadway
- **i** Maintain accessible path behind PROWAG sidewalk ramp, typical
- **j** Yield line to be 20′ to 50′ from midblock crossing, typical
- Clear sightline zone

Scale: 1″ = 20′ – 0″

NARROW BOULEVARD



PROTOTYPE

CONRAIL CROSSING AT LIVERNOIS AVENUE

Midblock Conrail crossing north of Intervale Street

This midblock crossing has a two-way street with a center median and two or more travel lanes in each direction with or without bike lanes.

This treatment will apply to collector and arterial streets with medians at any speed limit. Expand median and close Michigan Left Turn to reduce conflicts between motor vehicles and greenway users.

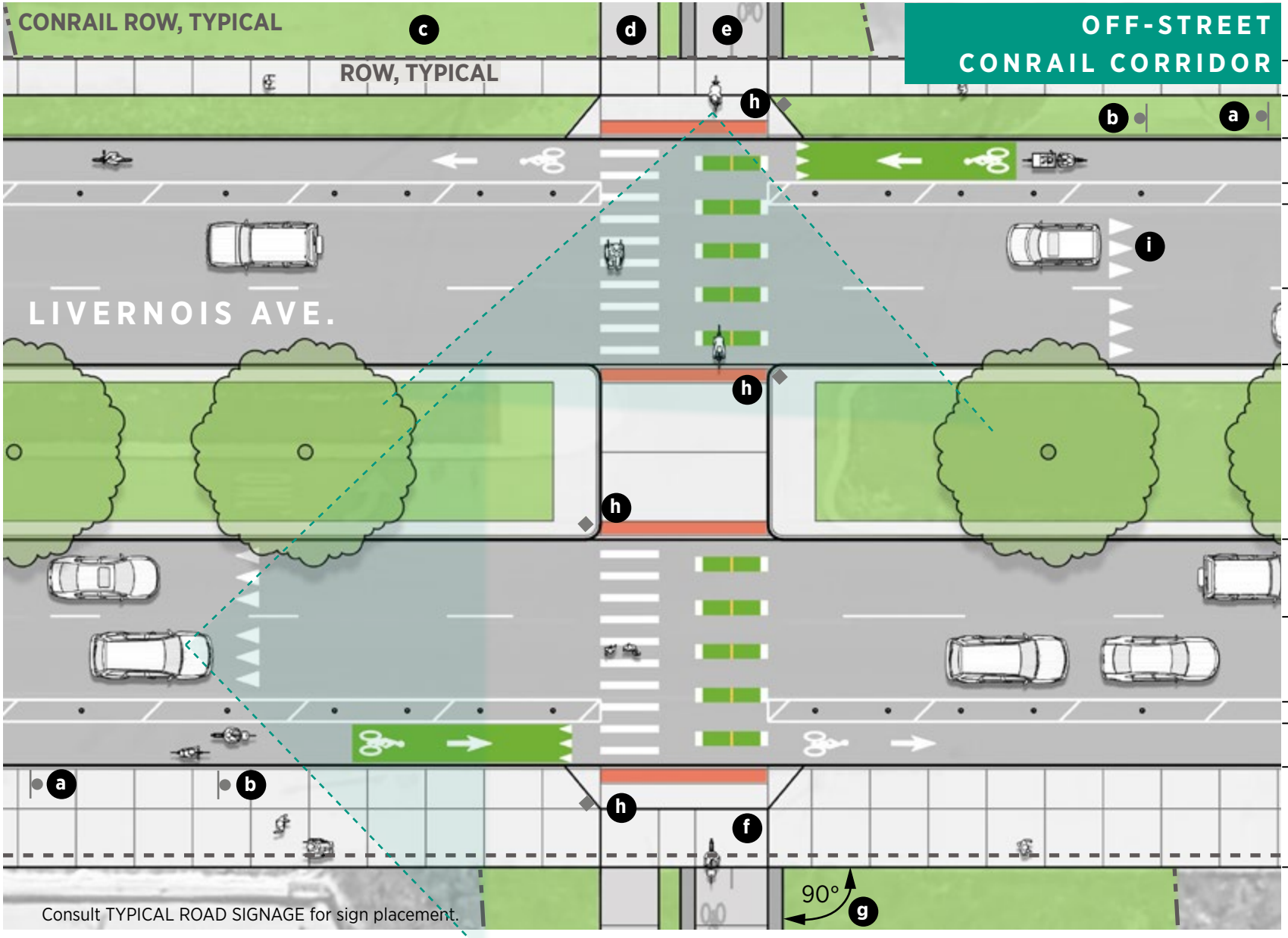
BUFFERS AND BARRIERS

Bike lanes along northern Livernois Avenue are protected by parking. Buffer them near the greenway and add flexposts 100–150′ out from the crossing, with spacing per City standards.

SIGNS AND SIGNALS

If traffic volumes and speeds are sufficiently high to warrant the installation of RRFBs, install in pairs with visibility to drivers on both approaches.

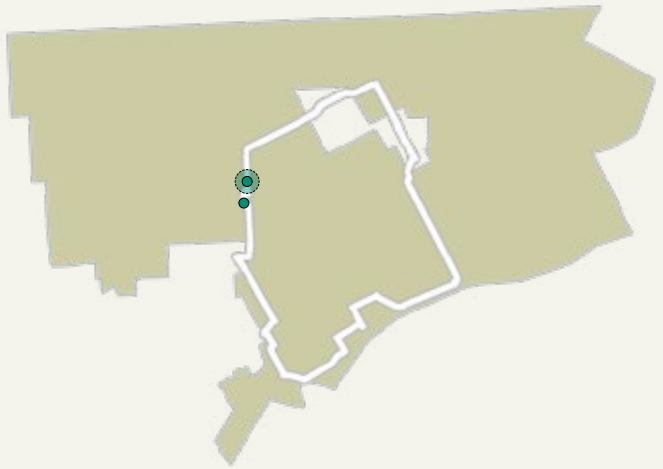
Make yield lines more visible in multi-lane or higher-speed areas by placing them no more than 50′ from greenway crossings.



- **a** Sign—W11-15 & W16-9P, Pedestrian and Bike Crossing Ahead
- **b** Sign—modified R1-15, Yield to Pedestrians and bikes
- **c** Landscape / stormwater / amenity zone, typical
- **d** 8′ pedestrian path, typical
- **e** 14′ bike path with clear zones, typical
- **f** Maintain accessible path behind PROWAG sidewalk ramp, typical
- **g** Crossing to be 90 degrees to roadway
- **h** Rectangular Rapid Flash Beacon (RRFB) w/ W11-15 & W16-7P signs
- **i** Yield line to be 50′ from midblock crossing, typical
- Clear sightline zone

Scale: 1″ = 20′ – 0″

WIDE MEDIAN BOULEVARD



PROTOTYPE

CONRAIL CROSSING AT OAKMAN BOULEVARD

Midblock Conrail crossing west of Cloverdale Street

This midblock crossing has two travel lanes in each direction with a wide median and bike lanes. Oakman Boulevard has curving roads and reduced sightlines from vehicular travel lanes.

VISIBILITY

Use low-growing vegetation in the center median in order to maintain sightlines. Trees should be planted in locations where user and driver sightlines will not be obstructed.

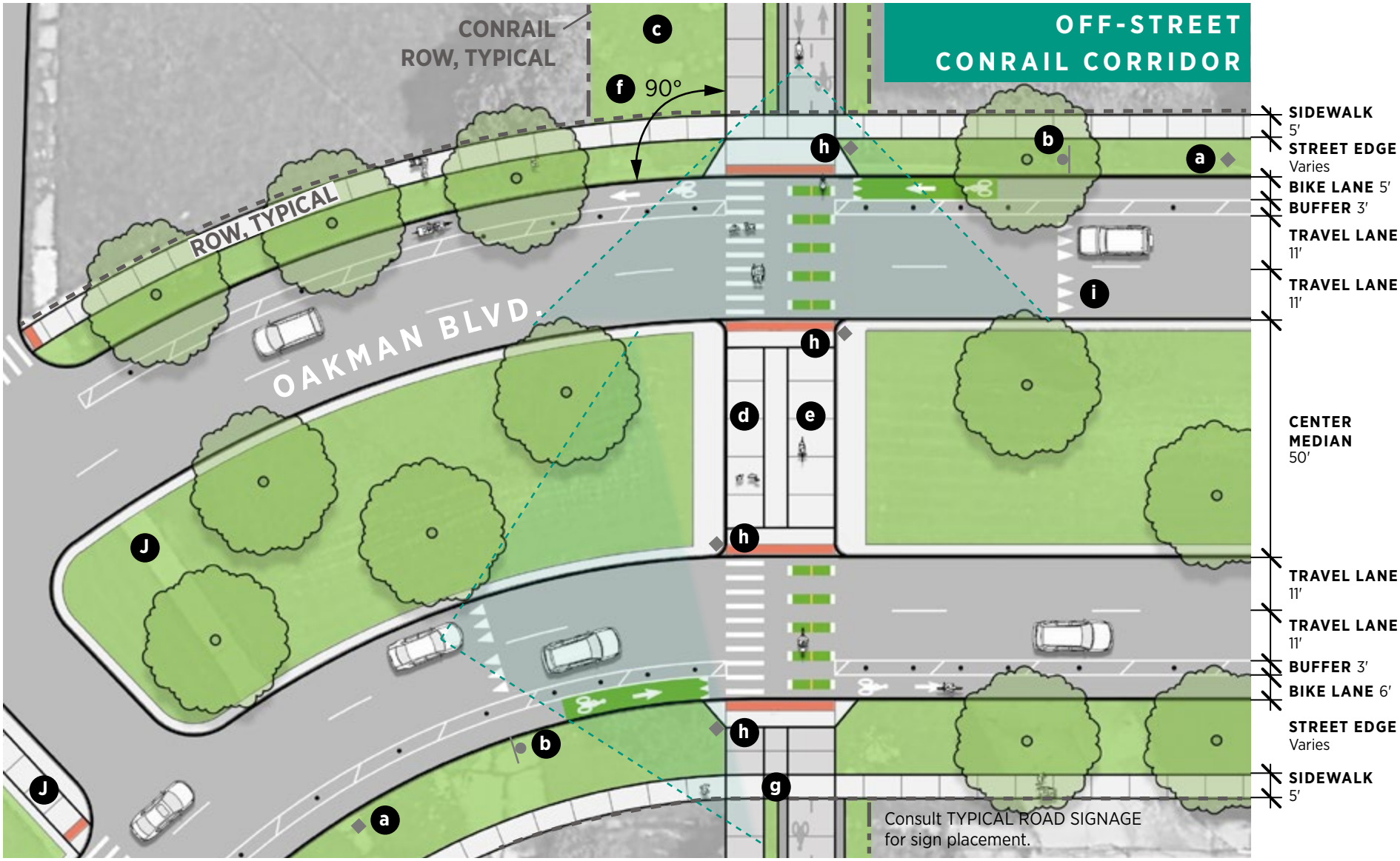
Close the nearest crossing on the curve to reduce conflicts while marking the crossing farther away in a more visible location to drivers.

BUFFERS AND BARRIERS

The configuration of Oakman Boulevard currently has two travel lanes in each direction with bike lanes planned. Oakman is adequately wide near the greenway so that bike lanes should be buffered, and each bike or travel lane should be clearly delineated with striping.

SIGNS AND SIGNALS

It is necessary to install RRFBs at this midblock crossing. Due to the curvature of Oakman Boulevard, additional advanced warning RRFBs should be placed in pairs on both approaches. Install per MMUTCD standards for placement.



- **a** Advanced warning RRFB with W11-15 & W16-9P (ahead) sign
- **b** Sign—modified R1-15, Yield to Pedestrians and Bikes
- **c** Landscape / stormwater / amenity zone, typical
- **d** 8′ pedestrian path, typical
- **e** 14′ bike path including clear zones, typical
- **f** Crossing to be 90 degrees to roadway
- **g** Maintain accessible path behind PROWAG sidewalk ramp, typical
- **h** RRFB w/ W11-15 & W16-7P signs
- **i** Yield line to be 50′ from midblock crossing
- **j** Reconfigure existing crossings

Clear sightline zone

N

Scale: 1″ = 30′ – 0″

WIDE MEDIAN BOULEVARD

PROTOTYPE

ALLEY CROSSING AT EVALINE STREET

Midblock alley crossing west of Joseph Campau Street

This treatment applies to allies crossing one-way streets with on-street parking—specifically, where the Joe Campau Alley crosses one-way local streets with low traffic volumes and speeds.

This treatment may also apply to non-alley midblock crossings of one-way streets with one or more lanes with or without parking.

VISIBILITY

Install curb extensions to make greenway users more visible by pulling parked cars away. Keep vegetation low.

SAFETY

Install a raised intersection to reduce vehicular speeds and give priority to greenway users.

A 3′ minimum width service area on both sides of the greenway will help reduce conflicts between greenway users and businesses with back-door entries.

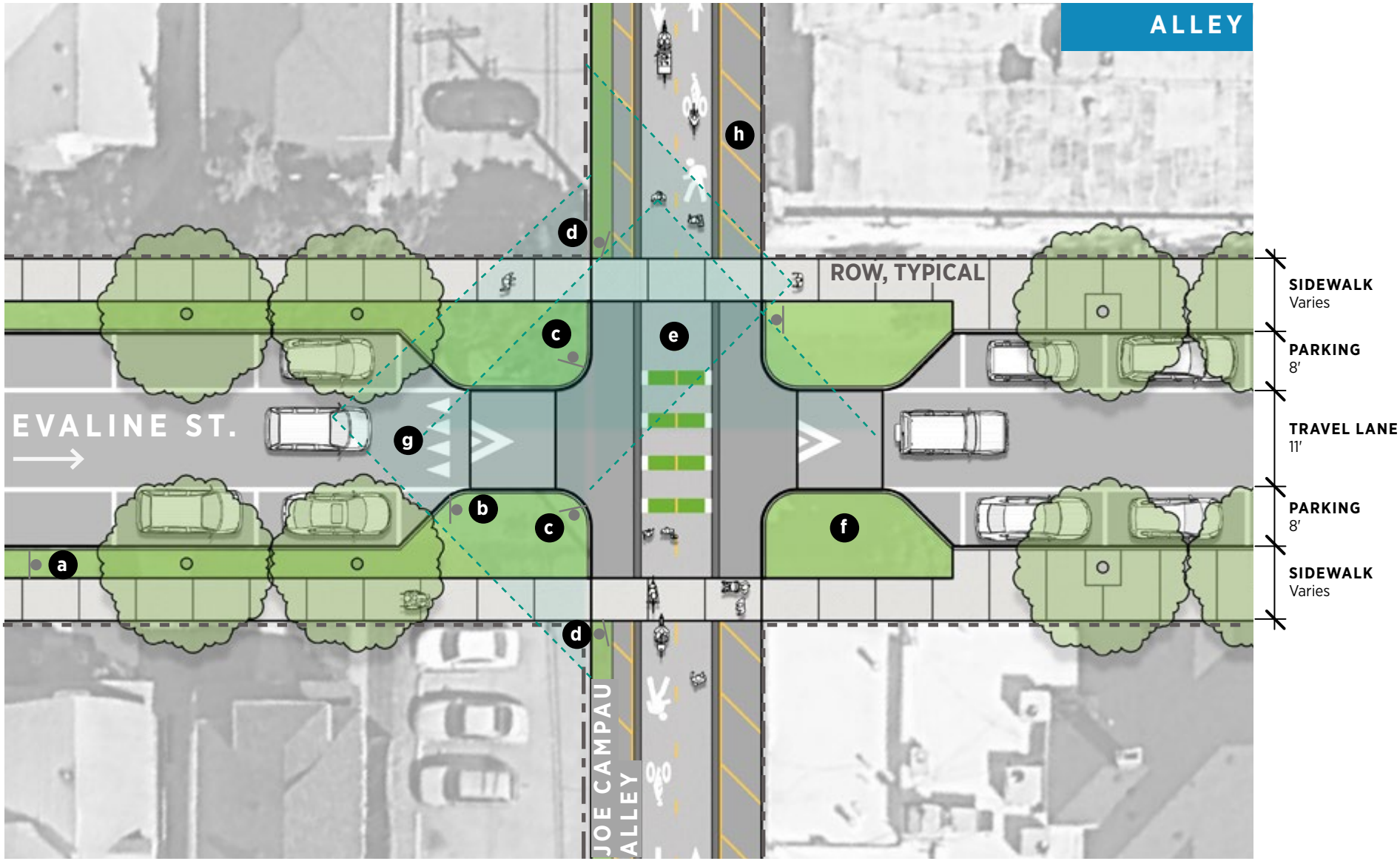
SIGNS AND SIGNALS

Use an R5-11 sign or similar to indicate that alley access is limited to authorized service and loading vehicles only.

Where buildings are set close to sidewalks, signage or mirrors may be needed so pedestrians on the sidewalk are aware of oncoming greenway users.

"ENTRY POINTS LIKE THE EXISTING ONES AT DEQUINDRE CUT AT WILKINS, GRATIOT AND LAFAYETTE COULD BENEFIT GREATLY FROM INSTALLATION OF CONVEX MIRRORS THAT WOULD ALLOW CYCLISTS TO SEE ONCOMING MERGING TRAFFIC (GRATIOT AND LAFAYETTE) OR APPROACHING CROSS TRAFFIC (WILKINS)."

— COMMUNITY RESIDENT



- **a** Sign—W11-15 & W16-9P, Pedestrian and Bike Crossing Ahead
- **b** Sign—modified R1-15, Yield to Pedestrians and Bikes
- **c** Sign—R5-11, Authorized Vehicles Only (or similar)
- **d** Sign—Greenway Crossing with optional mirror
- **e** 12′ shared-use path
- **f** Proposed curb extension, with landscape / stormwater amenity zone, typical
- **g** Yield line to be 20′ to 50′ from midblock crossing
- **h** Service access zone, typical

Clear sightline zone

Scale: 1″ = 20′ – 0″

RAISED CYCLE TRACK INTERSECTION

PROTOTYPE

BAGLEY STREET AT ST. ANNE STREET

This four-way intersection has one travel lane in each direction (or at one-way service drives) and may or may not have parking.

The intersection at Bagley Street and St. Anne Street is stop controlled, but this treatment may also be applied to signalized collectors and arterials.

SAFETY

The cycle track in this example is raised to sidewalk grade to accommodate the narrow right-of-way corridor and higher traffic volumes. Restaurants, businesses and events may cause additional increased traffic.

Bikeway ramps are more comfortable when barely perceptible. Gradual (4–5%) slopes are preferred and may require ramp lengths of 12′ when the curb is 6″ high. Stop lines may be placed at the bottom of gradual ramps. Otherwise they should be placed at the top of the ramp or in the flat roadway if at least 6′ of loading space is available.

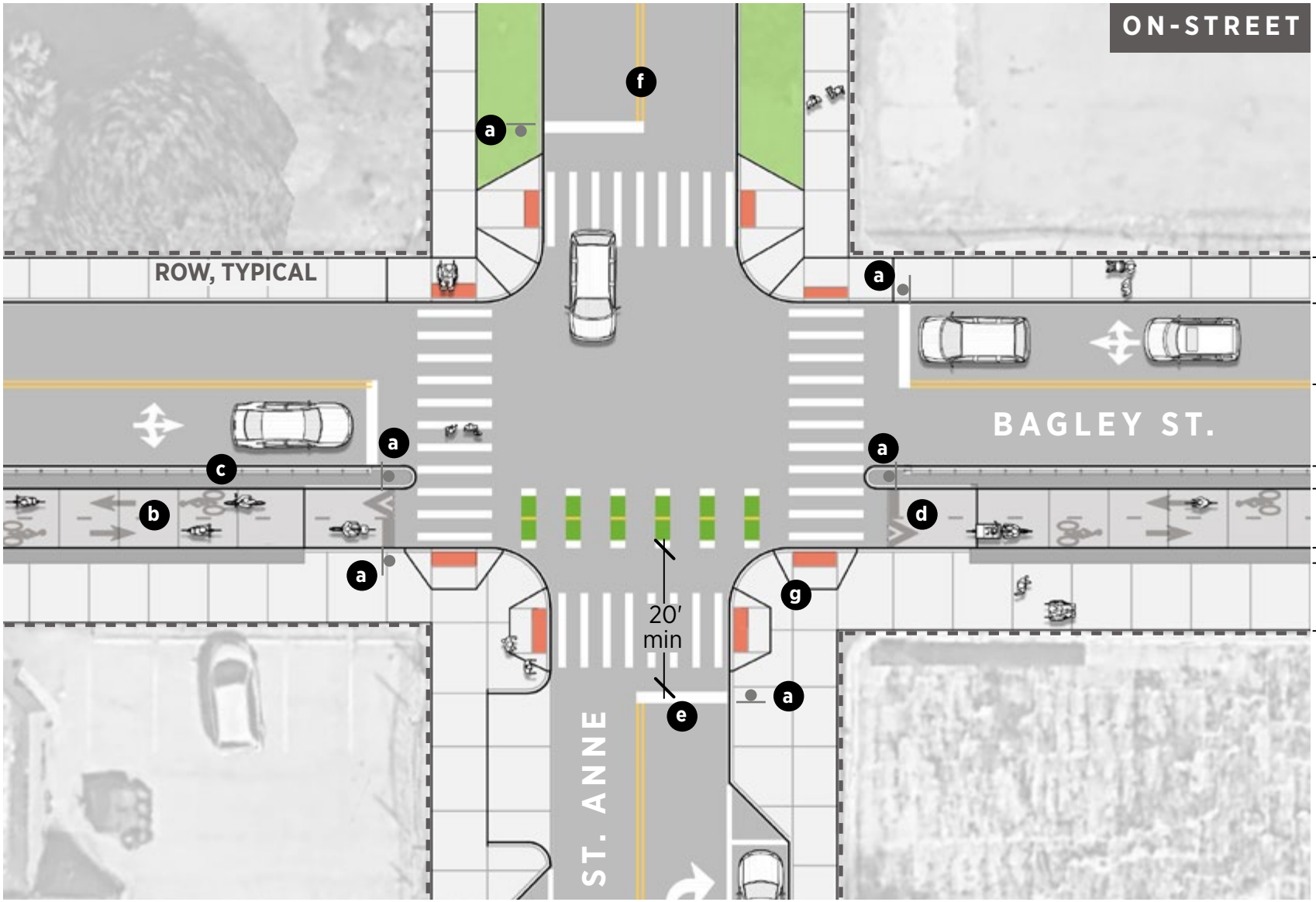
BUFFERS AND BARRIERS

A decorative railing in the narrow buffer between the cycle track and travel lane helps increase separation.

SIGNS AND SIGNALS

Stop signs should be placed on the right sides of both the travel lanes and the bikeway. Bikeway stop signs may be a smaller size than the roadway standard.

If signalized, add a W10-11A or similar “No Turn on Red” sign for approaches that cross bike lanes. Consider a separate bike signal phase where motor vehicle turning volumes warrant.



a Sign—R1-1, Stop sign. Place in both roadway and bikeway.

b Raised bikeway with clear zones, typical

c Robust buffer such as planters or decorative rail that reflects character of neighborhood, typical

d Ramp to be 4–5% slope. Mark ramp up to raised bikeway, and apply stop line at bottom of ramp for cyclists headed into the intersection, typical.

e Mark stop lines at all corners, typical

- Position with or slightly before stop signs while maintaining at least 4′ of distance from crosswalks and 20′ from bike crossings.

f Mark centerlines on all side street approaches, typical. Extend them back at least 150′ per City standards.

g Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 20′ – 0″

ON-STREET CYCLE TRACK CROSSING

PROTOTYPE

LONYO STREET AT MCGRAW AVENUE

This treatment is typical of many signalized intersections on collectors and minor arterials along the greenway. Two-way bike traffic requires extra protection from unsuspecting drivers.

BUFFERS AND BARRIERS

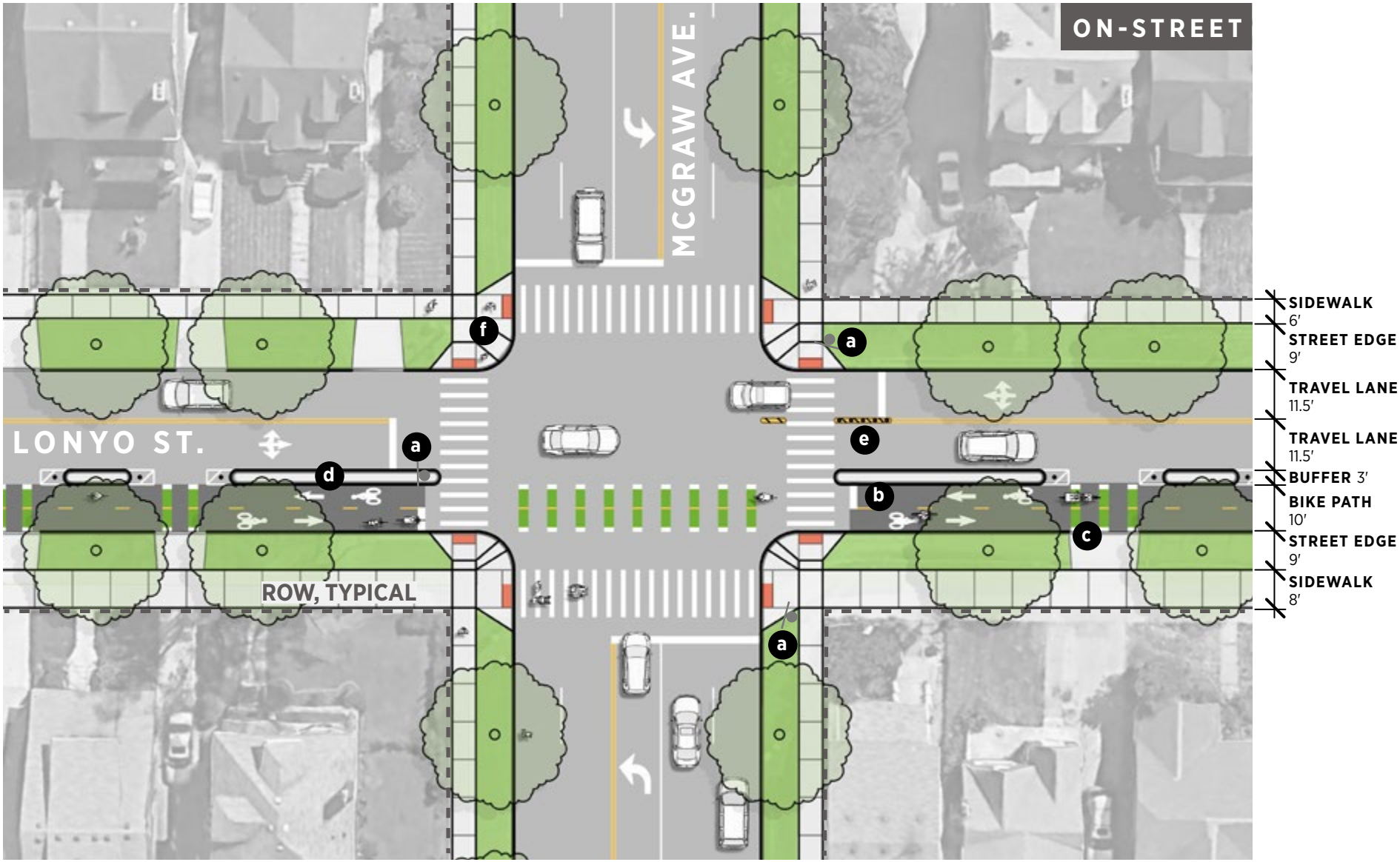
Add a rubber-hardened centerline with bollards to ensure sufficient clearance by left-turning vehicles.

SIGNS AND SIGNALS

Place W10-11A or similar “No turn on red” (NTOR) signs for eastbound traffic on McGraw and southbound traffic on Lonyo. NTOR signs should be placed near and/or on the far side as needed to ensure drivers can see the sign.

Install bike conflict markings at all residential driveways to provide extra warning of two-way bike traffic for residents.

Analyze intersection to determine if a bike signal is warranted by traffic and turning volumes, speeds and expectations for high volumes of greenway users, among other factors.



a Sign—W10-11A or similar No Turn on Red

b Stop bar within bike lane on intersection approach, typical

c Paint bike conflict markings per City standards at all driveways

d Curb buffer extended to crosswalk

e Hardened-rubber centerline (with bollards behind the crosswalk)

f Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 30′ – 0″

ON-STREET BIKE LANES TO OFF-STREET ADJACENT CYCLE TRACK

PROTOTYPE

FORT STREET AT CAMPBELL STREET

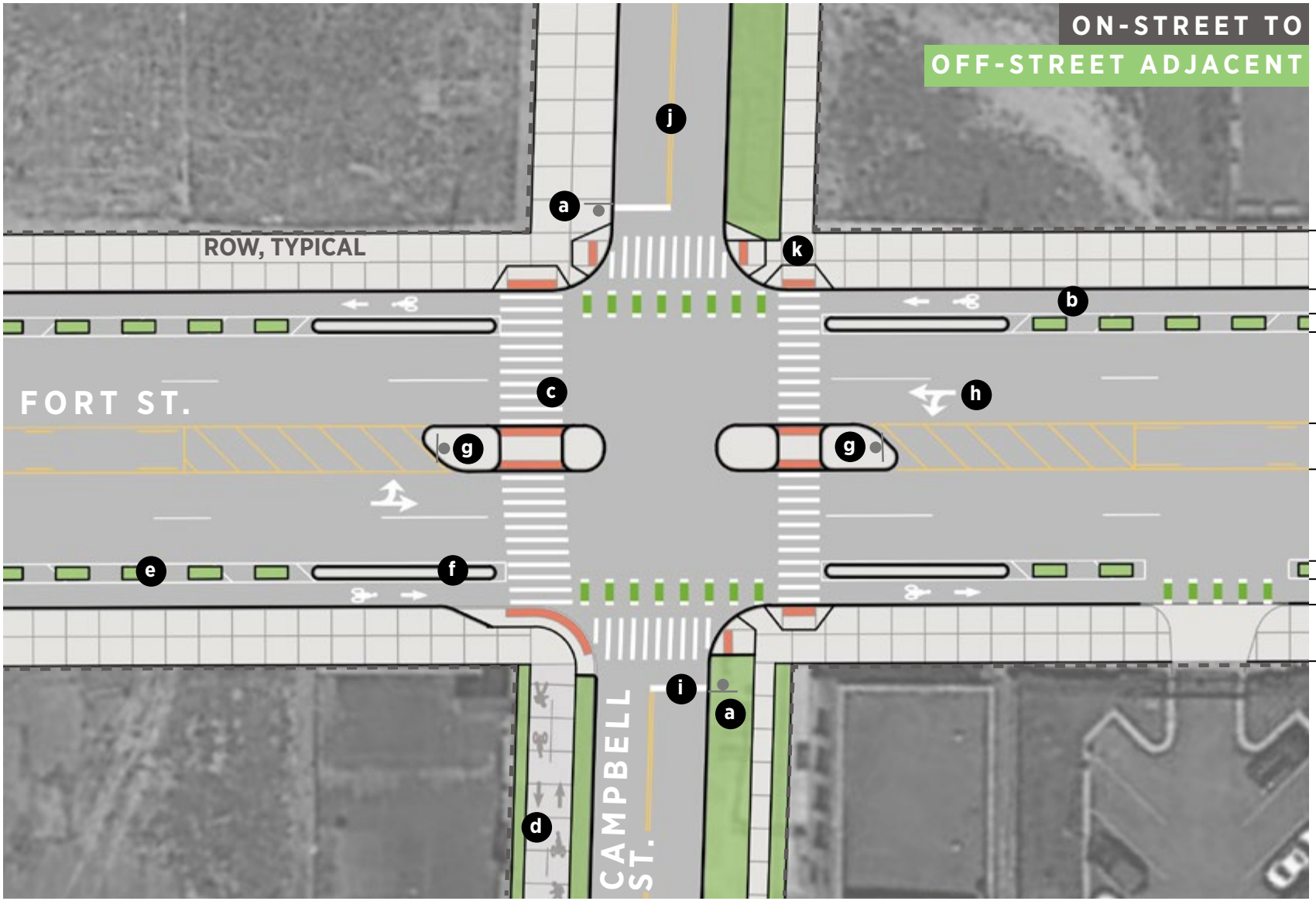
This treatment applies only to the greenway on Fort Street where one-way bike lane pairs are to be installed, and the greenway turns south on Campbell to become a shared-use path.

SIGNS AND SIGNALS

Signage on pedestrian signals should tell cyclists to use pedestrian signal to cross north-south on the greenway. Wayfinding signs would additionally help both cyclists and pedestrians to navigate the turn.

Pedestrian refuge islands are proposed. Additional pavement markings will ensure that drivers are made aware of median curbs and left-turning traffic from alternate lane.

East and westbound bike lanes should be marked through the intersection, but north-south movement to the shared-use path will use crosswalk markings only to avoid conflict between users.



- **a** Sign—R1-1, Stop
- **b** 6′ one-way bike lane, typical
- **c** 15′ wide mixed pedestrian and bike crossing
- **d** 11′ shared-use path
- **e** Robust buffer such as planters or raised median with vegetation
- **f** Use low buffer only for 50′ to intersection to maintain sightlines between drivers and cyclists
- **g** Install pedestrian refuge islands in center turn lane with R4-7, Keep Right sign and paint that closes the turn lane on approaches
- **h** Provide through and left turn arrow to warn of potential turn movements, typical
- **i** Mark stop lines with stop signs on side streets
- **j** Mark centerlines on all side street approaches, typical. Extend them back at least 150′ per City standards
- **k** Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 20′ – 0″

RAISED TO STREET-GRADE CYCLE TRACK TRANSITION

PROTOTYPE

LONYO STREET AT MICHIGAN AVENUE

This four-way intersection has one or more travel lanes in each direction, dedicated turn lanes and may have parking or bike lanes. Large trucks turn in all directions at this intersection.

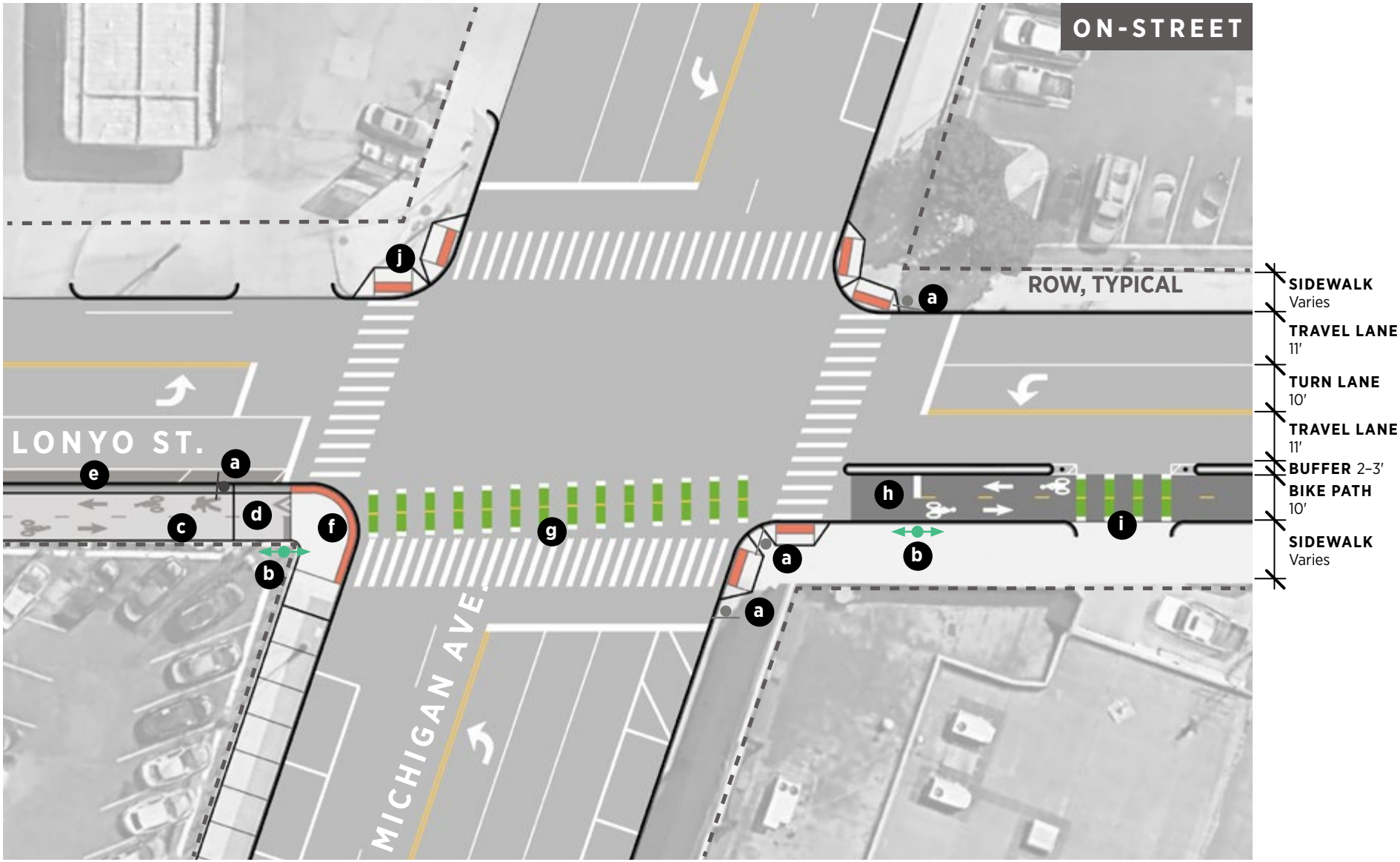
SAFETY

Determine the amount of curb required to be mountable in the bike buffer on the south side of Michigan Avenue. Similarly, use engineering judgment to determine placement of stop lines throughout the intersection.

SIGNS AND SIGNALS

Ensure that pedestrian signals are visible to users, and consider providing a bike signal and separate bike signal phase where motor vehicle turning volumes warrant.

Place W10-11A or similar “No turn on red” (NTOR) signs for eastbound traffic on Michigan Avenue and southbound traffic on Lonyo Street. NTOR signs should be placed near and/or on the far side as needed to ensure drivers can see the sign.



a Sign—W10-11A or similar No Turn on Red

b Bike signal—both near and far side. Far side signal at least to have sign R10-10b, "bike signal."

c 12′ raised shared-use path with clear zone

d Mark ramp up for cyclists and provide stop bar at bottom of ramp w/ gradual (4–5%) slope. Place elsewhere if ramp is steep.

e Rumble strip buffer

f Curb ramp for cyclists and pedestrians

g Provide two-way bike conflict markings when using bike signal

h 10′ road grade bike path buffered by raised curb (mountable near intersection)

i Prohibit current sidewalk parking and mark driveways with bike conflict paint

j Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 30′ – 0″

OFFSET INTERSECTION

PROTOTYPE

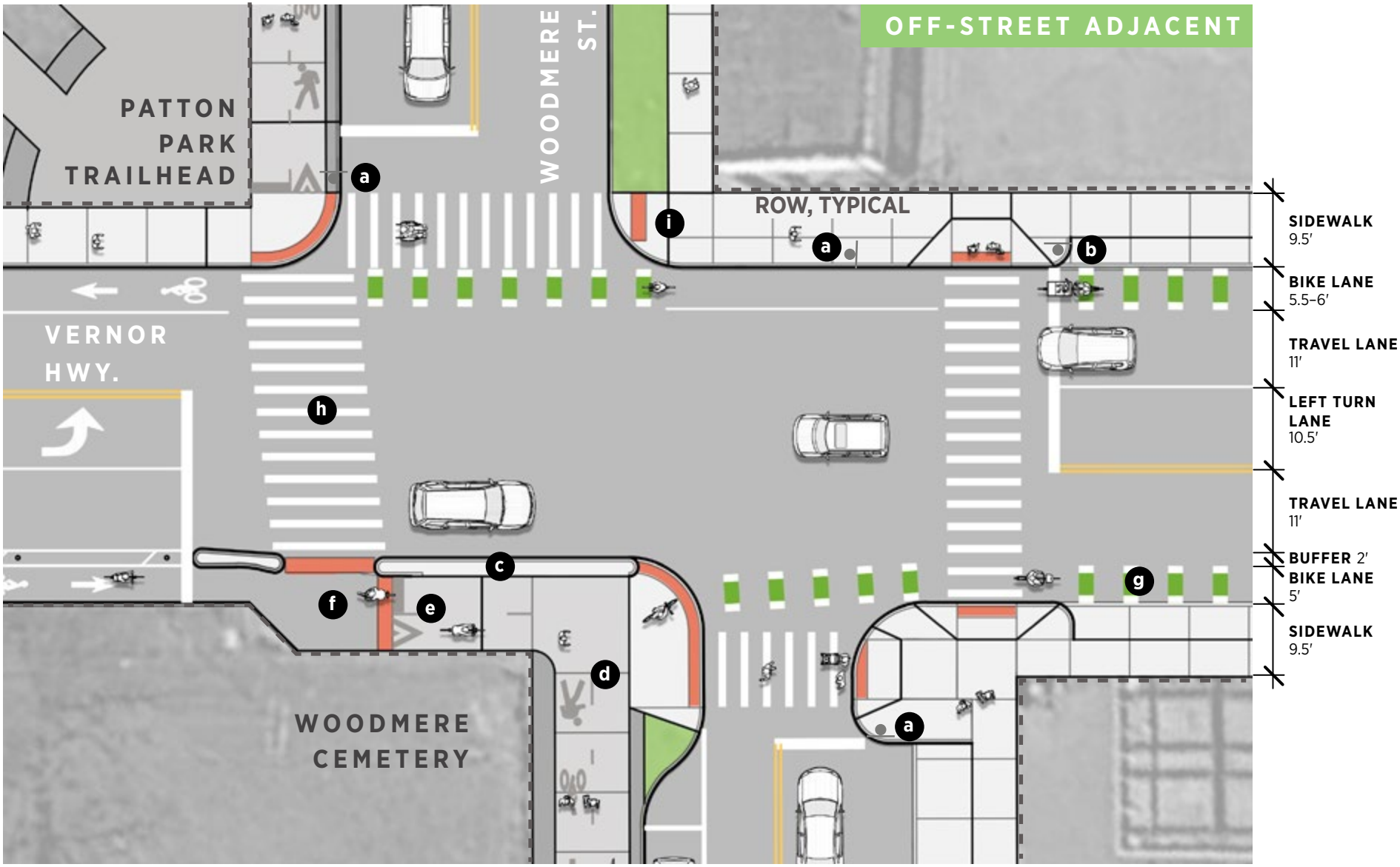
WOODMERE STREET AT VERNOR HIGHWAY

This offset intersection is particularly challenging due to the lack of space on the southwest side. Curb extensions are necessary to increase mixing space and to keep it protected for pedestrians and people on bikes.

Add signage and wayfinding to help people through the intersection. Conduct analysis to determine a vehicular and greenway user signal and signage scheme that clarifies directional movements.

SIGNS AND SIGNALS

At a minimum, place W10-11A or similar “No turn on red” (NTOR) signs for eastbound traffic on Grand River and northbound traffic on Oakman. Consider adding NTOR signs throughout the intersection with new development.



- **a** Sign—W10-11a, No Turn on Red
- **b** Sign—R-14 alt, Yield to Bikes
- **c** Raised concrete buffer
- **d** 15′ shared-use path with clear zones
- **e** Mark ramp up to raised bikeway, and apply stop bar for cyclists headed into the intersection
- **f** Protected area design allows for flow through bike cyclists on Vernor Hwy
- **g** Provide conflict markings per City standards in front of all driveways and across intersections, typical
- **h** Wide crosswalk to skew to for shared-use greenway traffic
- **i** Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 20′ – 0″

INTERSECTION

PROTOTYPE

DIX AVENUE AT LONYO STREET

Dix Avenue intersection at Patton Park

This “T” intersection describes a location where the greenway intersects a cross street and turns to follow that street. Due to its “T” shape, this intersection is much like a midblock crossing. East-to-west motor vehicular traffic does not stop and should be warned of a potentially unexpected crossing.

SAFETY

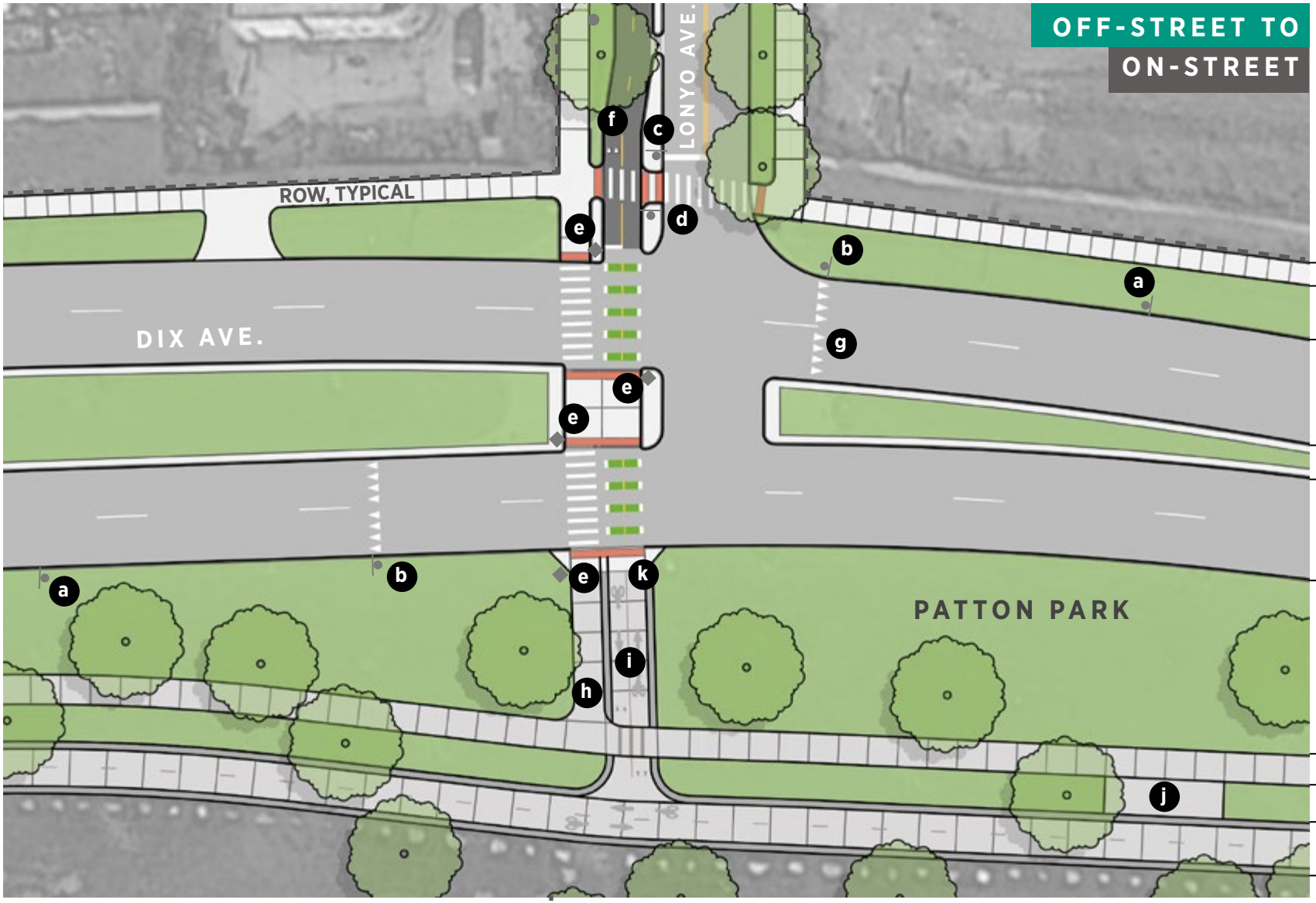
Median and park edge vegetation should be low growing near the crossing to maintain sightlines. Plant trees in locations where driver and greenway user sightlines are not obstructed.

SIGNS AND SIGNALS

Install RRFBs in pairs for both approaches to provide adequate warning to drivers. Install per MMUTCD standards for placement. Add other warning signage as shown on the plan.

Place yield lines within the bike path to let people on bikes know they should yield to pedestrians.

OFF-STREET TO ON-STREET



- **a** Sign—W11-15 & W16-7P, Pedestrian and Bike Crossing Ahead
- **b** Sign—modified R10-15, Yield to Pedestrians and Bikes
- **c** Sign—R1-1, Stop
- **d** Sign—R-14 alt, Yield to Pedestrians and Bikes
- **e** RRFB w/ W11-15 & W16-7P signs
- **f** 10′ bike path w/ 3′ buffer. Mark for bikes to yield to crossing pedestrians.
- **g** Place yield lines 50′ back due to wide road and potential for speeding
- **h** 8′ pedestrian path, typical
- **i** 10′ bike path including clear zones, typical. Mark for cyclists to yield to crossing pedestrians
- **j** Concrete seating / amenity area within landscape zone
- **k** Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 40′ – 0″

"T"-INTERSECTION

PROTOTYPE

WOODMERE STREET AT CHAMBERLAIN STREET

This describes a "T"-Intersection (where greenway passes an intersecting street and continues) a "Y"-Intersection and acute angle intersections.

This treatment will apply to neighborhood and local collector streets. This example shows a "T" configuration, but the same treatments may apply to four-way intersections. Chamberlain Street, like other streets in the area, is used for drag racing.

SAFETY

Provide curb extensions that shorten the pedestrian crossing distance across the intersection.

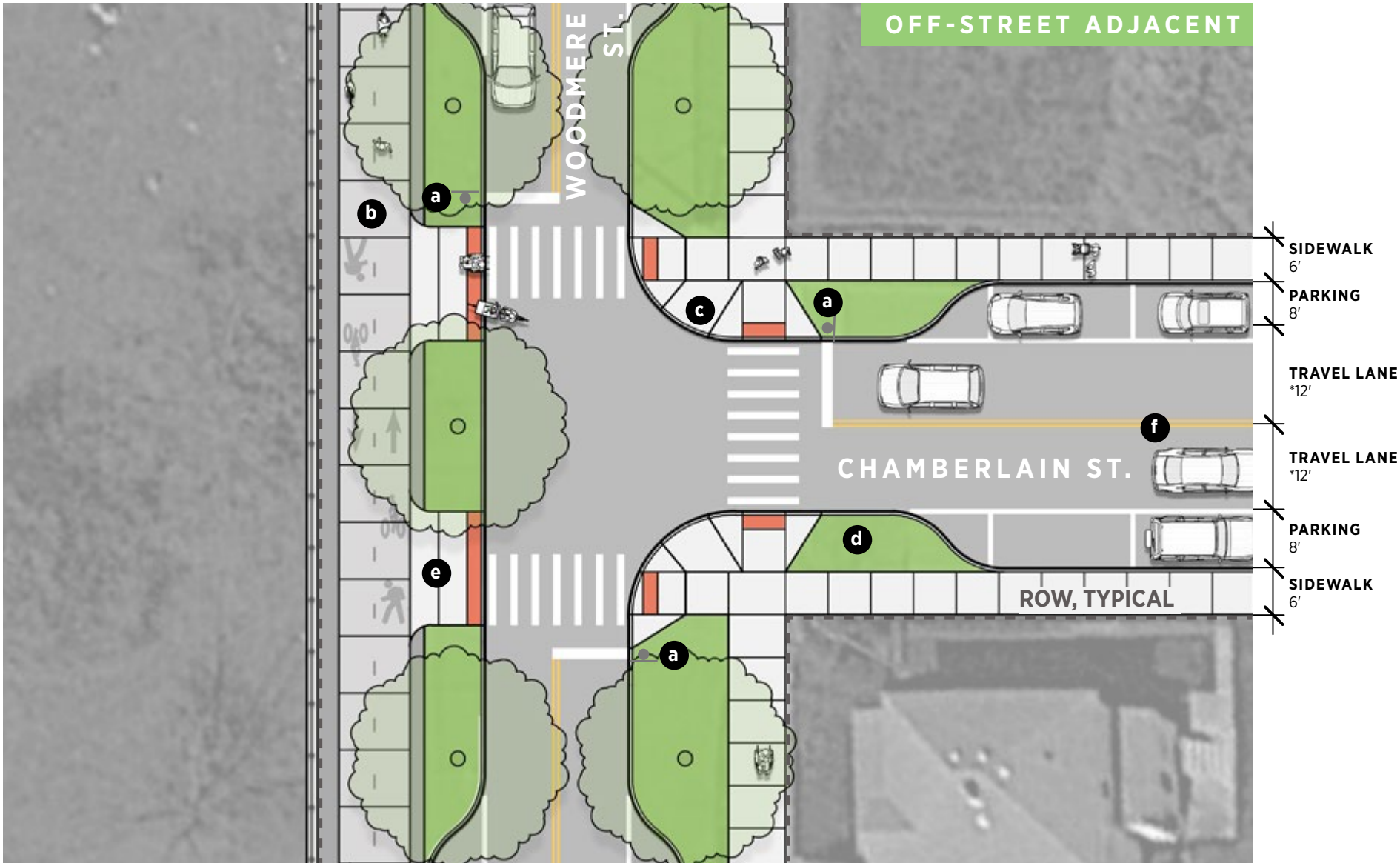
Provide receiving ramps to the greenway that are wide enough for bikes to enter alongside pedestrians. Offset these entries so they align with curb extensions while not conflicting with westbound vehicular traffic.

VEHICLE SPEEDS

Consider adding speed humps along neighborhood streets per City of Detroit standards.

SIGNS AND SIGNALS

Use R1-1 Stop sign at intersections.



a Sign—R1-1, Stop

b 15′ shared-use path including clear zones, typical

c Curb extension the width of the parking lane, typical

d Landscape / stormwater / amenity zone, typical. Keep vegetation low-growing near intersection to maintain sightlines.

e Provide ramps to greenway wide enough to receive both pedestrians and people on bikes

f Mark centerlines on all side street approaches, typical. Extend them back at least 150′ per City standards.

g Ensure all intersection corners meet PROWAG standards for accessibility, typical

Scale: 1″ = 20′ – 0″

RAILROAD CROSSINGS

Twelve crossings of existing railroad operations are proposed as part of the Joe Louis Greenway.

Eleven of these are associated with existing crossings of several different railroads on city streets. There is one new crossing of the CN Railroad west of I-75 and south of McNichols Road. The Michigan Department of Transportation (MDOT) has regulatory responsibilities to assess the physical and safety needs of public crossings and to coordinate rail crossing safety improvements in the state. In order to determine the scale of safety improvements, the project team met with representatives of the MDOT Office of Rail for a desktop review of each of the existing street crossings. A meeting in the field was completed with MDOT and representatives of the CN Railroad to assess the proposed new crossing.

MDOT uses the New Hampshire Hazard Index to complete a risk assessment of public crossings and to determine the level of safety improvements required. This includes factors such as the number of trains per day and train speed. Sidewalks do not typically require warning devices except for truncated domes. Non-motorized trails are designated differently from sidewalks and require compliance with the Manual on Uniform Traffic Control Devices (MUTCD). Generally, MDOT prefers mazes at all trail crossings unless the trail is in the road with active bidirectional warning devices. Mazes provide offset barriers that require users to slow down or even dismount in order to navigate the crossing. Depending on the risk assessment, trails separate from the road may require gates connected to track circuits.

As segments of the Joe Louis Greenway with proposed rail crossings advance toward implementation, it will be necessary to coordinate a Diagnostic Study Team Review (DSTR) with MDOT. This is initiated by completing a Notification of Proposed Project Involving a Public Railroad

PROPOSED ON-STREET CROSSINGS

The following crossings are located at existing road and railroad crossings, which are not suited for multimodal transportation:

1. Farnsworth Street (Siding)
2. E. Milwaukee Avenue
3. Oakman Boulevard
4. Lonyo Street #1
5. Lonyo Street #2
6. Lonyo Street #3
7. Dearborn Street #1
8. Dearborn Street #2
9. W. Jefferson Avenue*
10. Campbell Street*
11. W. Grand Boulevard

* W. Jefferson Avenue and Campbell Street fall under the purview of the Gordie Howe International Bridge project

PROPOSED OFF-STREET CROSSING

The following crossing is not associated with any existing roads and will be a completely new crossing:

12. Grand Trunk Western (West of I-75)

PROPOSED ON-STREET CROSSINGS

	NATIONAL INVENTORY #	RAILROAD	STREET	LAT	LONG	TRAINS PER DAY	TRAIN SPEED	NOTES	LOCAL GRADE REVIEW	PREDICTED RAIL SAFETY COMMENTS
1	477242P	CSX	Jefferson Avenue at West Grand Boulevard	42.31257	-83.08018	<1	<25mph	North of Riverside Park, ordered for surface repair but only after new crossing at 24th Street is installed	Consider roadway realignment to consolidate the multiple approaches into a single 90-degree crossing for vehicles and trail users	Low-speed trains; 90-degree angle, cross-buck, stop sign and pavement markings; if sight distance is a concern, mazes may be recommended
2	477255R	CSX	Campbell	42.30646	-83.09622	6	<25mph	West of Junction, Gordie Howe International Bridge Area	Road under MDOT jurisdiction during the Gordie Howe Bridge construction, North/South surface, CSX signals	
3	477266D	CSX/NS/ Delray Connecting	Jefferson Avenue at Zug Island	42.2931	-831286	4	<25mph	Access to Zug Island will require coordination with Delray Connecting Railroad for new south sidewalk	NS surface, CSX track circuit, city traffic (HAWK) signal, Delray Connecting ownership at south curb line	
4	511626R	Conrail	Dearborn Street	42.2931	-83.1286	32	<25mph	Southeast of Woodmere, immediately west of I-75	Delray Tower Controlled	Higher speed trains, maze with cross-buck, stop signs, pavement markings
5	477272G	CSX	Dearborn Street	42.2931277	-83.129646	60	<25mph	Immediately east of Woodmere intersection	Delray Tower Controlled	Skewed crossing with high volume of trains; maze with cross-buck, stop signs, pavement markings
6	511952U	Conrail	Lonyo Street	42.320801	-83.137496	2	<25mph	South of rail viaduct	Scrap metal spur	Low-speed trains; 90-degree angle, cross-buck, stop sign and pavement markings; if sight distance is a concern, mazes may be recommended
7	512363H	Conrail	Lonyo Street	42.320801	-83.137497	24	60mph	North of rail viaduct, immediately south of John Kronk	Four-track main line with Conrail and Amtrak usage	High-volume, high-speed trains; trail off roadway requires maze, trail i roadway will require one-way routing
8	867420B	Conrail	Lonyo Street	42.338902	-83.1511	2	<25mph	Between Brandt and Radcliffe by Kenwall Steel	Conrail spur	Low-speed trains; 90-degree angle, cross-buck, stop sign and pavement markings; if sight distance is a concern, mazes may be recommended
9	234252Y	CSX	Oakman Boulevard	42.3696035	-83.1515315	<1	<25mph	Between Grand River Avenue and Chicago	Active four times per week	
10	284236B	Detroit Connecting	E. Milwaukee Avenue	42.375702	-83.054802	4	<25mph	South and west of E. Grand Boulevard by GM Hamtramck	Consider routing on-way trials within roadway shoulder lane to utilize existing warning devices	To be determined based on trail layout and alignment in or outside of roadway: existing devices if in roadway; cross-buck, stop sign and pavement markings if off-roadway
11	284229R	Detroit Connecting	Farnsworth Street	42.365009	-83047569	4	<25mph	Siding outside of ROW north of Farnsworth	Appears to be locomotive storage/ maintenance area; coordinate with local railroad company after determining type and quantity of operations at this location	New public crossing, skewed crossing, low volume, low-speed trains. Possible maze or stop signs.

Crossing (Form 1425) and submitting it to the Office of Rail. MDOT will coordinate scheduling a meeting with rail safety staff and the owner of the rail to discuss and agree upon necessary safety improvements. All pavement markings and warning and safety devices should comply with the MUTCD and the MDOT Guidelines for Highway-Railroad Grade Crossings.

A summary of the proposed rail crossings and MDOT comments is provided in the following narrative and reference table.

Source: Jan Canty, Unsplash

PROPOSED OFF-STREET CROSSINGS

	NATIONAL INVENTORY #	RAILROAD	STREET	LAT	LONG	TRAINS PER DAY	TRAIN SPEED	NOTES	LOCAL GRADE REVIEW	PREDICTED RAIL SAFETY COMMENTS
A	NEW CROSSING	CANADIAN NATIONAL	--	42.41498	-83.086891	14	40mph	New crossing west of I-75, south of McNichols	Two-track mainline with eight freight and six Amtrak trains per day	At-grade v. culvert below grade to be determined. At grade will require some robust warning and safety devices, track reconstruction and closure of at least one existing at-grade crossing.

ON-STREET RAILROAD CROSSINGS


View looking south

1: JEFFERSON AVENUE AT W. GRAND BLVD.

This is a low-volume (less than one train per day), low-speed crossing. CSX is working on improvements at this location, which will take about two weeks to complete and will require complete closure. It is recommended that the City work with Parks, CSX and MDOT to reconfigure the road south of the tracks ideally to a single, two-way, 90-degree crossing for vehicles and trail users.


View looking south

2: CAMPBELL STREET

A DSTR was completed at this low-speed location as part of the Gordie Howe International Bridge (GHIB) project, although it is unclear if the Joe Louis Greenway was included in that evaluation. If the trail is not using existing warning devices, mazes may be required.


View looking west

3: WEST JEFFERSON AVENUE AT ZUG ISLAND

A DSTR was completed at this low-volume, low-speed location, but not all parties participated. Currently, there is a HAWK signal that is tied to the track circuit; there are no gates. MDOT would prefer to have a traffic signal at this location.


View looking west


View looking west

4: DEARBORN STREET

There are two crossings in this location, one immediately west of I-75, with high speed trains and the other just south of Woodmere Street both with high train traffic. Train operations at both locations are controlled by the Delray Tower located south of Dearborn Street across from the Woodmere intersection. The trail is on the north side of the street and will most likely require mazes on all sides. Gates may not be required due to proximity to road signals.


View looking north

5: LONYO STREET (SOUTH OF RAIL VIADUCTS)

This crossing is associated with a scrap metal spur and has very low traffic. Introducing a bike lane may require a pedestrian gate. The viaducts to the north are pinch points. Consider shifting the bike lanes to back-of-curb and extending through the viaducts, adding delineators to guide users.


View looking north

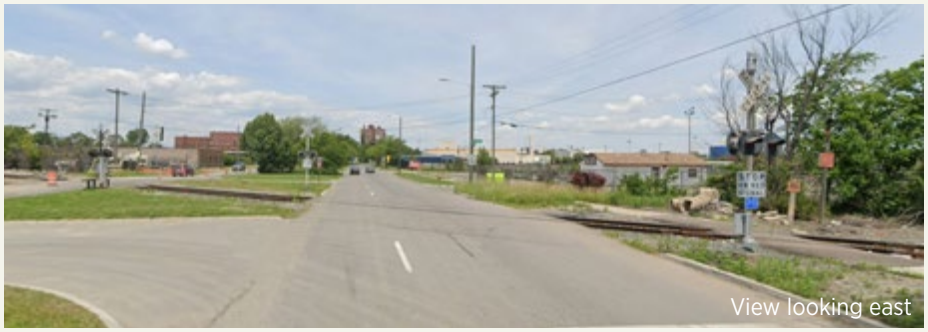
6: LONYO STREET (NORTH OF RAIL VIADUCTS)

There are four tracks in this location, which experiences a high volume of trains at high speed. In addition to Conrail freight this is also an Amtrak passenger corridor. At a minimum, mazes would be required. Due to the proximity to the intersection, mazes may be difficult to place at John Kronk. Gates may be required here.


View looking north

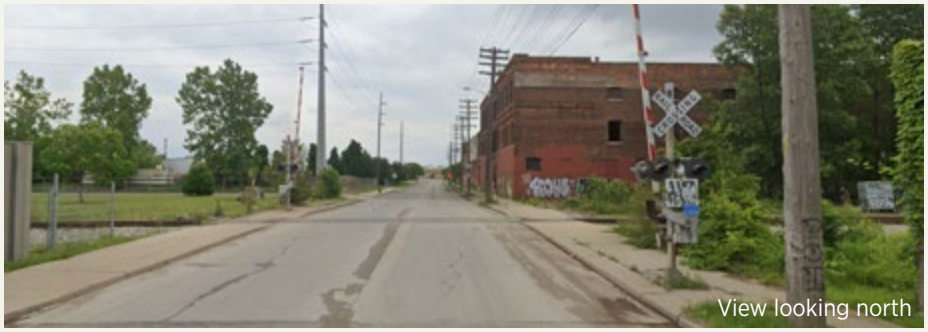
8: LONYO STREET (BETWEEN BRANDT AND RADCLIFFE)

This is a spur to the adjacent Kenwal Steel Corporation. Due to the low-speed, low-volume conditions, mazes may not be required—although it may be desirable to consider them for the sake of consistency across the greenway.


View looking east

9: OAKMAN BOULEVARD BETWEEN GRAND RIVER AND CHICAGO

The greenway off-street adjacent at this low-speed, low-volume crossing. Mazes are recommended in both directions with closure of the adjacent vehicle crossovers.


View looking north

10: EAST MILWAUKEE AVENUE

Mazes are recommended at this low-volume, low-speed crossing. Consider consolidating the sidewalk into a non-motorized trail on the south side of the street or shifting to bike lanes in the street, utilizing the existing signals for this short segment.


View looking north

11: FARNSWORTH STREET

The greenway is in the rail corridor at this location. This is a crossing of a siding that is outside of the right-of-way north of Farnsworth and would be considered a new public crossing. Details will need to be coordinated with the rail company.

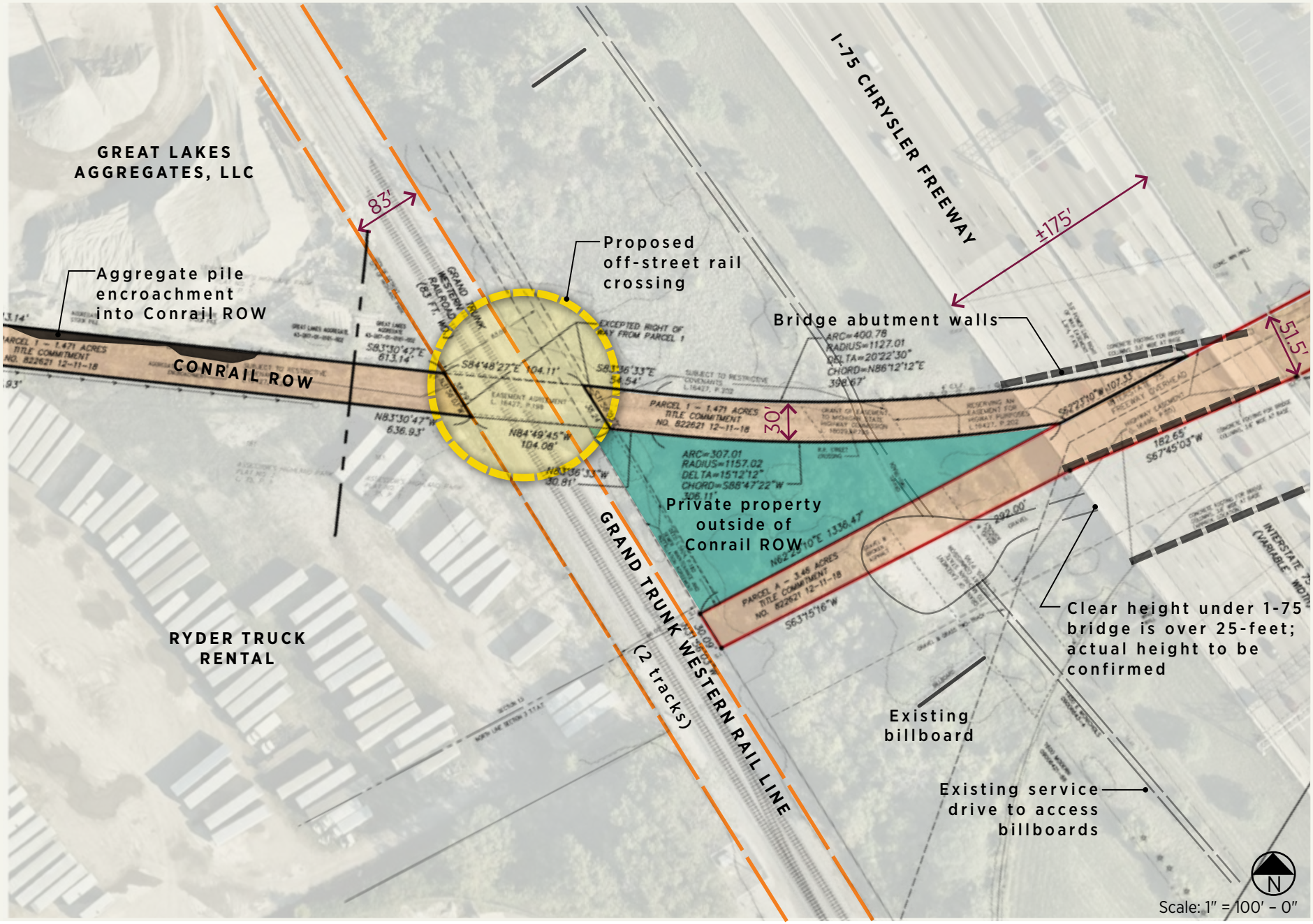
OFF-STREET RAILROAD CROSSINGS

A: WEST OF I-75, SOUTH OF MCNICHOLS ROAD

This is a new crossing of an existing two-track rail operation that serves both Amtrak and CN freight. There was formerly a rail crossing in this location; it has been removed. It has not been determined if this will be an at-grade or grade-separated (tunnel) crossing. An at-grade crossing is a possibility but will require robust warning/safety devices, track reconstruction and closure of at least one other existing at-grade crossing.

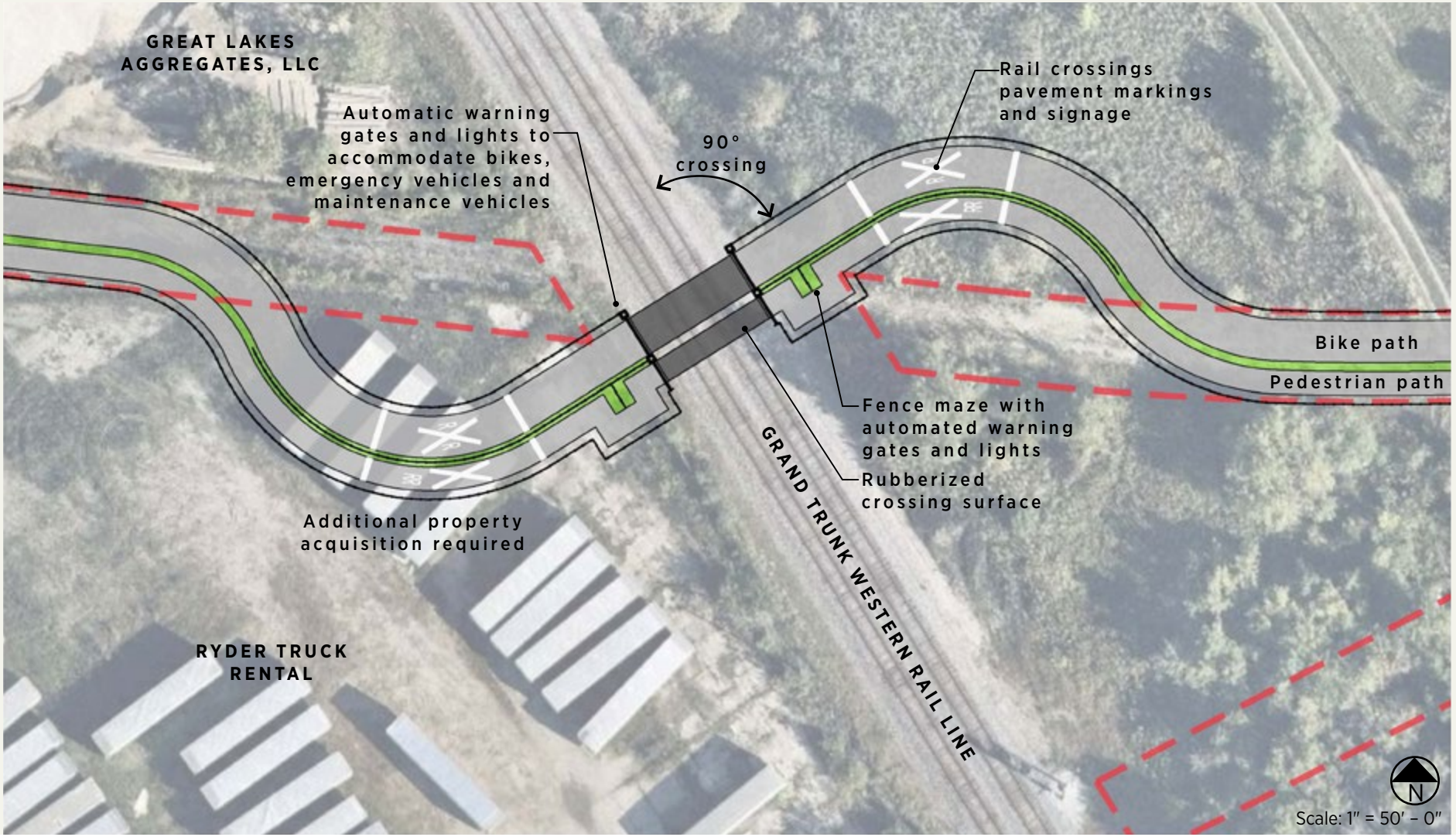
The Joe Louis Greenway is in the rail corridor from East Milwaukee to Mack where it joins with the existing Dequindre Cut Greenway. The trail will need to be outside the dynamic envelop (6′ from edge of rail). Details will need to be coordinated with the rail company. Sidelights could be added to the existing flashers. Supplemental signage and robust pavement markings are recommended in the crossing streets to warn motorists of bicycle traffic.

OFF-STREET RAILROAD CROSSINGS

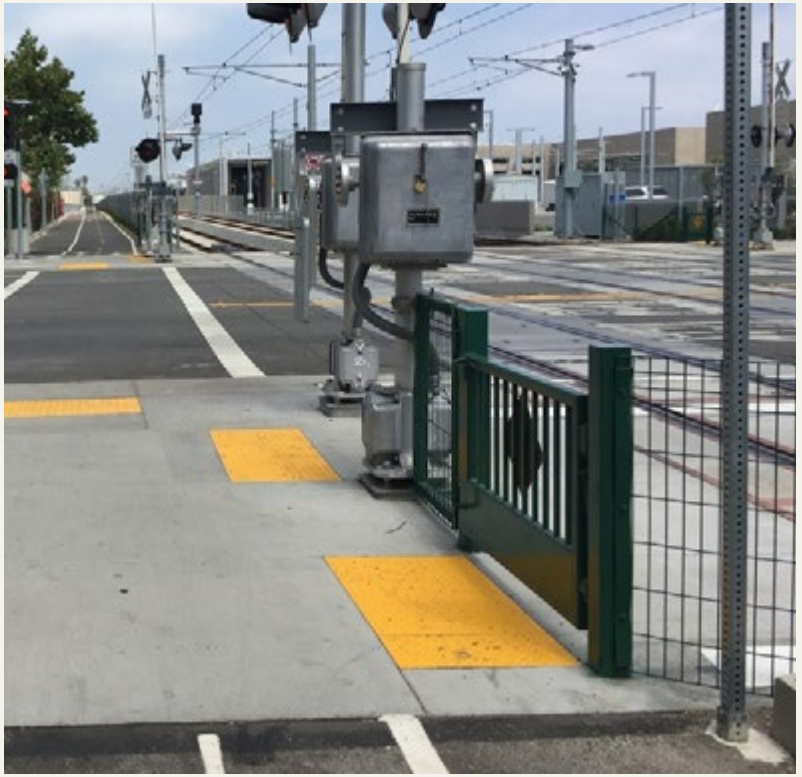

GREAT LAKES AGGREGATES, LLC
I-75 CHRYSLER FREEWAY
83'
±175'
Proposed off-street rail crossing
Aggregate pile encroachment into Conrail ROW
Bridge abutment walls
51.5'
CONRAIL ROW
GRAND TRUNK WESTERN RAILROAD (83 FT. WD.)
S84°48'27"E 104.11'
S83°30'47"E 613.14'
N83°30'47"W 636.93'
N84°49'45"W 104.08'
N83°36'33"W 30.81'
S83°36'33"E 54.54'
EXCEPTED RIGHT OF WAY FROM PARCEL 1
PARCEL 1 – 1.471 ACRES TITLE COMMITMENT NO. 822621 12-11-18
30'
ARC=400.78
RADIUS=1127.01
DELTA=20°22'30"
CHORD=N86°12'12"E
398.67'
ARC=307.01
RADIUS=1157.02
DELTA=15°12'12"
CHORD=S88°47'22"W
306.11'
Private property outside of Conrail ROW
N82°24'10"E 1336.47'
292.00'
PARCEL A – 3.46 ACRES TITLE COMMITMENT NO. 822621 12-11-18
S63°15'16"W
182.65'
S67°45'03"W
INTERSTATE 75 FREEWAY OVERHEAD
INTERSTATE 75 (VARIABLE WIDTH)
RYDER TRUCK RENTAL
GRAND TRUNK WESTERN RAIL LINE
(2 tracks)
Clear height under 1-75 bridge is over 25-feet; actual height to be confirmed
Existing billboard
Existing service drive to access billboards
N
Scale: 1" = 100' – 0"

AT-GRADE RAIL CROSSING OPTION

An at-grade crossing that is located at the current rail line grade elevation offers one option for the off-street rail crossing. The at-grade crossing will require a series of robust crossing improvements and safety devices in order to mitigate potential conflicts between trail users and train traffic.



EXAMPLE AT-GRADE RAIL CROSSINGS



Source: Amtrak

AT-GRADE RAIL CROSSING OPTION

CHALLENGES

90 Degree Crossing: An at-grade crossing at this location will require a 90-degree crossing of the railroad tracks. The current Conrail right-of-way alignment is at an approximate 45–50 degree angle in relationship to the rail line. This alignment will create a restricted rail crossing and potentially will require the acquisition of additional property.

Limited Right-of-way Area: The Conrail right-of-way is 30 feet in width on either side of the crossing, restricting the space available for crossing improvements. Maintenance vehicles require a minimum pavement width of 15 feet and emergency vehicles require a minimum pavement width of 20 feet. The crossing angle noted above, required pavement widths and crossing improvement noted below will likely require the acquisition of additional property.

Crossing Improvements: Railroad crossing mazes, composed of a series of fencing, railings and gates, are typically required at all off-street shared-use greenway crossings. Mazes provide offset barriers that require users to slow down or even dismount in order to navigate the crossing in order to increase awareness of the active railroad. Safety exit gates and additional fencing that meet current railroad standards will need to be integrated into the design. The current rail lines are composed of the older spliced rail design that is no longer being installed. The replacement of 6 to 12 sections of spliced rail sections will be required. A rubberized crossing surface, per current railroad standards, will be required to provide a safe crossing surface for pedestrians and bikes.

Automated Warning Devices: Depending on the risk assessment, off-street greenways/trails separate from the road will likely require automated warning lights, crossing control arms and gates connected to the track circuits. The specific requirements and warning devices will need to be determined following more detailed design, engineering and coordination with state and federal rail safety representatives.

Safety and Security: An at-grade railroad crossing presents the opportunity for accidents between rail traffic and pedestrians/bikes. All appropriate and available safety measures should be integrated into the proposed crossing to minimize the potential for accidents and to increase awareness of the active rail line.

Closing of Existing Crossings: The City of Detroit will need to close at least one existing at-grade crossing to allow for a new at-grade crossing (typically on streets with less than 100 ADDT). The closure of two existing at-grade crossings is preferred, although only one is required.

Annual Railroad Maintenance: An annual inspection and maintenance fee—which is currently $2,200 per crossing, annually—will be required. This fee is likely to increase over time and is anticipated to increase to $5,000 within the next year. The repair and replacement of damaged or worn equipment and materials will be required in addition to the annual maintenance fee.

Access: The crossing is located in a relatively remote segment of the greenway and is more than 1400 feet away from the nearest street crossing and access point.

BENEFITS

At-Grade: The crossing at the existing rail line grade elevation maintains clearer visibility from longer distances and does not limit trail users to a below-grade tunnel.

Ramp and Retaining Walls: These do not require significant grade changes, so the need for ramps and retaining wall is eliminated.

Stormwater Management: The at-grade crossing can include stormwater management designs that are consistent with the rest of the greenway and do not require supplemental pumping or other intensive solutions.

Utilities: Underground utilities can remain in place.

CONSTRUCTION

The at-grade crossing will require significant coordination and reviews with rail company representatives and the state and federal rail safety representatives.

The crossing design and approval process is anticipated to require a minimum of a year prior to initiating the construction process.

The timing for construction will be dependent upon the rail companies' rail schedules and will need to completed in an expedited manner to minimize the disruption to rail traffic.

The construction cost would be less than a separated below-grade crossing, however, the cost could be significantly impacted by the required safety measures, automated warning devices and the specific design improvements required at the crossing.

CONSTRUCTION BUDGET: $1,500,000

The budget is based on similar construction components and projects. The approximate order-of-magnitude construction cost may vary significantly and will be dependent on a number of key factors including: the confirmed site conditions (i.e. underground utilities and environmental conditions), rail safety improvement requirements, automated warning devices, quality of materials selected, design style, construction timing, property and right-of-way restrictions and other related unknown conditions and issues. The anticipated construction cost can be refined following completion of a survey, site condition assessment, railroad coordination and more detailed engineering and design.

BRIDGES & VIADUCTS

Bridges offer excellent opportunities to create unique experiences for greenway users—whether they're traveling on or beneath the expanse.

To ensure these experiences are both safe and comfortable, design will address physical protection, lighting and visual quality.

BENEATH BRIDGES AND VIADUCTS

The design will ensure visibility with clear entry and exit points when greenway users pass beneath bridges. Art installations, paint and material finishes on the bridge structure can add color and interest to create a more friendly and engaging environment. Lighting, described in more detail in the lighting section, will address the transition from light to darkness and will fully illuminate individuals as well as travel and bike lanes.

ABOVE BRIDGES

Bridge edges provide opportunities for overlooks and vantage points. Fencing, guardrails and buffer strips will protect greenway users from falling while also shielding passing vehicles from being hit by dropped objects. Access widths will feel neither open nor restricted, and access points will provide clear visibility from each direction. These crossing points over roadways provide a unique opportunity to express the identity of the greenway to passersby through greenway identity elements, art and signage.

Source: SmithGroup

I-96 AND DAVISON CONNECTOR BRIDGES

PROPOSED BRIDGES

Two new bridges will need to be constructed to enable greenway users to safely and efficiently cross Interstate 96 and the I-96 Davison Connector. To ensure an efficient bridge design—and to accommodate the limited space across the entire crossing area—the separated bike and pedestrian paths leading to the bridges will transition to a shared-use path

The high volumes of daily traffic traveling along I-96 and the Davison Connector provide a prime opportunity to highlight the identity of the Joe Louis Greenway on bridges. Designed to be iconic and innovative, the bridges will enhance recognition of the greenway and its important role in the development of non-motorized infrastructure in Detroit.

CONSTRUCTION CHALLENGES

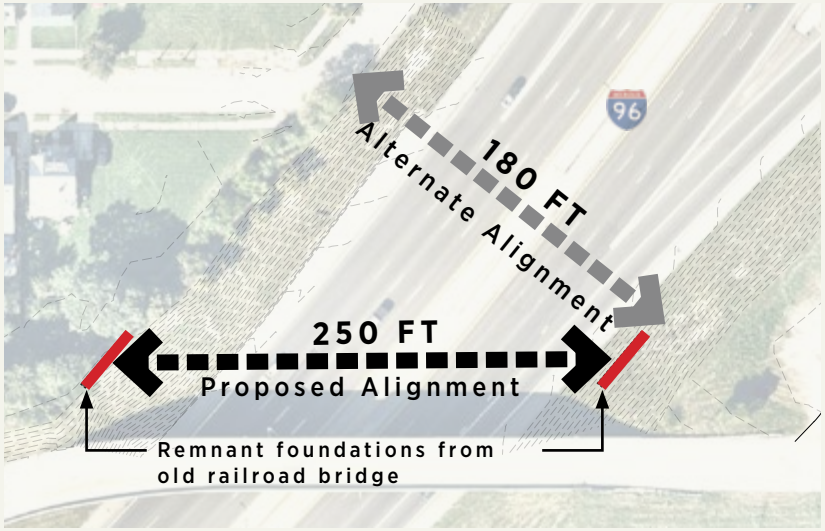
Historically, the Conrail rail lines made this crossing using now-demolished railroad bridges. The Conrail right-of-way is currently owned in fee by the City of Detroit, which enables the construction of the new Joe Louis Greenway bridge crossings. The property, however, is subject to the MDOT highway easement. A portion of the right-of-way between I-96 and the I-96 Davison Connector was sold before the City purchased the Conrail right-of-way and is now used to support a cell tower and billboard. These facilities lie directly in the path of the proposed greenway and complicate the use of the Conrail right-of-way for this crucial crossing.

To address this challenge, the City of Detroit should coordinate with the State of Michigan, Federal Highway Safety Administration and existing land owners to resolve land ownership issues, such as: obtaining a new easement across a portion of the privately held parcel for alignment purposes; obtaining a new easement through limited access MDOT and federal highway rights-of-way; and maintaining service access and parking for the cell tower and billboard.

Additionally, public safety concerns, such as controlling access to the interstate right-of-way and providing a defensible space, will need to be integrated into the design to ensure a safe, comfortable and enjoyable crossing.

ANGLE OF CROSSING

Though the proposed span for the bridge is longer than the alternative perpendicular crossing, overall costs for bridge construction are reduced by using the remnant foundations from the old railroad bridge which spanned the interstate. The proposed alignment will also reduce disruption to I-96 during construction, resulting in a more efficient and cost-effective construction process.



GENERAL DIMENSIONS & CLEARANCES

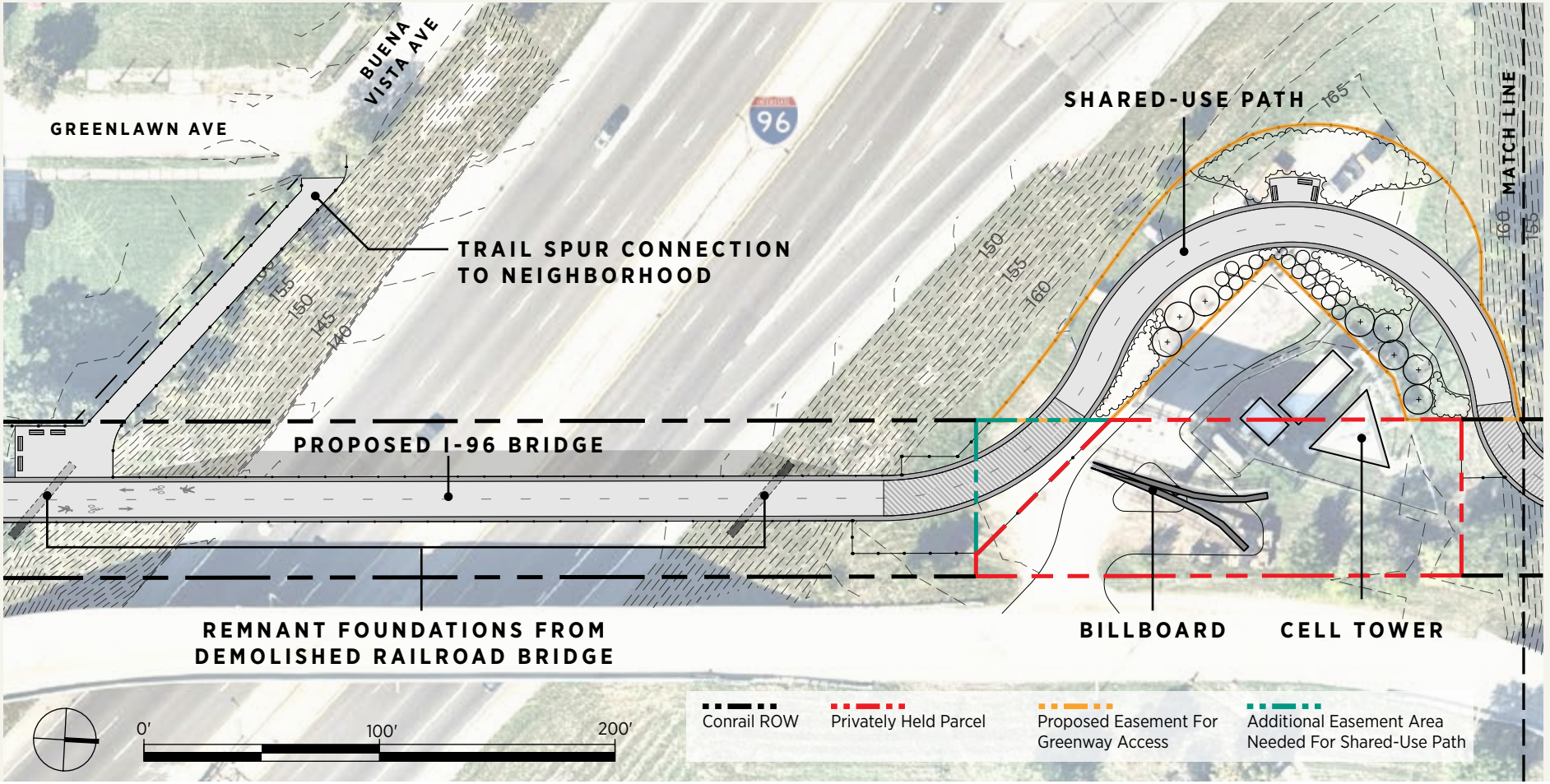
	Length	Width	Under clearance
I-96 Bridge	+/- 250 ft.	18′ – 6″ (min. clear width 15 ft.)	18 ft. min.
Davison Connector	+/- 154 ft.	18′ – 6″ (min. clear width 15 ft.)	18 ft. min.

ANNUAL AVERAGE DAILY TRAFFIC (AADT)

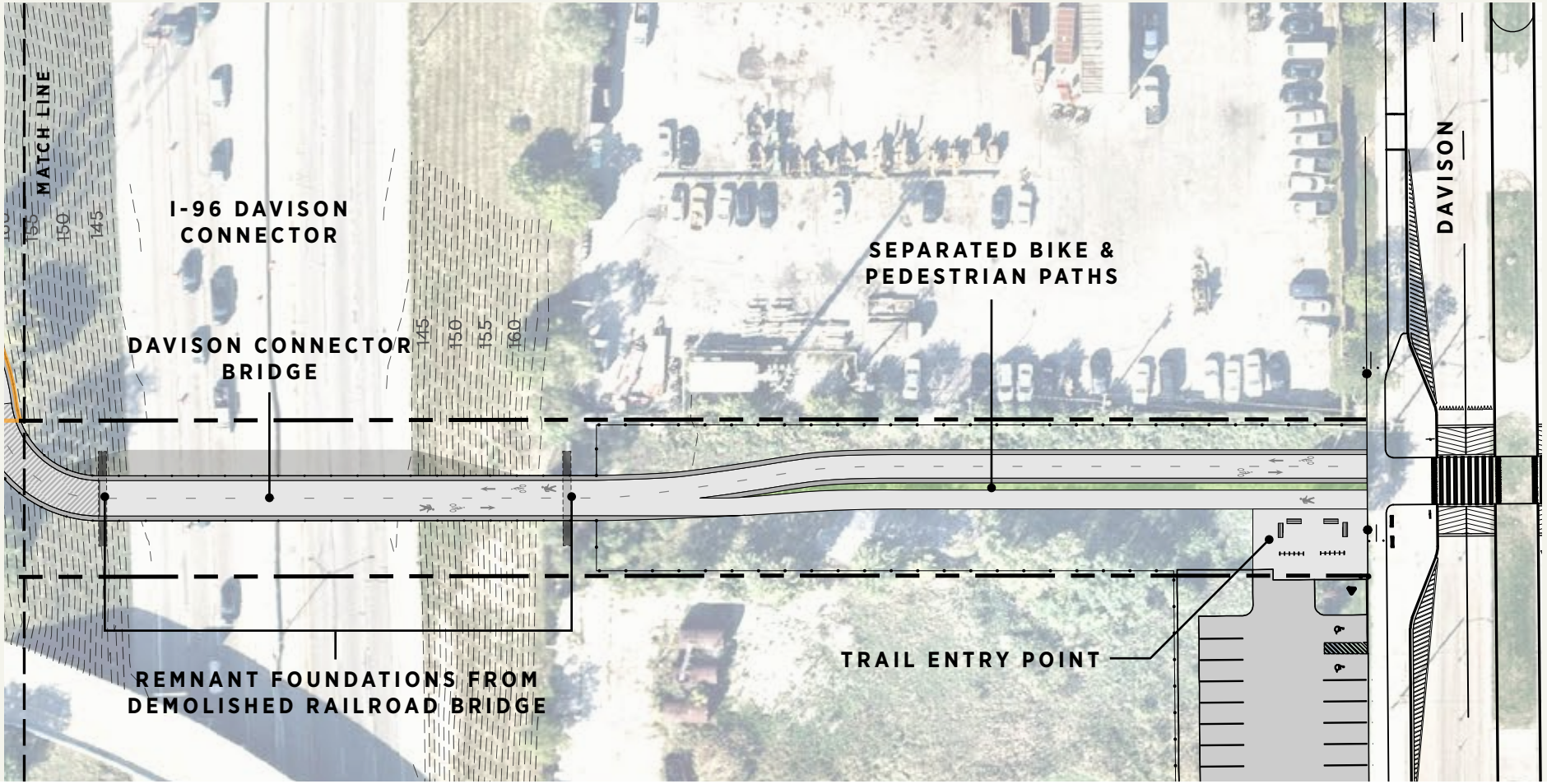
I-96 Eastbound	**46,400**
I-96 Westbound	**40,100**
I-96 Davison Connector Eastbound	**37,700**
I-96 Davison Connector Westbound	**37,700**

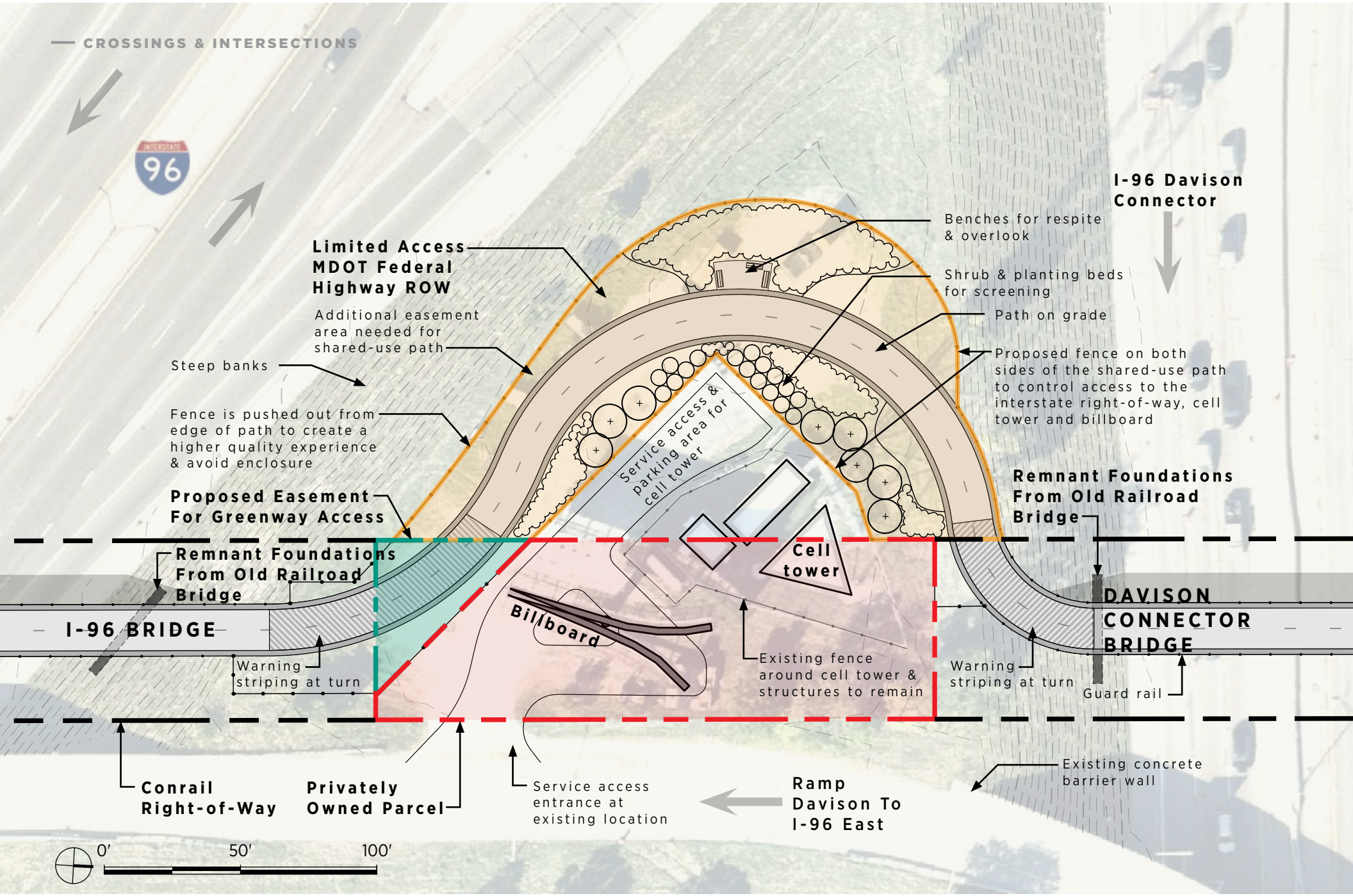
SEMCOG Data

I-96 BRIDGE


BUENA VISTA AVE
GREENLAWN AVE
96
SHARED-USE PATH
165
MATCH LINE
166
165
TRAIL SPUR CONNECTION TO NEIGHBORHOOD
155
150
145
140
150
155
160
PROPOSED I-96 BRIDGE
REMNANT FOUNDATIONS FROM DEMOLISHED RAILROAD BRIDGE
BILLBOARD
CELL TOWER
0′
100′
200′
Conrail ROW
Privately Held Parcel
Proposed Easement For Greenway Access
Additional Easement Area Needed For Shared-Use Path

DAVISON CONNECTOR BRIDGE




I-96 Davison Connector
Benches for respite & overlook
Shrub & planting beds for screening
Path on grade
Proposed fence on both sides of the shared-use path to control access to the interstate right-of-way, cell tower and billboard
Limited Access MDOT Federal Highway ROW
Additional easement area needed for shared-use path
Steep banks
Fence is pushed out from edge of path to create a higher quality experience & avoid enclosure
Proposed Easement For Greenway Access
Service access & parking area for cell tower
Remnant Foundations From Old Railroad Bridge
Remnant Foundations From Old Railroad Bridge
Cell tower
I-96 BRIDGE
Billboard
DAVISON CONNECTOR BRIDGE
Warning striping at turn
Existing fence around cell tower & structures to remain
Warning striping at turn
Guard rail
Conrail Right-of-Way
Privately Owned Parcel
Service access entrance at existing location
Ramp Davison To I-96 East
Existing concrete barrier wall
0′
50′
100′

PERMITTING & APPROVALS

Engineering and design for construction of the new bridges will need to be coordinated with state and federal permitting requirements.

For detailed permitting and approval information, refer to the Permitting and Approvals section in the final chapter of this document. The bridge will be owned, operated and maintained by the City of Detroit. Specific permitting and approval will need to be coordinated with MDOT, local agencies and bridge groups.

STATE PERMITTING AND APPROVALS

Permit applications for the construction of structures—such as pedestrian bridges, grade separations, tunnels or any other item that results in a structure over or under the State highway right-of-way—require a design review from the Michigan Department of Transportation (MDOT).

Applicants must submit an individual construction permit application package through Construction Permit System (CPS) with the following attachments:

- A copy of the engineer's structural design calculations.
- Plans certified by a registered professional engineer.
- Other items as required to make a structural review such as a Geotechnical Report or structural details.

Additionally, the following Special Conditions for Structures over State Highways apply:

- The permit applicant shall defend, indemnify and hold harmless the Michigan Department of Transportation (MDOT) for any claims whatsoever resulting from the construction, maintenance, or removal of the structure authorized by this permit, from any claims for injuries to or death of any and all persons, for the loss or damage of property and from environmental damage degradation, response and cleanup costs resulting from the construction or presence of the structure authorized by this permit.
- A right-of-way airspace lease agreement shall be required by MDOT prior to the placement of the structure over the state trunkline right-of-way.
- All structures serving the public within state trunkline right-of-way shall comply with the Americans with Disability Act of 1992.
- The clear height of the structure's under-clearance above the traveled roadway and road shoulders shall meet a minimum under-clearance distance of 18 feet.
- An approved permit shall be required prior to the erection of any part of the structure.

FEDERAL PERMITTING & APPROVALS

The specific requirements for the review, approval and permitting by the Federal Highway Administration (FHWA) will need to be confirmed as part of the initial planning and design for the I-96 non-motorized bridge crossings. FHWA oversight and review is anticipated to be a requirement along with an application for a categorical exclusion for NEPA compliance.

Source: James Brown

3

FURNISHINGS & AMENITIES

FURNISHINGS & AMENITIES

Amenities and furnishings enhance the experience of the Joe Louis Greenway. They help define the spaces for activities along the greenway, from the passive and restorative to the active and social. They provide protection from the rain and sun. They give us places to sit—to chat with a few friends, to share a snack with our child, to tie our shoes or just to catch our breath on a long run. These elements provide the backdrop for our stories.

The functional and supportive purposes of these features are important to the elderly, those with limited mobility, adults with small children and other greenway users.

The selection, placement and inclusion of quality site amenities and furnishings helps define the greenway's character and sense of identity.

APPROACH

The range of distinct neighborhoods and variety of major destinations along the Joe Louis Greenway will provide a unique blend of cultural vibrancy and aesthetic experience. The selection of standard site elements and furnishings along the route will knit together a distinct and authentic experiential tapestry that will be cohesive, but not uniform.

Dequindre Cut, Detroit

Photo: SmithGroup

Site furnishings and amenities will be distributed along the Joe Louis Greenway to provide a level of consistency across the unique and varied neighborhoods and land uses.

Multiple options for some of the furnishings have been identified to accommodate specific site conditions and needs. Recommendations for where the specific elements would be located have been identified for each item to address the needs of the greenway users.

GUIDING PRINCIPLES

The following guiding principles were used to select the recommended site amenities and furnishings:

1. CONTEXTUALLY CONSCIOUS

Detroit's vibrant neighborhoods and communities reflect a deep wealth of cultural, historical and social qualities. These contextual aspects shift along the greenway, and should be reflected through the greenway amenities and site furnishings.

2. UNIVERSAL STYLE & CHARACTER

The style and character of specific features should be timeless and not reflect short-term fads and fleeting style trends. Site furnishings provide an opportunity to integrate the Joe Louis Greenway branding and identity.

3. DURABILITY & PERFORMANCE

When it comes to selecting and designing site furnishings and amenities, their durability and use should be taken into account. How frequently will the features be used, and what are the requirements for long-term use? What kind of maintenance will be required to ensure their performance and life—and with what frequency and intensity? Consider the effects of weather, such as sunlight, contraction from cold and heat expansion, rain, snow and wind. And bear in mind both the intended and unintended uses of the furnishings and amenities. Further, choose materials, construction, hardware, mounting and other features that minimize opportunities for being burned, carved, painted with graffiti, or otherwise abused.

4. USER COMFORT

To ensure the comfort of greenway users, consider the anticipated use of furnishings and amenities—as well as the length of use. Plaza and park-like spaces should be designed with longer periods of use in mind, while other areas—such as those adjacent to bus stops—can be designed for shorter periods of use. The level of firmness of materials should take into account, while armrests, back supports, natural ergonomic forms and other applicable features should be provided where appropriate.

5. SAFETY & SECURITY

Site furnishings should be composed of safe materials and designed to prevent injury—without sharp edges or exposed hardware. Paint and finishing materials should be non-toxic and non-staining. Construction and hardware should be vandal resistant and installed in a way that minimizes opportunities for theft.

6. FLEXIBILITY & VERSATILITY

Everyone—regardless of age or ability—should have equal opportunities to enjoy the greenway. To meet the needs of all greenway users, including children, the disabled and the elderly, site furnishings with a high degree of flexibility and versatility should be selected.

7. PLACEMENT, SPACING & QUANTITY

Where elements are placed, how many there are and how far apart—these things all affect the users' experience of the greenway. The function and purpose of each element should be considered in the context of specific site conditions—as this will guide their placement and orientation. As always, the arrangement should take into account visibility, sightlines, lighting and accessibility.

8. COST

When it comes to selecting site amenities, the initial capital cost should be balanced against anticipated life cycle costs and overall project budgets.

SEATING

Comfortable and accessible seating areas welcome users of all ages and abilities.

LOCATION

Locate seating in areas where people would typically want to wait, meet or socialize. Prioritize greenway access points or areas adjacent to high activity, near path intersections, and near play areas or other key desirable destinations.

Seating areas should be provided at regular intervals along the greenway to accommodate the needs of adults with small children, the elderly and individuals with limited abilities. Spacing should take into consideration site conditions, and distance between seating should not exceed 1,000 feet where possible. In areas that promote gathering or with steep hills or restricted sightlines, distance between seating should be decreased—while flat, open and clear areas may have seating that is further apart.

Seating areas should be oriented to accommodate conversations while also providing opportunities for respite.

As appropriate, seating options should provide protection from wind, rain and the sun. Benches should be offset from the shared-use path by a minimum of two feet. Accommodations for wheelchair users, such as companion seating areas, should be integrated into seating design.

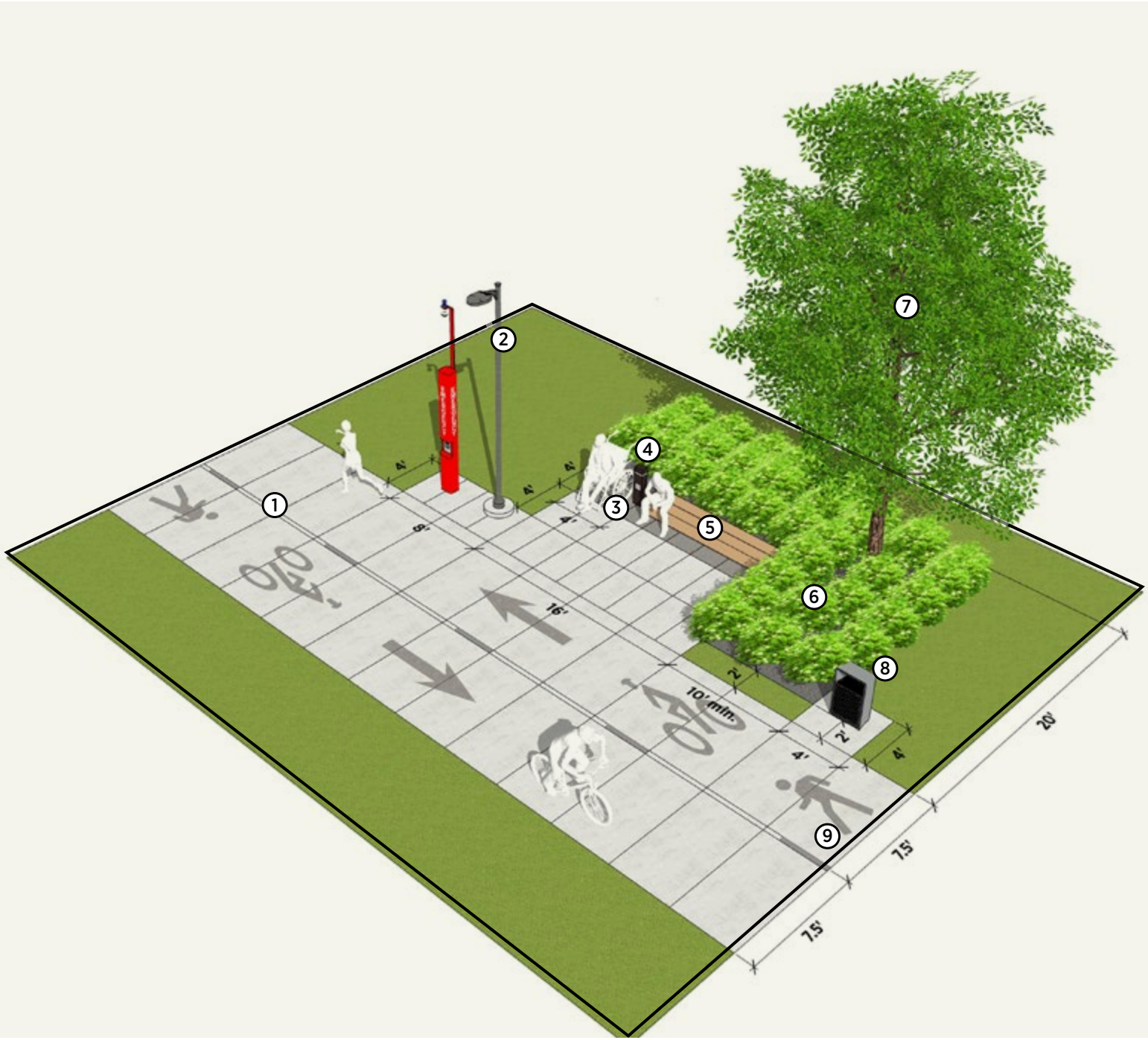
SPECIFIC LOCATION CONSIDERATIONS INCLUDE:

- **Backed benches:** Use in areas intended for longer periods of use
- **Backless benches:** Locate in areas with multiple access points, sightlines and flexible seating orientations
- **Picnic tables:** Use in park spaces and in locations that would likely be used for eating and games
- **Tables and chairs:** Provide both fixed and movable options, selected based upon specific site conditions, program and functional requirements. Tables and chairs may be located in plazas, urban spaces and special event spaces. Adjacent private business owners may also choose to provide tables and chairs for greenway users.

PATH-SIDE SEATING AREA

These seating areas should be located where there is a shared-used path and where available space is constricted. Landscape and seating arrangement can be adjusted as needed for varying site conditions.

1. SHARED-USE PATH
2. LIGHTING
3. ACCESSIBLE SEATING AREA
4. POWER PEDESTAL
5. 10′ BACKLESS BENCH
6. LOW PLANTINGS
7. SHADE TREE
8. TRASH RECEPTACLE
9. SANDBLASTED USER, DIRECTIONAL & LANE MARKINGS (DIMENSIONS PER CITY OF DETROIT STANDARDS)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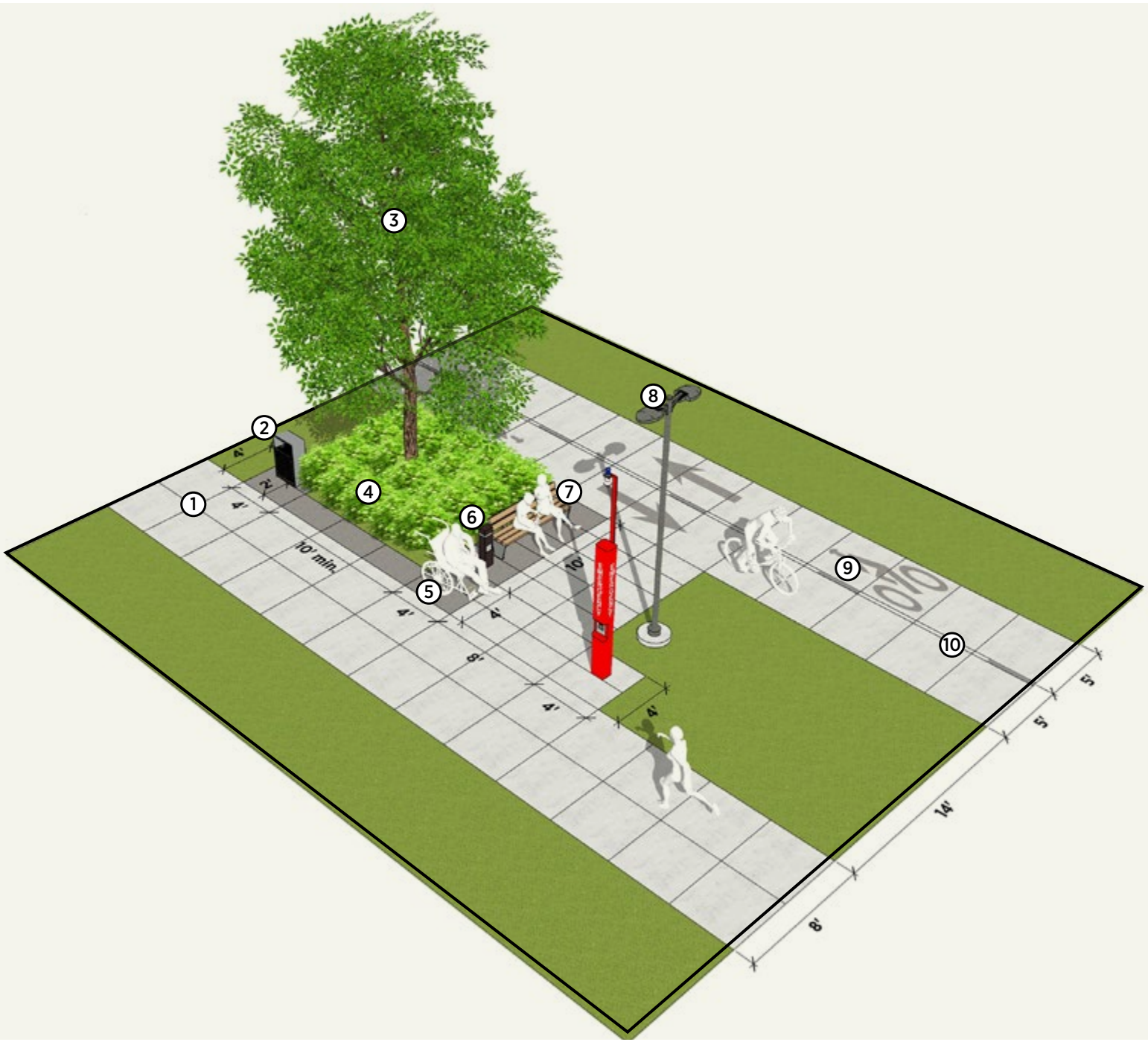
SMALL SEATING AREA

These seating areas should be located where the Joe Louis Greenway and other paths intersect and near minor amenities such as interpretive opportunity areas and small art installations.

1. PEDESTRIAN PATH
2. TRASH RECEPTACLE
3. SHADE TREE
4. LOW PLANTINGS
5. ACCESSIBLE SEATING AREA
6. POWER PEDESTAL
7. 6′ BACKED BENCH
8. LIGHTING
9. SANDBLASTED USER, DIRECTIONAL & LANE MARKINGS (DIMENSIONS PER CITY OF DETROIT STANDARDS)
10. BIKE PATH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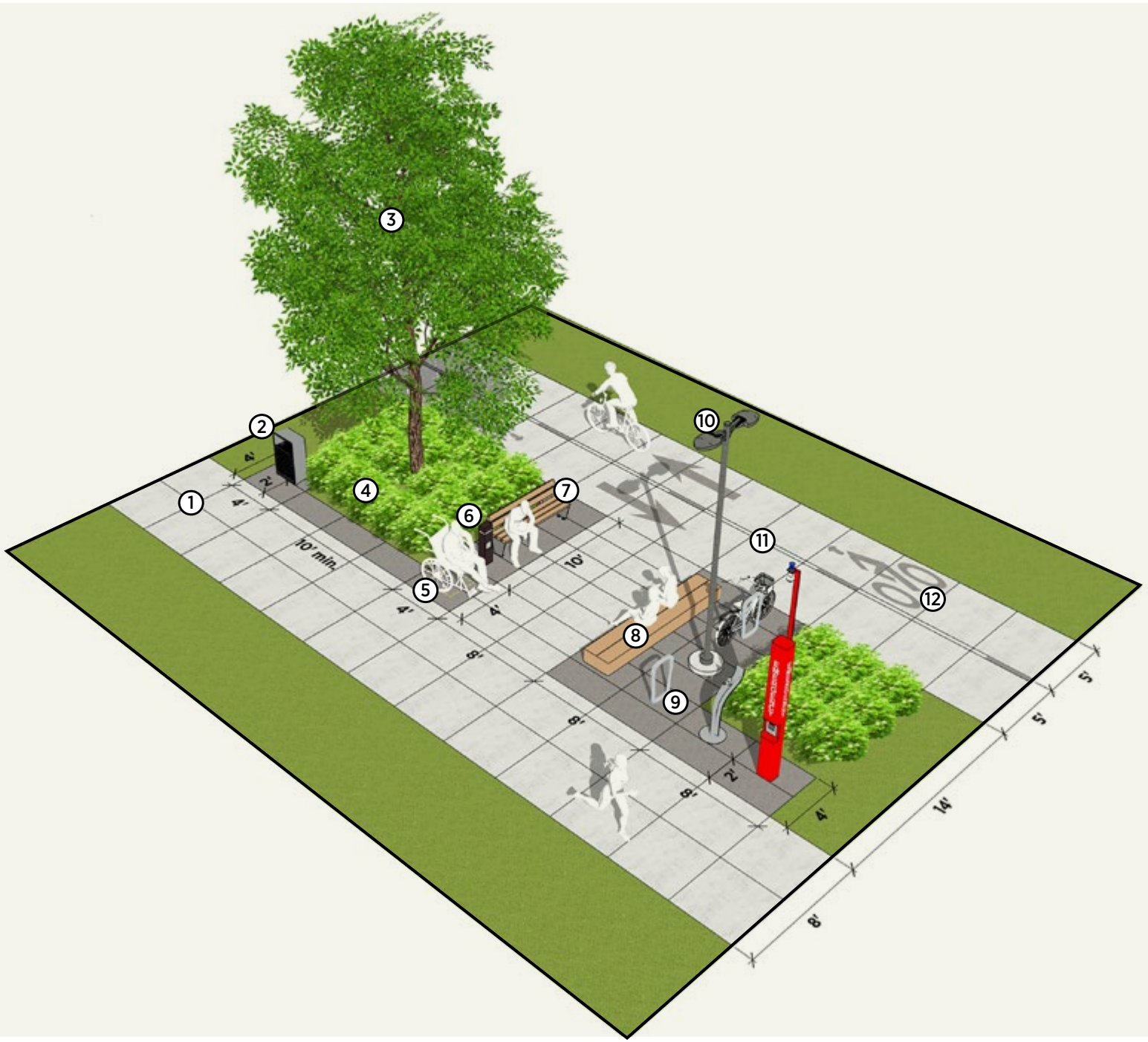
MEDIUM SEATING AREA

These seating areas should be located near other greenway amenities such as small play or exercise areas. Other limited additional amenities such as bike repair stations or drinking fountains may also be incorporated as needed.

1. PEDESTRIAN PATH
2. TRASH RECEPTACLE
3. SHADE TREE
4. LOW PLANTINGS
5. ACCESSIBLE SEATING AREA
6. POWER PEDESTAL
7. 6′ BACKED BENCH
8. 10′ BACKLESS BENCH
9. BIKE RACK
10. LIGHTING
11. BIKE PATH
12. SANDBLASTED USER, DIRECTIONAL & LANE MARKINGS (DIMENSIONS PER CITY OF DETROIT STANDARDS)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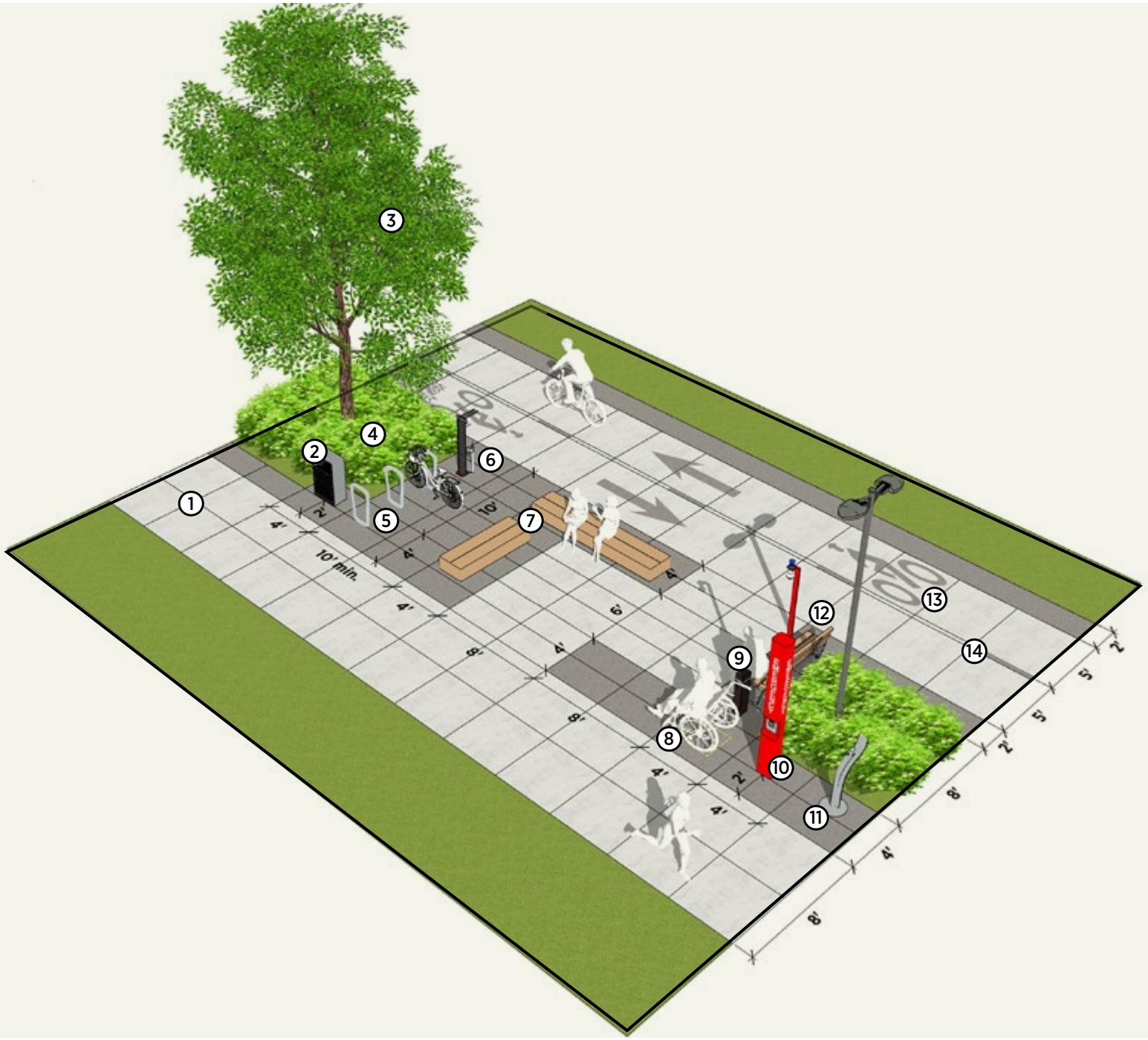
LARGE SEATING AREA

These seating areas should be situated near major locations where there are higher demands for amenities—or where multiple attractions such as paths, major playgrounds and trail entry points share the same area. Paved areas may be increased to accommodate additional site features such as bike repair stations or drinking fountains.

1. PEDESTRIAN PATH
2. TRASH RECEPTACLE
3. SHADE TREE
4. LOW PLANTINGS
5. BIKE RACKS
6. BIKE REPAIR STATION
7. BACKLESS BENCHES
8. ACCESSIBLE SEATING AREA
9. POWER PEDESTAL
10. EMERGENCY CALL TOWER
11. DRINKING FOUNTAIN
12. 6′ BACKED BENCH
13. SANDBLASTED USER, DIRECTIONAL & LANE MARKINGS (DIMENSIONS PER CITY OF DETROIT STANDARDS)
14. BIKE PATH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RECOMMENDED MODELS

BACKLESS BENCH

Product: Columbia Cascade Timberform—Colossus Giant Timber Bench

Material: Natural Timber with Galvanized Steel Base

Dimensions: Custom lengths available up to 16′ adjust length to meet site conditions

Modifications: If outer armrest is desired, coordinate with General Services Department

Location: Place in areas that would benefit from flexible seating direction, off-street greenway seating areas, areas requiring a greater quantity of seating and areas adjacent to plazas, access points and large gathering areas.

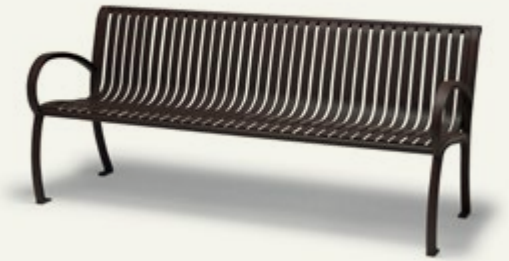
NATURAL LIMESTONE SEAT WALLS

CONCRETE SEAT WALL

Description: Site-specific customized cast-in-place concrete seat walls

Purpose: Concrete seat walls can be integrated with changes in site topography to provide access and seating opportunities.

Location: Place in off-street greenway areas with grade changes and those requiring a greater quantity of seating, flexible seating options and adjacent to plazas/access points/ large gathering areas.



BACKED BENCH 1

Product: Maglin Iconic Backed Bench

Material: Cast aluminum leg and back supports with Ipe Wood

Dimensions: 6 ft. length

Options: Surface mount without end arms

Color: Black powdercoat legs with Natural Ipe Wood

Location: Place in on and off-street greenway seating areas that anticipate a longer use period such as near play areas, plazas and gathering spaces.

BACKED BENCH 2

Product: Wabash Valley Winchester Backed Bench

Material: 319 Aluminum casting legs and ½" x 2" aluminum tube slat seating

Dimensions: 6 ft. length

Options: Surface mount with end arms

Color: Black powdercoat

Location: Place along on-street greenway segments and in plazas and urban spaces.

PICNIC TABLE

Product: Wabash Valley—ADA and Standard Designer Series
—Surface Mount Picnic Tables

Material: Traditional slat pattern steel tops and seats with plastisol coating and powdercoated legs

Dimensions: 8 ft. length

Color: Charcoal Tabletop and Seat, Black powdercoat leg

Location: Locate in park spaces and large gathering areas along greenway, particularly near spaces with dining or concession services.

OUTDOOR GRILL

Product: Dumor Embedded Grill

Material: Heat-resistant, Non-toxic 3/16" black enamel steel fire box with drain holes and ½" steel bar grill with adjustable heights. 2" Schedule 40 Steel Pipe support Black Powdercoat.

Dimensions: 21" Rectangular

Color: Black Powdercoat

Location: Locate in park spaces and large green open spaces along the greenway.

HOT COAL RECEPTACLE

Product: Pilot Rock Hot Coal Bin HCB B-1

Material: 14 gauge steel side panels and ½" dial steel bar grates finished with a high temperature non-toxic enamel paint.

Dimensions: 23 ½" square and 32" height

Options: Surface mount with vandal resistant concrete anchors. Side door with exterior grade combination padlock. Include 31 Gallon galvanized steel can liner.

Color: Black Enamel Paint

Location: Locate near outdoor grills and in park spaces and large green open spaces along the greenway.

Detroit Riverwalk
Photo: Eli Lindauer, Detroit Stock City

TRASH & RECYCLING

Providing trash and recycling receptacles helps minimize littering and keep the greenway beautiful and clean.

LOCATION

Place waste receptacles in highly visible and accessible locations such as street and greenway intersections, pedestrian crossings, bus stops, greenway pavilions and plazas. Litter receptacles should be located at least 10 feet away from seating areas in order to minimize odors and disturbance from insects, such as flies and bees.

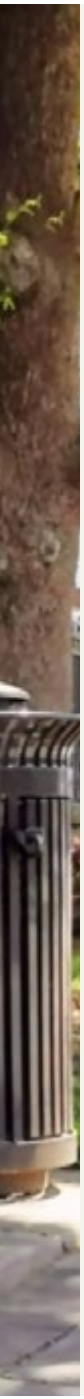
The number or receptacles depends on the anticipated number of users in a particular area, and on the frequency of maintenance and collection. One receptacle should be provided near each seating area, spaced the same maximum distance apart as seating areas at 1,000 feet and at both sides of crossings, crosswalks and intersections.

CONSIDERATIONS

If applicable, a separate or second trash receptacle can be provided with a recycling logo if there is a need for recycling in a specific area of the greenway.

Georgia Tech Campus

Photo: Victor Stanley



RECOMMENDED MODELS

LITTER RECEPTACLE

Product: Forms+Surfaces 'Bevel' Litter Receptacle

Material: Concrete (Color: Natural) with Dark Gray and Dark Corten Powdercoated Aluminum Door

Dimensions: 22 Gallons

Location: Along off-street greenway segments and in more remote areas.

LITTER RECEPTACLE

Product: Victor Stanley Model SD-42 with Rain Bonnet Lid

Material: Steel hot-dipped galvanized with black powder coat finish. Standard lockable door. City of Detroit Logo.

Dimensions: 36 Gallons

Location: Along on-street greenway segments, plazas and urban spaces.

LITTER RECEPTACLE

Product: City of Detroit HDPE 55-gallon drum style receptacle

Material: Exterior black steel locational ring with City of Detroit Logo

Location: Use in high-traffic areas where heavy use is anticipated, such as parks and large gathering areas.

BIKE INFRASTRUCTURE

Over the past decade, Detroit has seen exciting and innovative developments in bike infrastructure—which continue to grow in scope and volume.

To allow for potential future additions, the design and implementation of the greenway and bike infrastructure should be designed and planned with flexibility and expansion in mind. The installation of these supporting elements and enhancements may be implemented both by public agencies as well as private businesses, property owners, non-profit organizations, greenway advocates and partnerships among these groups. These additional infrastructure improvements are currently anticipated to be implemented in future phases of the development of the greenway and will be specific to the particular locations, site condition and needs.

BIKE RACKS

To support and encourage users to cycle on the greenway, it's important to provide bike racks. When designed properly, bike racks and bike parking areas can enhance a space and make people with bikes feel welcomed. The lack of appropriate bike racks can result in chaotic public spaces clogged with bikes.

Photo: SmithGroup

RECOMMENDED MODELS

The selection of bike racks can help enhance the aesthetics of a space and provide a sense of activity and fun. Bike racks should provide a 1 ½ ft. wide by 6 ft. long space on both sides for a bike on each side and should be spaced 3 ft. apart.

LOCATION

To meet the needs of greenway users, the location of bike racks should be given careful consideration. Strategies for bike rack locations include:

- Locate bike racks near key destinations and high-use areas such as: building entrances, plazas, gathering spaces, seating areas, park amenities, athletic fields, bus and transit stops, vehicular parking lots, etc.
- Ensure bike racks are visible, well-lit and easily-accessible from bike paths
- Provide secure locations with appropriate facilities for locking bikes and provide sheltered locations when possible
- Do not put bike racks in remote and obscured areas away from key destinations
- Avoid obstructing pedestrian and bike paths, leaving a recommended 6 ft. of unobstructed pedestrian access space

CONSIDERATIONS

Bike racks along the greenway should provide the following:

- Adequate support to rest the bike firmly against the rack
- Secure, convenient and flexible locking for typical “U” and cable style locks
- Secure surface mounting or embedded into the paved surface
- Shaped to coordinate with a wide range of bike sizes and types with at least two points of contact, including at least one wheel
- Bike racks are often scratched, bumped and susceptible to corrosion and should therefore be constructed of steel (galvanized and finished with powder coating or automobile type finish), aluminum or stainless steel
- Tall enough (minimum 25″ height) to avoid becoming a tripping hazard

Providing the appropriate number of bike racks in a particular location is key to successful bike parking. The anticipated number of bike users in a particular area, the anticipated length of stay and the types of adjacent destinations and land uses should be evaluated in determining the required number of bike racks.

Signage should be provided to help guide bike riders to the appropriate locations for bike parking, and to discourage the parking or locking of bikes in a way that obstructs walkways, entrances, ramps and other high use zones.

BIKE RACK 2

Product: Dumor Bike Rack 293

Material: Hot-dipped galvanized 2" square steel tubing with powdercoat finish

Dimensions: 32" Height

Installation: Shallow embedded mount

Color: Dark Charcoal or Black powdercoat

Location: Position near activated areas, trail entry points and near seating areas.

BIKE RACK 1

Product: Forms+Surfaces 'Twist' Bike Rack

Description: Black, dark gray & dark corten steel. Cast aluminum with powder coat finish. Embedded tamper-resistant anchors.

Location: Position near activated areas, trail entry points and near seating areas.

BIKE REPAIR STATIONS

Bike riders count on convenient access to air for tires and tools for small repairs on the go. The addition of bike repair stations in convenient locations along bike paths and greenways minimizes the need to walk long distances to repair shops. The bike repair stations also support and encourage bike riders that may not easily have access to everyday repair tools.

LOCATION

Place bike repair stations along on- and off-street greenway segments, trail access points, near key destinations and bike parking areas. Be sure they are located in high visibility areas with higher volumes of activity and people.

CONSIDERATIONS

Bike repair stations are especially susceptible to vandalism and theft, particularly cutting the hose of air pumps and the theft of bike tools. The air pump hose should be a durable, high-quality material with a protective covering such as steel braiding. Bike tools should be physically connected to the repair station with stainless steel cables. Locating the bike repair stations in high-visibility areas with higher volumes of people can help discourage vandalism.

RECOMMENDED MODEL

BIKE REPAIR STATION

Product: Saris Infrastructure 'Deluxe Public Work Stand' with Outdoor Manual Bike Pump with gauge and steel braided long hose (matching powder coat finish)

Description: Retractable tools on braided stainless-steel cables

Color: Black center post and bike hangers with yellow highlighted panels with bike repair station vinyl decal

Location: Locate along on- and off-street greenway, trail access points, near key destinations and large bike parking areas.

BIKE LEANING RAILS

Bike riders temporarily stopping at traffic lights, intersections and crossings can avoid inconvenient and time-consuming dismounting and re-mounting by using foot and hand leaning rails and posts. Leaning rails allow riders to safely pause with something to hold onto to balance while waiting to proceed. The implementation of these leaning rails helps discourage the use of light poles, traffic signal poles and signs for the same purpose. The proper location of leaning rails also encourages bike riders to remain in the correct location within bike lanes and greenways, so that they avoid obstructing pedestrian sidewalks and roadways. The footrests are not only convenient and comfortable, but provide a platform for riders to push off from when the light changes or the intersection clears. The installation of bike leaning rails—particularly at higher volume intersections—improves the efficiency of traffic movement.

RECOMMENDED MODEL

Although more common in European cities, bike leaning rails have seen a recent rise in popularity in the United States. These devices are of relatively simple construction, allowing them to be manufactured by metal fabricators utilizing standard steel tubing, channels and other cold steel products. These rails should be constructed of steel (galvanized and finished with powder coating or automobile type finish), aluminum or stainless steel to ensure the proper durability and corrosion resistance. A high degree of wear and tear should be assumed and planned for in construction and implementation of bike leaning rails.

LOCATION

Bike leaning rails should be located on the near-side of intersections, crossings, transit stops and other stopping points on the right side of the bike lanes or greenway shared-use paths in the direction of travel.

CONSIDERATIONS

The length and number of bike leaning rail segments can be extended or added to address the anticipated volume of bike traffic.

BIKE LEANING RAIL

Product: Dero 'Biker Bar'

Material and Color: Steel rectangular tube. Galvanized with black powder coated finish

Installation: Surface-mounted

Location: At intersections and greenway crossings along on- and off-street greenway segments

Eastern Market, Detroit
Photo: Alicia Adams

BIKE LOCKERS & STORAGE AREAS

Bike lockers and storage areas are increasing in demand and popularity, as they provide secure parking locations, parking for increased volumes of bikes, protection from outdoor exposure and longer-term bike parking. These facilities are often popular with bike commuters and for e-bikes.

BIKE SHARE & BIKE RENTAL

Bike share and rentals provided by private vendors, public agencies and non-profit organizations, such as MOGO Detroit[1], provide on-demand bikes serving a wide range of people and needs. These programs provide convenient, flexible, lower-cost alternatives for transportation needs, and they alleviate the need for personal bike ownership, maintenance and storage.

These services are often used by apartment dwellers and visitors to the city. To accommodate individuals with lower incomes, programs with options for reduced bike rental costs are available.

Bike tours for local residents as well as visitors to Detroit are often provided by these bike share and rental organizations, including Wheelhouse Detroit www.wheelhousedetroit.com.

BIKE SHOPS

Bike shops help support the greenway by providing bikes and equipment for purchase or rental, along with maintenance and repair services. They contribute to local bike culture and can provide guidance and information to users of the greenway.

BIKE CAFES

Cycling cafes accommodate bikers and often serve coffee, snacks, beverages and meals. Many of these businesses provide secure
on-site bike parking, repair services and spare parts.

These businesses provide much-needed services along the greenway. They enhance the local economy and support a welcoming community.

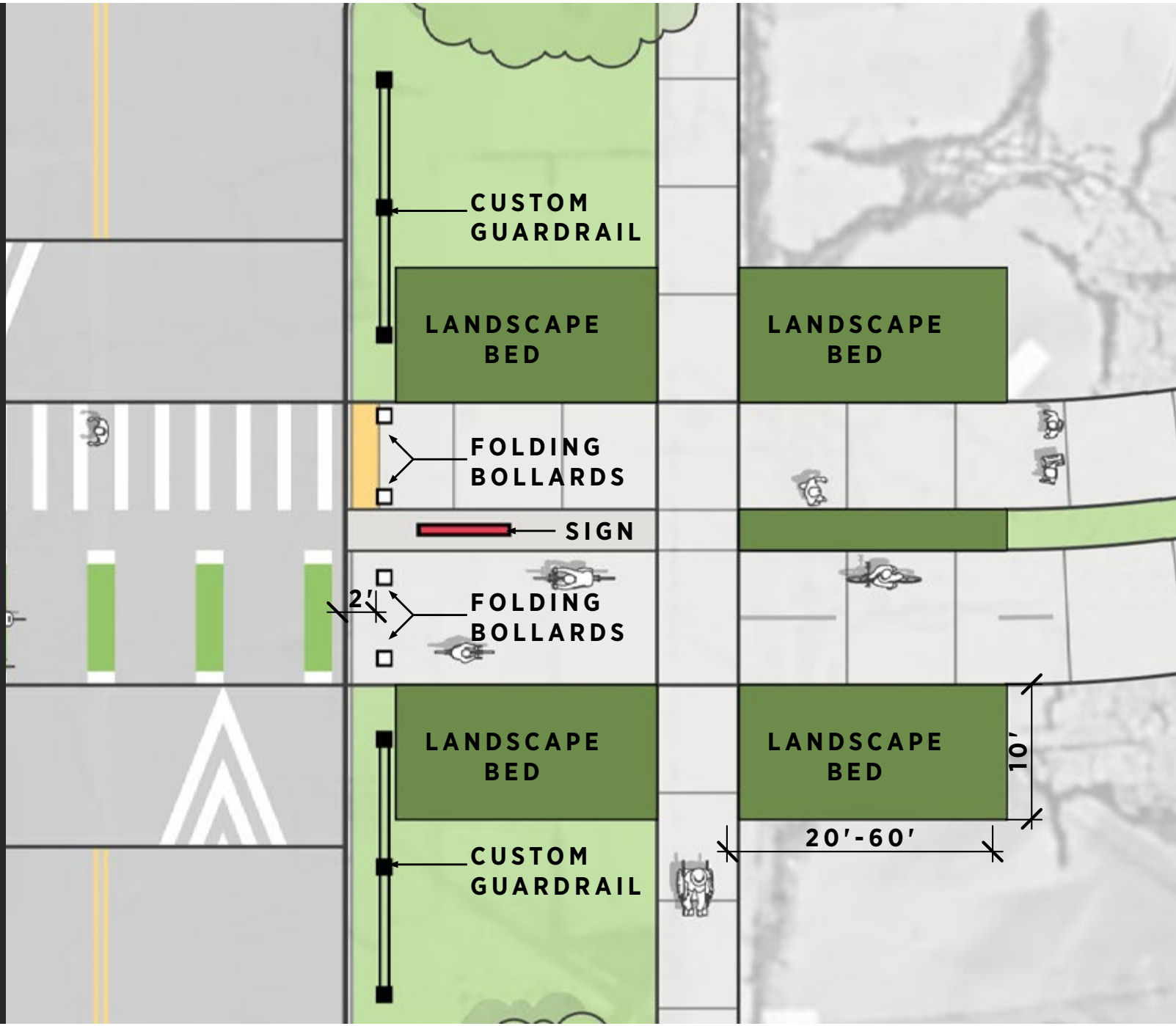
1 www.mogodetroit.org

ACCESS CONTROL

When it comes to designing bike lanes, shared-use paths and greenways, it's important to clearly define and delineate the intended purposes of various public spaces, separation from private properties and the access control to them. Pedestrian, bike and vehicular uses need to be clearly defined for the intended purpose with easily recognizable entrances and exits. The select use of key design features and furnishings provides natural cues to the intended purposes of a space; delineates where different types of use should be located; establishes separation and buffers between them and controls access. Good design—integrated within the context of sites using a variety of natural and physical features—can guide the public to areas where they are encouraged to be, and away from areas where they should not be, including private property. Where the greenway meets the street, vehicle access must be restricted, while at the same time allowing access to emergency vehicles. A combination of barrier types that are both fixed and foldable will limit the access width while allowing emergency and maintenance vehicles access. The following series of site furnishings and components are the key tools for these purposes.

Dequindre Cut Greenway
Photo: SmithGroup

ACCESS POINTS



DELINEATOR POSTS

Bike lane and greenway delineator posts provide key safety and access control between vehicles and bikes, in order to:

- Provide a visual and physical separation between vehicular travel/parking lanes and bike lanes
- Provide a sense of comfort and security for bikers
- Reduce accidents
- Provide high visibility and a contrasting vertical element

LOCATION

Pexco 'FG 300 EFX' Standard delineator post located within roadway buffer areas separating vehicular / parking lanes from bike lanes / shared-use paths

Pexco 'City Post' and US Reflector 'K71' Alternative delineator posts where increased visibility and greater physical separation is required.

CONSIDERATIONS

Delineator posts are located in areas that are highly susceptible to damage from vehicles and maintenance equipment.

The proper location, spacing and selection of the appropriate post for the specific conditions should be intentionally designed and implemented. Depending on the specific location and volume of adjacent traffic, the regular maintenance and replacement of delineator posts should be integrated into the long-term maintenance and operation plans.

Midtown Loop Greenway Photo: SmithGroup

RECOMMENDED MODELS

STANDARD DELINEATOR

Product: Pexco 'FG 300 EFX' stabilized thermo-plastic polyurethane

Description: White base with two 4" Oralite (Reflexite) AR 1000 reflective green sheeting wraps

Installation: Heavy duty white anchor base

Location: Within roadway buffer areas separating vehicular or parking lanes from shared-use paths or bike lanes.

ALTERNATIVE DELINEATOR 1

Product: Pexco 'City Post' stabilized thermo-plastic polyurethane

Description: 36" height white post. Ultra-high impact. Two 4" Oralite (Reflexite) AR 1000 reflective green sheeting wraps

Installation: Screw-in mounting

Location: Within roadway buffer areas separating vehicular travel lanes and bike lanes.

ALTERNATIVE DELINEATOR 2

Product: US Reflector 'K71' polyethylene

Description: Semi-rigid post. Two 4" Oralite (Reflexite) AR 1000 reflective green sheeting wraps. 6" diameter post, 36" height.

Installation: "T"-bar anchoring system

Location: Position between road travel lanes and bike lanes.

BOLLARDS

Bollards are vertical barriers that physically prevent vehicle access into dedicated pedestrian areas, non-motorized shared-use paths and greenways.

LOCATION

Bollards are typically located between roadways and greenways, as well as at the entrances and exits between them. Bollards are typically spaced at a maximum of 6 feet on center to restrict vehicles driving between them, while at the same time providing enough clear space for pedestrian, wheelchairs (meeting ADA standards) and bikes. Bollards should be tall enough—typically over 30 inches—finished in contrasting colors and should include reflective materials/wraps in order to be visible, minimizing tripping and accidental impacts by vehicles, bikes and people.

Bollards can be combined with other site features including fencing, light poles, landscaping, buildings/structures, walls and other physical features to guide and control access.

Milliken State Park, Detroit

Photo: SmithGroup

FIXED BOLLARD

Product: MaxiForce Fixed Bollard with Standard Rectangular Body

Description: Standard Style 2 Head. Hot-dipped, galvanized and powder coated. Black and dark gray. Two 4" Oralite (Reflexite) AR 1000 reflective white sheeting wraps.

Installation: Simple Embedded base with concrete footing

Location: Primary access, entry points, crossings and other areas where vehicular access is specifically restricted.

COLLAPSIBLE BOLLARD

Product: MaxiForce Collapsible Bollard with Standard Rectangular Body

Description: Standard Style 2 Head. Hot-dipped, galvanized and powder coated. Black and dark gray. Two 4" Oralite (Reflexite) AR 1000 reflective white sheeting wraps.

Features: Breakaway pin for emergency access (heavy duty or steel insert), combination padlock or hydrant wrench operated

Installation: Simple Embedded base with concrete footing

Location: Primary access and entry points where emergency, maintenance and special event vehicular access is required. Can be used in combination with fixed bollards to restrict vehicle access locations.

SPRING BOLLARD

Product: Ontario Bollards 'SpringBollard'

Description: 7" diameter, Black UV resistant HDPE Bollard. Galvanized coated base and anchors with integral spring. Two 6" Oralite (Reflexite) AR 1000 reflective white sheeting wraps.

Location: Locate to provide vehicles with visual and physical warnings about areas where vehicles are restricted, or prior to other physical features located within or near vehicle travel lanes or roads as a warning. Primary areas of use include on the ends of center refuge islands within roadways, curb bump-outs, medians and other areas that would likely be accidentally impacted or encroached upon by vehicles.

CONSIDERATIONS

Fixed and folding bollards can be used to restrict the general public from entering while allowing temporary access for emergency and maintenance vehicles.

BOULDERS AND OTHER NATURAL FEATURES

In a similar fashion as noted for bollards, natural stone boulders, rain gardens/ bioswales/stormwater features, canopy trees and other related natural features can be used to control and define access.

LOCATION

These elements should be placed adjacent to or along parks, in large open space areas and integrated with other natural site features and site conditions.

RECOMMENDED MODELS

The specific components and materials vary depending on the particular natural feature used. The design, placement and sizing of the natural features should be developed in a way that provides clear visual cues; with appropriate consideration of safety; while maintaining the design intent and aesthetics of the area.

Middlegrounds MetroPark, Toledo Photo: SmithGroup

GUARDRAILS

Vehicular guardrails are used in areas that require a greater degree of visual and physical separation between vehicular and greenway areas. They can also be used not only to serve as access control, but also as signage to highlight the identity of a key destination for the greenway. Guardrails can be used along with bollards and other access control features as an integrated system to satisfy the particular design objectives and aesthetics.

LOCATION

In order to restrict vehicular access and protect greenway users, guardrails are typically located where street or vehicle access driveways terminate at a greenway access point. These are often areas with a high volume of activity, such as key destinations and intersections between vehicular and greenway routes.

DESIGN CONSIDERATIONS

Given their unique application, guardrails should be custom designed to meet contextual needs, existing site conditions and greenway identity.

DESCRIPTION:

vertical 6″ x 6″ HSS (hollow structural section) post with 2″ thick, 6″ x 6″ steel angle. Matte black. Graphics and art may be applied to rail.

LOCATION:

Locate where street terminates at a greenway access point. This restricts vehicle access and protects greenway users.

Middlegrounds MetroPark, Toledo

Photo: SmithGroup

DESIGN CONSIDERATIONS

Given their unique application, guardrails should be custom designed to meet contextual needs, existing site conditions and greenway identity.

The typical guardrail feature is not intended to satisfy a specific crash barrier rating. If there is a need to restrict vehicle access to a critical site feature, the specific access and security control requirements will need to be defined, and the appropriate barrier should be rated to meet the necessary standards; this should be independently confirmed and defined.

PEDESTRIAN HANDRAILS AND GUARDRAILS

Handrails provide a physical handhold for pedestrians to traverse ramps and stairs and cross bridges. They provide stability and act as a guide to prevent falls and assist in maintaining balance. Guardrails are often integrated with handrails to provide a physical barrier between users and ledges and potential trip hazards.

LOCATION

Handrails should be provided along stairs, ramps, bridges and abrupt grade changes. Handrails and guardrails shall be provided per the applicable building and ADA standards and requirements.

DESIGN CONSIDERATIONS

Hand and guardrails will be custom designed to respond to specific site conditions, functional needs and aesthetic intent.

Selden Courtyard, Detroit
Photo: SmithGroup

FENCES & SCREENS

To ensure security and privacy for properties backing up to the greenway, fencing and buffers will be constructed. Access for pedestrians and bicyclists is planned at regular intervals along the corridor, mainly at cross-streets that dead end into the greenway. In most cases, properties will have an access point to the greenway within a block or two of their property but will not have direct connections to the greenway from their property.

ACCESS CONTROL FENCE

Access control fences are 6 feet in height. They feature a relatively high degree of transparency and integrate anti-cut and anti-climbing characteristics in order to restrict access to private properties. This fencing type will be the typical design standard along the greenway, particularly along off-street segments.

SECURITY FENCE

Security fences are 8 feet in height. They integrate anti-cut and anti-climbing characteristics as well as a higher degree of protection with more robust components to ensure a greater degree of access control. The security fence will be less transparent than the access control fence but will still maintain visibility through the fence. Evergreen trees may be placed at the property line to provide a year-round visual screen of vertical elements.

The implementation of fencing both along on-street and off-street greenway segments will be coordinated with other related greenway design features—particularly the landscape and security system design—to ensure the following objectives are achieved:

- Maintain clear sightlines to and from the greenway and maximize the degree of visibility for the public
- Create multiple viewpoints from multiple locations and avoid creating screened hiding places
- Clear definition of borders between public space and private/non-public spaces

- Minimize areas that “channel” greenway users and incorporate multiple paths of travel and a variety of conveniently spaced access and exit points
- Avoid negative security elements that imply an area of higher crime
- Fencing and other access control features should promote positive social interaction and define the intended purpose of a space. Fencing transparency is flexible depending on adjacent land use.
- Proper screening strategies enhance the comfort and safety of greenway users while restricting access to adjacent private property
- Screening of adjacent properties will combine fencing and landscaping. Landscape placement will be coordinated with adjacent land use for screening and cost effectiveness.
- Foundation plating may be used to create additional screening and separation. Where width allows, landforms, flexible open space or landscaping may be added as amenities.

Dequindre Cut

Photo: SmithGroup

RESIDENTIAL SCREENING

FENCING AND SCREENING

A cost-effective welded wire, transparent, anti-climb mesh fence will be used to screen and restrict access to residential properties.

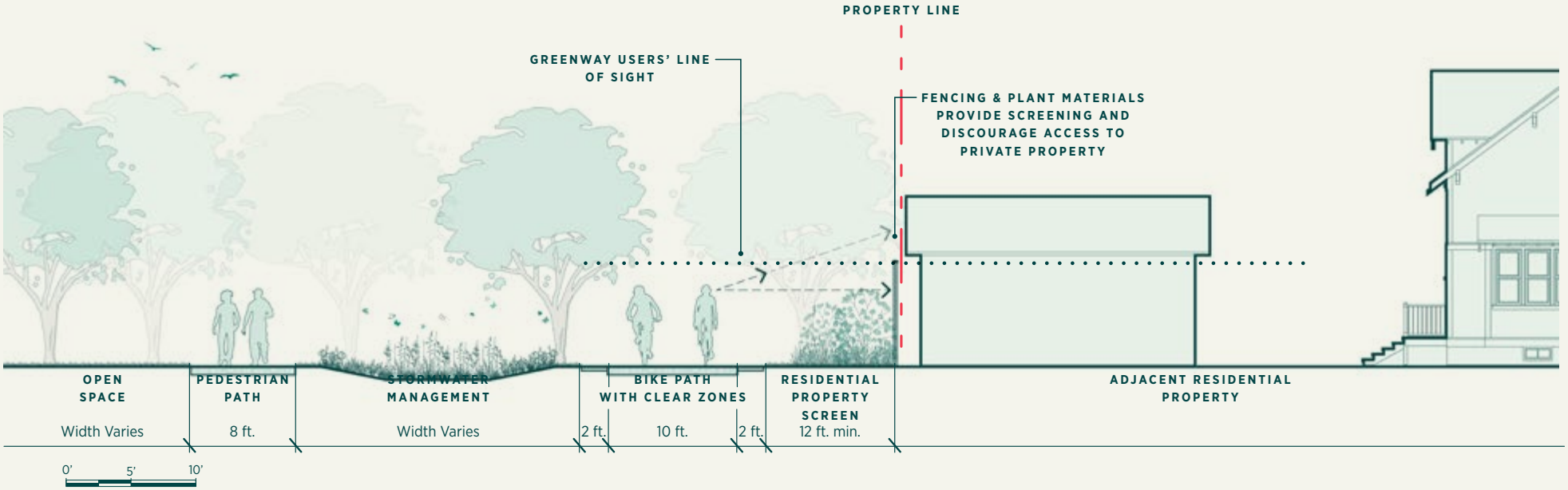
LANDSCAPING AND VEGETATION

Location of all landscape screening to be coordinated with adjacent land use for screening and cost effectiveness.
Landscaping—including foundation plantings and trees—may be used.

Landscaping along the Dequindre Cut
Photo: Evan Gonzalez, Detroit Stock City

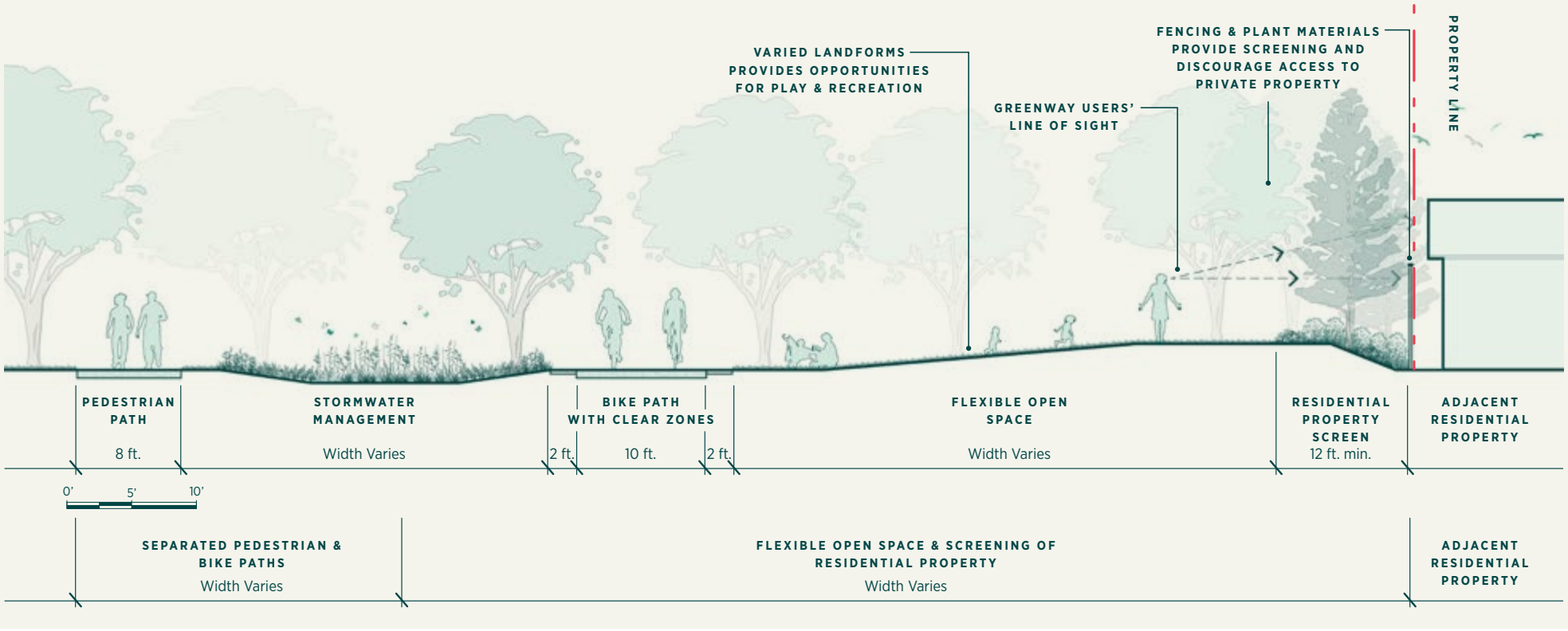
RESIDENTIAL SCREENING | NARROW CORRIDOR

- Proper screening strategies enhance the comfort and safety of greenway users while restricting access to adjacent private property
- Screening of adjacent properties will combine fencing and landscaping
- Fencing will define limits of access to the greenway
- Fencing will be a cost-effective welded wire, transparent, anti-climb mesh fence
- Fencing transparency is flexible, depending on adjacent land use
- Foundation plantings may be used to create additional screening and separation
- Landscape placement will be coordinated with adjacent land use for screening and cost effectiveness
- Gates providing access to greenway from private property will not be provided



RESIDENTIAL SCREENING | WIDE CORRIDOR

- Proper screening strategies enhance the comfort and safety of greenway users while restricting access to adjacent private property
- Screening of adjacent properties will be a combination of fencing and landscaping
- Fencing will define limits of access to the greenway
- Fencing will be a cost-effective welded wire, transparent, anti-climb mesh fence
- Fencing transparency is flexible, depending on adjacent land use
- Where width allows, landforms, flexible open space or landscaping may be added as amenities
- Foundation plantings may be used to create additional screening and separation
- Landscape placement to be coordinated with adjacent land use for screening and cost effectiveness
- Gates providing access to greenway from private property will not be provided



INDUSTRIAL SCREENING FENCING

A solid, opaque metal or semi-transparent, anti-climb mesh fence will be used to screen and restrict access to industrial properties.

INDUSTRIAL SCREENING FENCING

NOTE: Location of all landscape screening will be coordinated with adjacent land use for screening and cost effectiveness.

Landscaping—including foundation plantings and trees—may be used. To create additional screening and separation from both residential & industrial properties.

Where width allows, landforms, flexible open space, or other landscape areas may be added as amenities.

INDUSTRIAL SCREENING | WIDE CORRIDOR

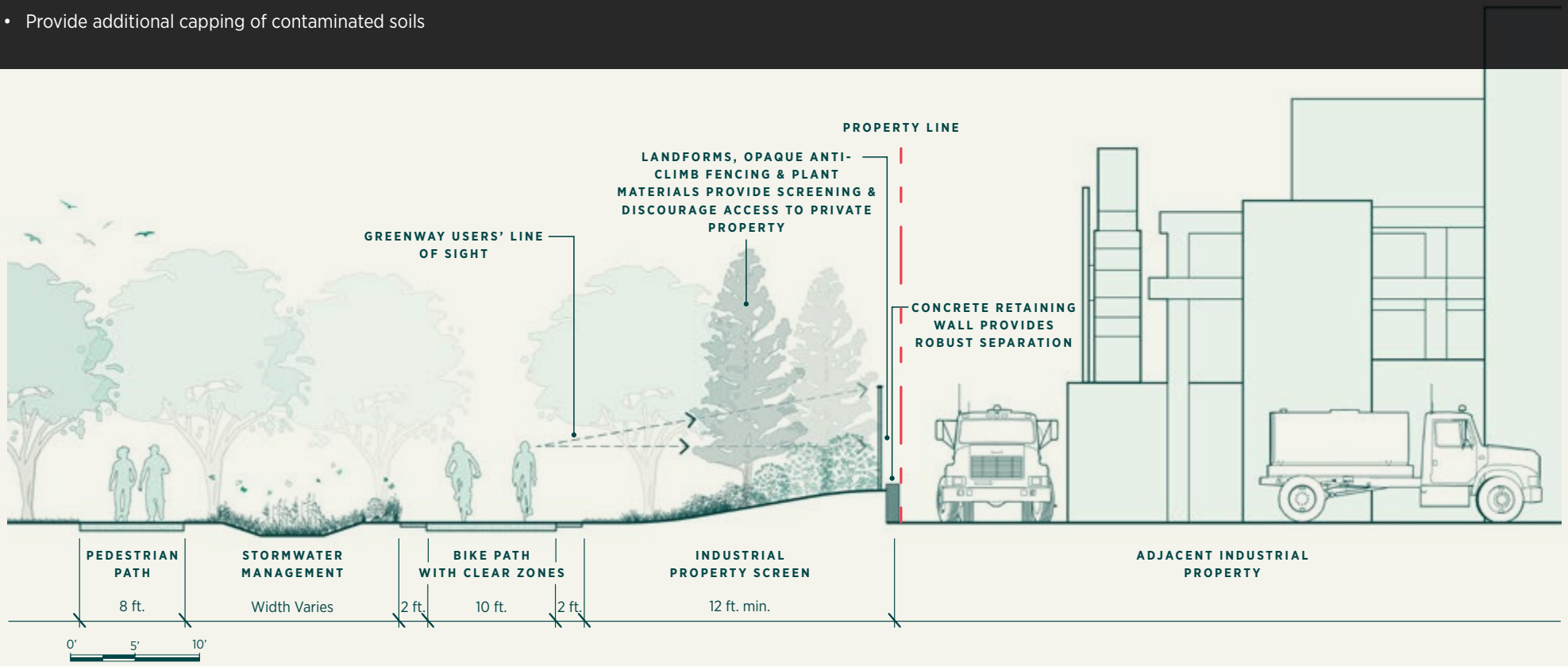
- Proper screening strategies enhance the comfort and safety of greenway users while restricting access to adjacent private property
- A solid, opaque metal fence will be used to screen and restrict access to industrial areas
- Fencing transparency is flexible, depending on intensity of adjacent industrial activity
- Where width allows, landforms, flexible open space, landscaping or retaining walls may be added as amenities
- Foundation plantings may be used to create additional screening and separation
- Landscape placement will be coordinated with adjacent land use for screening and cost effectiveness
- Evergreen trees may be placed at the property line to provide a year-round visual screen of vertical elements

- Foundation plantings may be used to create additional screening and separation
- Landscape placement will be coordinated with adjacent land use for screening and cost effectiveness
- Evergreen trees may be placed at the property line to provide a year-round visual screen of vertical elements


PROPERTY LINE
VARIED LANDFORMS PROVIDES OPPORTUNITIES FOR PLAY & RECREATION
LANDFORMS, OPAQUE ANTI-CLIMB FENCING & PLANT MATERIALS PROVIDE SCREENING & DISCOURAGE ACCESS TO PRIVATE PROPERTY
GREENWAY USERS' LINE OF SIGHT
PEDESTRIAN PATH
8 ft.
STORMWATER MANAGEMENT
Width Varies
2 ft.
BIKE PATH WITH CLEAR ZONES
10 ft.
2 ft.
FLEXIBLE OPEN SPACE
Width Varies
INDUSTRIAL PROPERTY SCREEN
12 ft. min.
ADJACENT INDUSTRIAL PROPERTY
0'
5'
10'

RESIDENTIAL SCREENING | WIDE CORRIDOR

- Proper screening strategies enhance the comfort and safety of greenway users while restricting access to adjacent private property
- A solid, opaque metal fence with small retaining wall will be used to screen and restrict access to industrial areas
- Small retaining walls will:
- Increase screening height
- Prohibit encroachment by industrial activities
- Provide additional capping of contaminated soils
- Foundation plantings may be used to create additional screening and separation
- Landscape placement to be coordinated with adjacent land use for screening and cost effectiveness
- Evergreen trees may be placed at the property line to provide a year-round visual screen of vertical elements



RECOMMENDED MODELS

LOCATION ACCESS CONTROL FENCE

This type of fencing will be used along the greenway, particularly along the off-street greenway segments. The access control fence will be located along adjacent residential homes, businesses, private property and other areas that are non-public spaces.

SECURITY FENCE

Security fencing will be provided along adjacent properties that require a greater degree of access control, particularly along adjacent industrial land uses, as well as private businesses that require more robust access control for the safety and protection of the public.

SCREENING SECURITY FENCE

Product: Betafence Guardian 2000 75% Opacity Minilouver

Material: Hot dipped galvanized steel and aluminum components with powder coat finish

Height: 8 ft.

Color: Gray or Black Powdercoat

Location: Where screening of adjacent land uses is required.

ACCESS CONTROL FENCE

Product: Betafence Securifor 4D

Material: Hot dipped galvanized steel wire with powder coat finish

Height: 6 ft.

Color: Gray or Black Powdercoat

Location: Locate along adjacent uses where access is restricted.

CHAIN LINK FENCE

Product: Ameristar 'Permacoat PC-40' Chain Link or Equal

Description: 8-foot height. Galvanized, epoxy powder coat and polyester color coat. Top and bottom rail.

Color: Black

Location: Replace or supplement existing fencing.

PARKS & PLAYGROUNDS

Many Detroit communities have limited access to parks and open spaces. Throughout the public engagement process, residents expressed the desire to address this issue by including safe play and activity areas along the greenway. The Joe Louis Greenway builds an extensive green network in the City of Detroit, with enhanced access to these valuable community amenities.

Ella Fitzgerald Park, Detroit Photo: Earthscape

Riverside Park, Detroit Photo: City of Detroit

LOCATION

To meet the needs of Detroit residents, existing and future play spaces should be located at regular intervals along the greenway with the same approximate spacing as major greenway access points (1 to 1 1/2 mile distance).

Given their varied locations, play areas should be designed to respond to the needs of nearby community residents.

SUSTAINABILITY

Natural and recycled materials should be used for groundcover and construction where possible. Materials should be low-maintenance and durable.

Pearson MetroPark, Toledo Photo: Alexa Bush

SITE-SPECIFIC DESIGN

Park and playground design should meet the site-specific conditions of the area, and should embrace the desires and identity of the surrounding neighborhood.

These areas should include supporting amenities such as seating, shaded areas, drinking fountains and restrooms.

SURFACE MATERIALS

The implementation of playground and active play spaces will require the installation of play surfaces that meet industry standards and requirements. These surfaces should use recycled or natural materials where possible and should meet the appropriate access and impact absorption standards.

EQUAL ACCESS

To welcome people of all abilities, play areas should be designed for universal access. These spaces should be interactive and versatile, encouraging exploration, imaginative play and learning opportunities for all generations.

NEED AND DISTRIBUTION

Parks and open spaces provide gathering and recreation spaces—which are essential features for all communities. When evaluating the adequate distribution of these spaces, we look at the parks available to areas within a 10-minute walk. The diagram to the right highlights gaps in park access in Detroit. This analysis helps guide conversations regarding the need and distribution of open space along the Joe Louis Greenway.

All statistical results are aggregated for the listed project areas and their service areas. Service areas are based on 10-minute (½ mile) walk times from project access points defined for each project area and based upon the walkable network.

City Statistics	Existing	New
City: Detroit, MI		
Park Acres	4,922	
Total Population	660,543	
Served Population	528,417	67,575
Percent Served	80.0%	10.2%

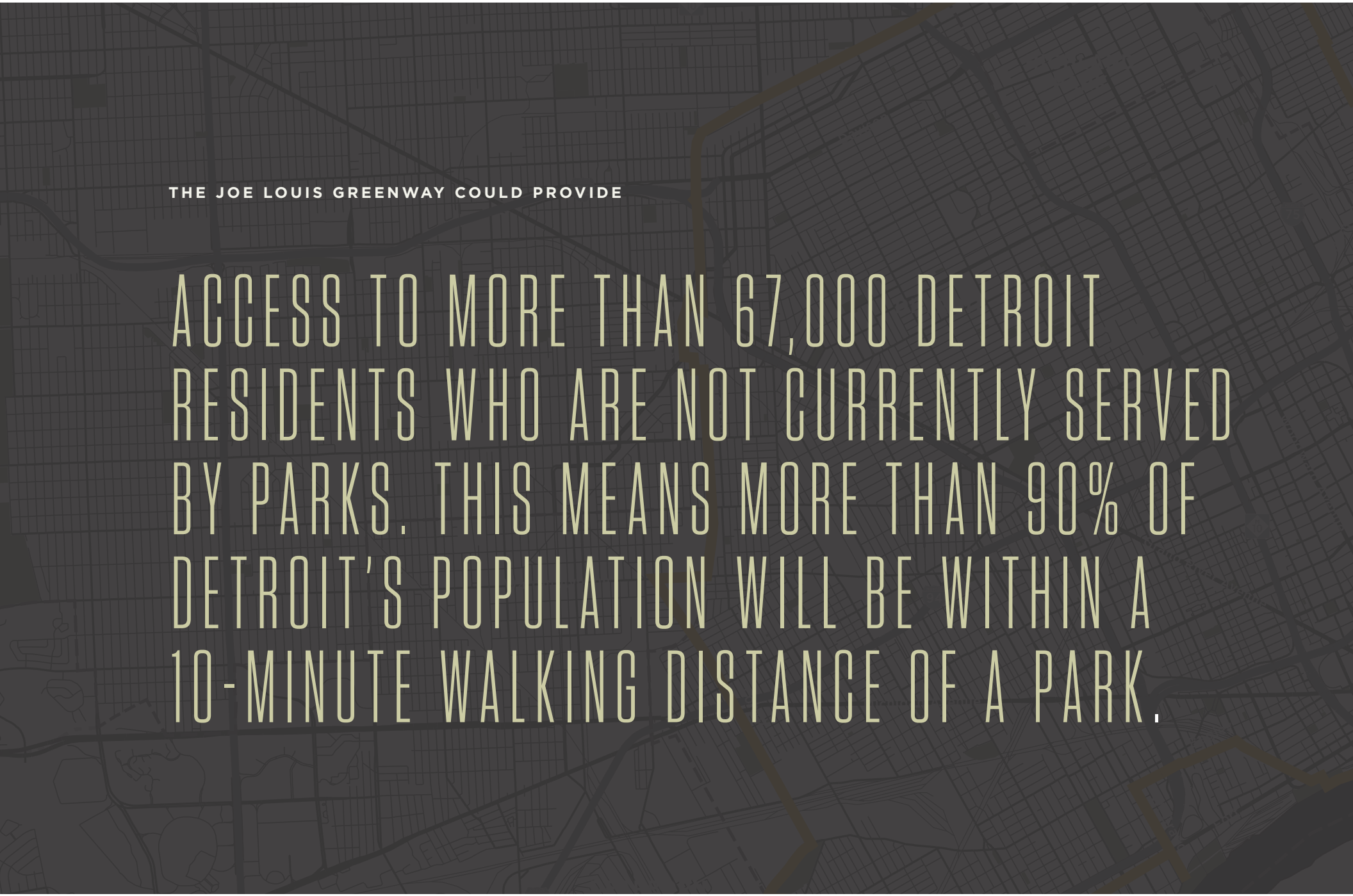
All statistical results are aggregated for the listed project areas and their service areas. Service areas are based on 10-minute (1/2 mile) walk times from project access points defined for each project area and based upon the walkable network.

PARKSCORE

- Joe Louis Greenway
- Project Service Area
- Parks

PARK NEED

- High
- Moderate to High
- Moderate



THE JOE LOUIS GREENWAY COULD PROVIDE

ACCESS TO MORE THAN 67,000 DETROIT RESIDENTS WHO ARE NOT CURRENTLY SERVED BY PARKS. THIS MEANS MORE THAN 90% OF DETROIT'S POPULATION WILL BE WITHIN A 10-MINUTE WALKING DISTANCE OF A PARK.

EXERCISE AREAS / STATIONS

Forest Park, Detroit
Photo: City of Detroit

Dequindre Cut, Detroit
Photo: Detroit Riverfront Conservancy

Residents made it clear throughout the Framework public engagement process: They believe opportunities for exercise along the greenway will enhance their quality of life.

In line with national trends, the Detroit community is facing an epidemic of obesity, inactivity and limited access to health and fitness opportunities. It's no surprise that the installation of other exercise areas in Detroit—including along the Detroit Riverfront, Dequindre Cut Greenway and within City parks—has seen significant increases in demand and usage.

Over the last decade—and particularly since the pandemic—outdoor fitness parks and exercise areas have emerged as a popular alternative to the traditional indoor gym.

LOCATION

The exercise areas will be located at regular intervals along the greenway that provide convenient access and meet the needs of the adjacent neighborhoods.

CRITERIA

Exercise areas will provide a well-rounded fitness program, including aerobic, muscle fitness, balance/flexibility and core elements, with a minimum of one product in each of these areas. Other criteria include:

- Universal access for all levels of ability and different demographics
- Body-weight resistance units that can be used regardless of age or level of physical conditioning
- Equipment that is interesting and engaging to encourage repeat usage versus just static elements
- Meet industry safety standards and requirements
- Low maintenance and durability
- Match the equipment color of black and gray selected by the General Services Department

CONSIDERATIONS

As with active playground areas, safety surfacing that meets industry standards should be installed. Each piece of exercise equipment should be accompanied by clear, easy-to-follow instructional signs—ideally two to three short statements with visual graphics.

LANDSCAPE ELEMENTS

TREE GRATES

Tree grates provide critical planting space in challenging urban environments while maintaining space for pedestrian traffic. The tree grates prevent litter buildup in the planting area, prevent compaction of planting soil and suppress weed growth.

LOCATION

Locate in on-street greenway segments, plazas and urban spaces where maximizing pedestrian walking space is a priority.

CONSIDERATIONS

Key design and implementation characteristics to consider when using tree grates include the following:

- Specify salt-tolerant tree species
- Consider watering and irrigation needs
- Provide below ground tree ball stabilizing during establishment
- Install root barriers
- Ensure proper drainage through use of underdrains and/or drainage aggregate
- Install aeration and watering PVC tube
- Maximize planting area and proper planting mix
- In locations where tree grates are near or above underground utilities, care should be taken to select tree species that do not have taproots. Trees with taproots, such as burr oak trees, may damage utilities with their root structure.

Broadway Streetscape, Detroit

Photo: SmithGroup

RECOMMENDED TREE GRATE MODELS

Ironsmith 'ADA' 4ft. x 12ft.

12" x12" opening
Cast Ductile Iron with Baked on Oil-finish
Load Class C
ADA compliant

EJCO 'Sunray' 4ft. x 12 ft.

12" radius opening
Cast Ductile Iron with Baked on Oil-finish
Load Class C
ADA compliant

Iron Age Designs 'Rain' 4ft. x 12 ft.

12" x12" opening
Cast Ductile Iron with Baked on Oil-finish
Load Class C
ADA compliant

Urban Accessories 'Rainbow' 7 ft. dia. round

16" diameter opening
Cast Ductile Iron with Baked on Oil-finish
Load Class C
ADA compliant

RESIN BONDED AGGREGATE TREE PIT SURFACE

Combining natural aggregates with a resin binder, these surfaces produce a walkable area that provides benefits similar to those of tree grates—while also providing a permeable surface for air and water infiltration.

LOCATION

Resin bonded aggregate tree pit surface can be used in applications similar to those of tree grates, as well as in locations where existing trees impede the use of tree grates.

RECOMMENDED MANUFACTURERS

- **Gravel-Lok:** manufactured and provided by Paramount Materials
- **Addapave TP**: manufactured and provided by Chameleon Ways
- **Arboresin**: manufactured and provided by Citygreen

CONSIDERATIONS

Provide loose aggregate (without resin) between a stainless-steel collar around the tree trunk to allow for tree growth. Lightly broadcast clear crushed glass grit grade 300 onto the finished surface to provide increased skid resistance.

IN-GROUND PLANTERS

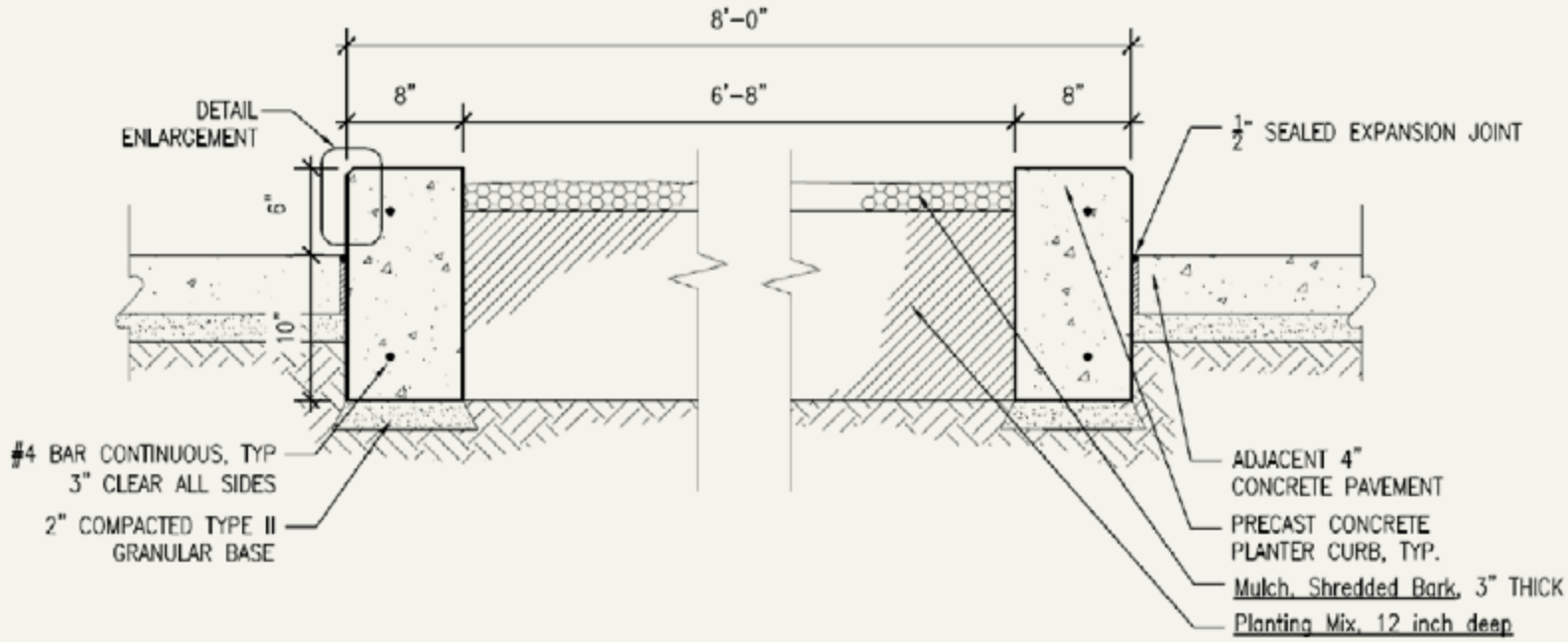
In-ground planters composed of precast concrete planting curbs can be used for the same purpose as the freestanding planters. However, the in-ground planters are installed directly in the ground to minimize the impact of plant die-back from the repeated freeze thaw of the planting soil. The in-ground planters can extend over a greater distance than freestanding planters to increase the impact of the buffer and aesthetic aspects of the plant material.

LOCATION

Use as a replacement for or in combination with delineator posts within the roadway buffer areas separating vehicular / parking lanes from bike lanes / shared-use paths.

RECOMMENDED MANUFACTURER

American Eagle Precast



FREESTANDING PLANTERS

Freestanding planters provide key safety benefits and access control between vehicles and bikes, while adding an aesthetic component to the greenway, particularly in urban streetscapes with limited green space.

These elements provide physical and visual delineation of space, reducing accidents and creating a sense of comfort for greenway users. Planters have higher visibility and presence than standard delineator posts.

LOCATION

Use as a replacement for or in combination with delineator posts within the roadway buffer areas separating vehicular and parking lanes from bike lanes and shared-use paths.

CONSIDERATIONS

The freestanding planters are exposed to weather conditions that will likely lead to repeated cycles of freeze and thaw, resulting in a high percentage of plant death in the winter season, requiring annual replacement. Planning for regular watering and maintenance will be required to successfully maintain the health of the plant material during the growing season.

Planters along the Detroit Riverwalk
Photo: Hannah Ervin, Detroit Stock City

RECOMMENDED MODELS

FREESTANDING PLANTER

JAY SCOTTS COLLECTION 'PERTH PLANTER'

16" wide x 48" long x 42" height
Fiberglass
Color: Matte Black and Matte Charcoal

Where to use:
Within the roadway buffer areas separating vehicular / parking lanes from bike lanes shared-use paths.

FREESTANDING PLANTER

CRESCENT GARDEN 'ELLIS PLANTER'

Resin Composite
20" wide x 48" long x 44" height
Color: Black and Old Bronze

Where to use:
Within the roadway buffer areas separating vehicular / parking lanes from bike lanes / shared-use paths.

SIGNAGE & WAYFINDING

A comprehensive signage system will play a key role in the success of the greenway by providing directions for greenway users to find their way to desired destinations; indicating distances; providing information; maintaining regulatory control; and helping to establish the identity and image of the greenway. As the Joe Louis Greenway will circle the entire Detroit metro area—and will travel through numerous neighborhoods, parks and other green spaces—greenway users will feel safer and more comfortable if they understand where they are and how to get to where they want to go. Signage can also help set the tone of the greenway through positive and informative messaging that provides greenway users the ability and confidence to act independently.

To create a defined and deliberate system that sets the visual character of the greenway, the signage system should be guided by a consistent and strategic approach that avoids unnecessary clutter and distraction. To achieve this, four basic sign types will be incorporated into the greenway.

REGULATORY SIGNS

Regulatory signs will inform road users of selected traffic laws and regulations that are applicable to a particular location. Primary examples of these types of signs are stop signs, speed limit signs, lane designators, etc. The regulatory signage for the greenway will be provided as defined in the Michigan Manual on Uniform Traffic Control Devices (MMUTCD). Similar smaller scale signs will be used along the greenway to guide people.

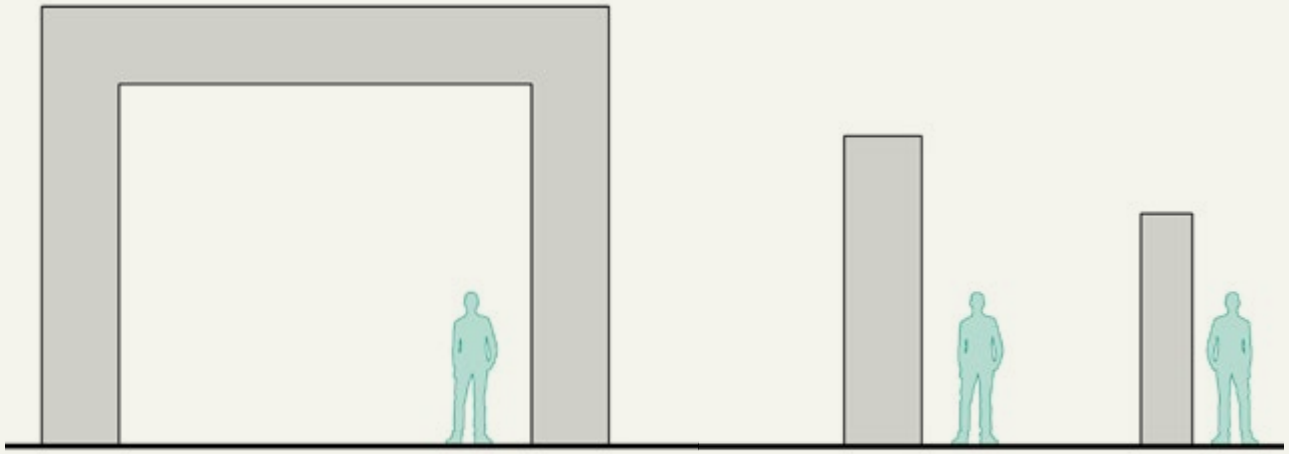
EDUCATIONAL AND INTERPRETIVE SIGNS

Educational and interpretive signs will highlight the unique history, culture, environment and features of the greenway and surrounding area. These types of signs are intended to expand greenway users' experience in a positive way by providing meaning and context to the greenway, and a sense of connection to the local community. These interpretive signs will be created in an interesting, engaging and compelling fashion.

WARNING SIGNS

Warning signs call attention to unexpected conditions and to situations that might not be readily apparent to greenway and roadway users. These types of signs may alert people to factors such as road crossings ahead, speed humps, steep hills, sharp curves in the road or shared-use paths that might call for a reduction in vehicular and/or bike speed. These signs are provided to ensure the safety of the general public and to maintain efficient transportation circulation.

Milliken State Park, Detroit Photo: SmithGroup



GREENWAY INFORMATIONAL AND WAYFINDING SIGNS

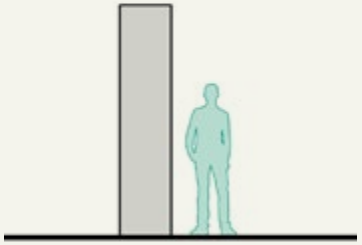
Greenway informational and wayfinding signage will answer key questions for greenway users. These signs will guide people along the greenway by providing maps, general greenway information, directional signs to destinations– as well as trail marker and mile marker signs that provide key information and enable users to confirm where they are on The greenway.

GATEWAY

Located at major access points and key destinations, gateway signage identifies the greenway with clear branding and identity.

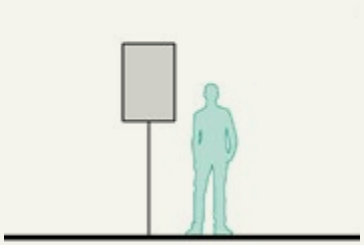
IDENTITY

Identity signage announces the location of key landmarks, greenway destinations and amenities.



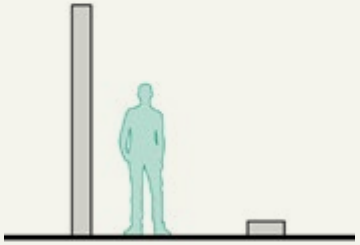
MAP & INFORMATION

These map and information signs help orient greenway users, providing background about the Joe Louis Greenway, as well as site and segment-specific context. This may include: history and facts about the greenway and its context, hours of operations and guidelines for greenway use. Maps help users identify their location and proximity to nearby amenities.



DIRECTIONAL

Directional signage indicates current location and provides guidance to nearby destinations and greenway amenities. These signs provide clear indications of direction of travel, distance and routing.



TRAIL MARKER

Guide signage along the greenway informs users that they are on the Joe Louis Greenway. These signs may also be used off of the greenway or at intersections to provide directions either to access or remain on the greenway route.

MILE MARKER

Signage at regular intervals of 1/10 of a mile to identify a user's particular location, enabling them to know how far they have traveled and how far they may need to go to get to their destination.

GREENWAY PAVEMENT

The greenway pavement design and construction detailing is critical to the success of the greenway. It's the most significant physical feature of the greenway—and one of the primary drivers for the construction cost.

The greenway pavement surface shall meet the following primary requirements:

- Easily navigable by all users and types of non-motorized transportation
- Complies with universal access and ADA standards
- Conforms to the requirements and standards of the AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities
- Engineered for the specific site conditions and the volume and type of users

The specific pavement design for the paved greenway surface should be based upon the specific loading requirements, site-specific soil conditions and anticipated volume of users. The pavement surface shall be designed to accommodate emergency and maintenance vehicles along with daily greenway users. The recommended pavement depths noted below will need to be confirmed based on the actual site conditions. The specific pavement designs may require the addition of a geotextile for areas with soft soils and other design modifications to address specific conditions.

HMA (asphalt) surface material is popular due to its flexibility and relatively low construction cost. Concrete surfaces are capable of withstanding more significant environmental forces if it is properly installed. Concrete is often used to increase the design life and to mitigate the challenging conditions that are often found in urban settings.

HMA (ASPHALT) PAVEMENT

Best for: Runners, joggers, skateboarders and rollerblades

Construction Cost: $3 to $5 per sq. ft.

Lifespan: 7 to 15 years on average (may be extended with consistent and comprehensive maintenance)

Maintenance: Regular maintenance is required:
- Resealing and resurfacing every 3 to 5 years, depending upon pavement design and site conditions
- Reapplication of pavement markings every 1 to 3 years, depending on materials used, user volumes and weather

Sustainability:
- Typically includes recycled materials
- Asphalt absorbs more heat from the sun, contributing to urban heat island effect and softening pavement material

CONCRETE PAVEMENT

Best for: Bikers, e-bikes, walkers and people with strollers

Construction Cost: $7.50 to $10 per sq. ft.
Lifespan: 25 - 50 years on average
- Dependent upon proper installation
- Lifespan can be influence by concrete mix design and environmental factors

Maintenance: Some minor maintenance is required:
- Maintenance typically involves small repairs and is less frequent than asphalt
- Reapplication of pavement markings—sandblasting markings can eliminate this maintenance need
- Concrete may be damaged by salt or other de-icing chemicals

Sustainability:
- Concrete may include recycled materials
- Light color reflects more sunlight, lowering contribution to urban heat island effect

OFF-STREET GREENWAY SEGMENTS

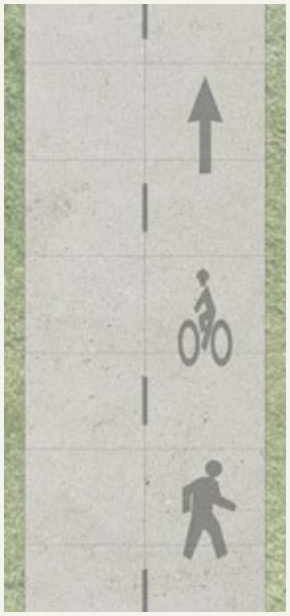
PEDESTRIAN PATH (LOWER SPEED USERS)
BIKE PATH (HIGHER SPEED USERS)

- 6″ min. concrete surface
- Min. 6″ compacted aggregate base

BIKE PATH SHOULDER (MID SPEED USERS)

- 2″ HMA wearing course
- 2″ HMA base course
- 6″ compacted aggregate base course
- Special attention should be paid to the design of the edge to minimize deterioration

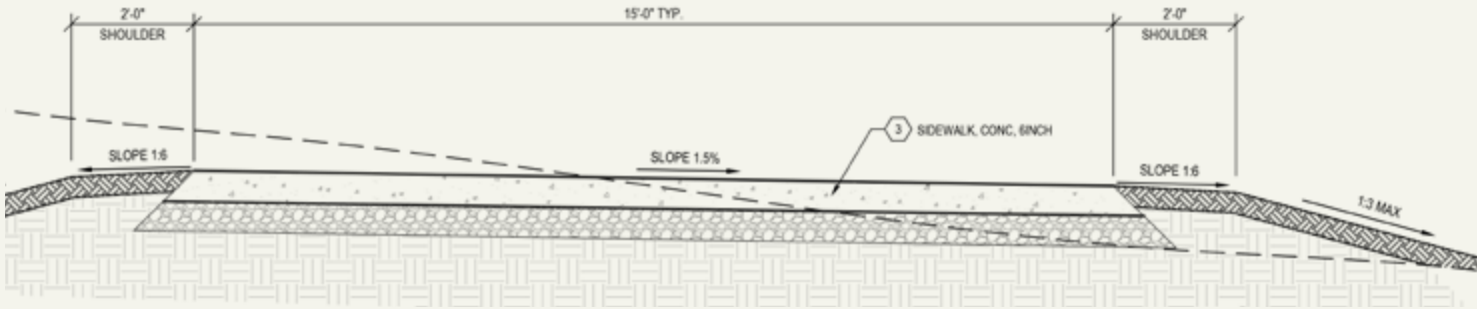
SANDBLASTED MARKING



PAVEMENT MARKINGS

Pavement markings on concrete trail expressed using medium sandblasting to expose dark aggregate to create a more permanent and lower maintenance series of markings

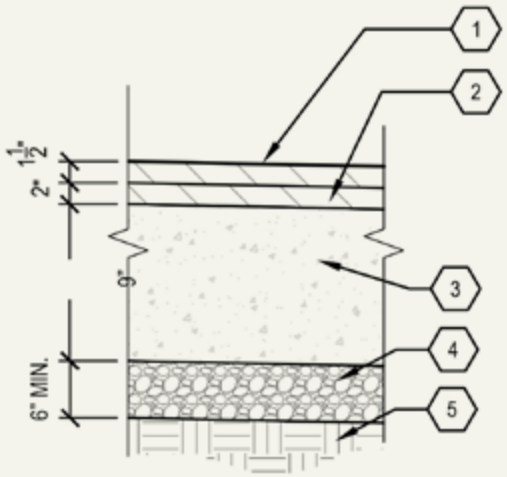
Where to use: Use for pavement markings including lane lines, users allowed and directional arrows and to indicate location along trail.



OFF-STREET PAVEMENT SECTION

ON-STREET GREENWAY SEGMENTS

On-street Pavement (Per City Detroit Standard)



1. HMA, 5E3 (TOP COURSE)
2. HMA, 4E3 (LEVELING COURSE)
3. NON-REINFORCE CONCRETE BASE COURSE
4. AGGREGATE BASE, 21AA, MODIFIED (6" MIN. DEPENDENT UPON SOIL CONDITIONS)
5. COMPACTED SUBGRADE

PAVEMENT MARKINGS

On-street and Right-of-Way pavement markings will be provided per the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), City of Detroit and Traffic Engineering Division standards and requirements. The pavement markings will both supplement the signage system and independently define regulations, guidance and warnings.

Where to use: Use for pavement markings including lane lines, buffers and directional arrows.

OTHER SITE FEATURES & GREENWAY ENHANCEMENTS

DRINKING FOUNTAINS

Outdoor drinking fountains and water bottle fill stations provide convenient hydration to people and pets, especially adjacent to active public spaces.

LOCATION

Locate at major access points.

CONSIDERATIONS

Requires connections to a potable water source and drain connection. Requires annual maintenance and winterization.

WATER FOUNTAIN

Product: Most Dependable Fountains 10155 SM with pet fountain

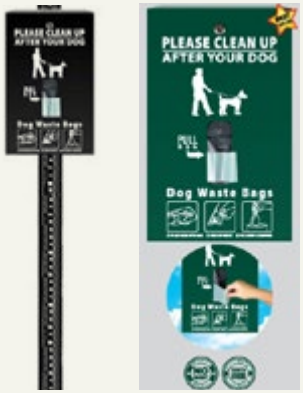
Material: Powdercoat 3/16" steel one-piece weld construction with stainless steel bowls.

Dimensions: 54" total height with 32" height ADA fountain

Options: Bottle filler with attached ADA drinking fountain and pet fountain. Include optional stainless steel surface carrier.

Color: Black Powdercoat

Location: Locate at major trail access points and major gathering spaces.



WASTE BAG DISPENSER

Product: Livin The Dog Life 'The Pet Caddy'

Description: Aluminum with powder coat finish. In-ground mount. ADA compliant. Custom Joe Louis Greenway logo.

Color: Black and Green.

WASTE BAG DISPENSER

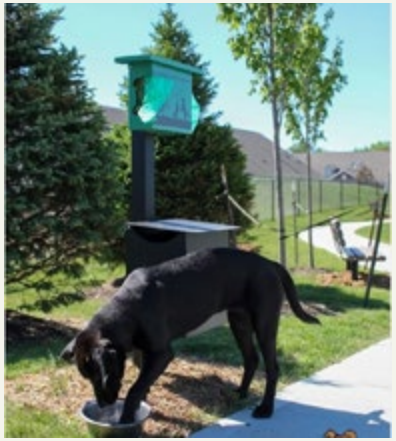
Dog walking is a popular activity on greenways, which means the sanitary disposal of dog waste is important to maintaining a clean greenway.

LOCATION

Locate at regular intervals along the greenway not exceeding 2,000 feet and at locations adjacent to large green open spaces.

CONSIDERATIONS

Coordinate with locations of trash receptacles for disposal of dog waste.



DOG LITTER BAG DISPENSER

Product: Gyms for Dogs Pet Waste Bag Dispenser with in-ground post

Material: Aluminum dispenser with aluminum mounting post

Dimensions: 4'-0" dispenser mounted height

Color: Grass Green dispenser with Black Powdercoat post

Location: Locate at regular intervals along the greenway not exceeding 2,000 feet and at locations adjacent to large green open spaces.

For the following greenway amenities and furnishings refer to the framework plan section noted.

- Lighting—Refer to Lighting Section
- Scooter and Electric Bike Infrastructure—Refer to User Types and Micro-mobility section.
- Transit facilities including bus shelters—Refer to the Transit Section
- Major access point pavilions and restroom facilities—Refer to the Major Access Point Section
- Security System components including security cameras and emergency call stations—Refer to Security Section
- Performance Measures and counters for greenway users—Refer to the Performance Measures Section

RETAINING WALLS

Retaining walls and other similar structures will be designed and engineered by a structural engineer to address actual site conditions, meet applicable codes and to ensure a safe greenway.

PRE-CAST CONCRETE RETAINING WALL

Product: Unilock - Durahold Pre-cast Concrete Blocks

Color: Natural

Location: Utilize as necessary to coordinate with a change in grade within the greenway or along adjacent properties. Can be utilized along bioswales to increase swale capacity where space is limited.

CONCRETE BLOCK RETAINING WALL

Product: Stone Strong Systems - Pre-cast Concrete Blocks

Description: 6 SF block, Face 4 feet x 18 inches, Width 44 inches. The 6 SF block allows for tighter turning radius, wall steps a 18-inch increments and vertical and horizontal adjustments.

LIMESTONE BLOCK RETAINING WALL

Product: Michigan Natural Limestone Blocks

Description: High quality limestone specific for landscape treatments (color, buff or tan)

Rectangular in shape, with a general cross section dimension of 20 to 36 inches square. Length varies from 48 to 60 inches.

BEING OUTDOORS IN DETROIT IS THE GATEWAY TO COMMUNITY. LIVING IN A NEIGHBORHOOD, LIVING IN THE CITY, IT'S NOT ABOUT GOING FROM YOUR HOUSE TO WORK—IT'S ABOUT BEING OUTDOORS. THAT'S WHERE COMMUNITY HAPPENS AND WHERE COMMUNITY IS BUILT.

A performer puts on a display at the Wilkins Plaza on the Dequindre Cut

Photo: SmithGroup

PLAZAS & GATHERING SPACES

Gathering spaces will be located along the greenway to support community activities, recreation, and events. Locations will be determined by community needs, distance from other public park facilities, and the space available within the greenway corridor. Plazas with larger hardscape areas will be located where events will be staged most frequently in order to ensure a durable ground surface.

Open lawn areas with shady tree canopies will serve as flexible spaces for hosting gatherings, and for community groups and families to come together. The appropriate use of materials and lighting will ensure the safety and accessibility of gathering spaces. Provisions for electricity and water will support event operations and support ongoing maintenance.

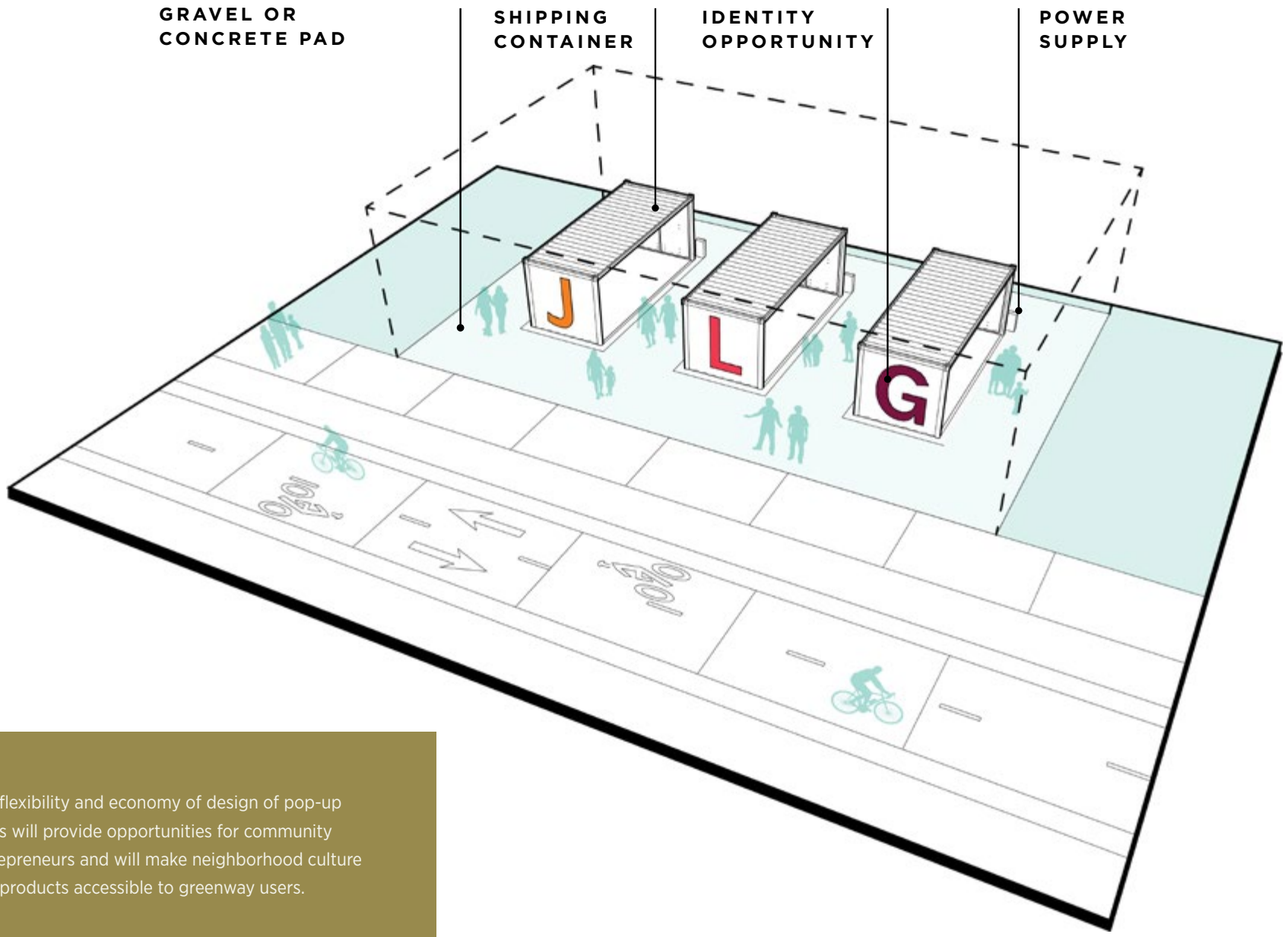
Cullen Plaza, Detroit
Photo: SmithGroup

POP-UP RETAIL & COMMERCIAL

A pop-up is a low-cost, short-term retail space that provides activation and accessible opportunities for small businesses and entrepreneurs. These spaces can enliven the greenway, provide access to local products and enable adjacent neighborhoods to create a presence along the greenway.

CONSIDERATIONS INCLUDE:

- **Appropriate frequency and location**
- **Durable and versatile materials**
- **Operational considerations**
- **Leasing and use structure**
- **Provisions for storage**
- **Power, lighting and data**
- **Access for maintenance, service, and emergency vehicles**



The flexibility and economy of design of pop-up areas will provide opportunities for community entrepreneurs and will make neighborhood culture and products accessible to greenway users.

PAVILIONS & STRUCTURES

Pavilions and covered structures can serve as landmarks that reflect the greenway identity and the unique qualities of the surrounding neighborhoods through design and community art. They will be located at major access points, at points where users will transfer between vehicles and bikes and in larger gathering areas. Major access points will include small pavilions, 1,000 to 1,500 square feet in size, along with complementary site improvements, which may include:

- Vendor space, including bicycle rental, concessions and cafes
- Seating area
- Flexible open space
- Storage for equipment, security and digital infrastructure

Structures can incorporate sustainable design measures, including management of roof stormwater; efficient and renewable energy systems, such as photovoltaics and geothermal; and an emphasis on passive systems, materials, orientation to address prevailing winds and undesirable heat gain.

Shade structures are essential features of greenways, park areas and other outdoor spaces, as they provide the following key functions:

- Protection from overexposure to the sun and heat exhaustion, especially for young children and the elderly
- Enhancing comfort and extending the length of time that greenway users may spend outdoors
- Reducing the temperature of play equipment in exposed locations
- Increasing the attractiveness of greenway facilities, highlighting key destinations and helping define the identity of the greenway

LOCATION

Locate at major access points, playgrounds, exercise areas, outdoor café areas and other areas that may require longer lengths of time outdoors.

CONSIDERATIONS

Shade structures can be significant capital investments that require careful planning and implementation.

TAKING A BREAK AT THE SKATE PARK IN DETROIT'S RIVERSIDE PARK

Credit: City of Detroit

RESTROOM FACILITIES

As the community expressed great interest in restroom facilities, they will be located at major access points and within adjacent public parks and facilities. Locations will be determined by proximity to high-demand gathering areas, physical space available and accessibility for regular service and maintenance.

Space will be reserved at major access points without restrooms to accommodate temporary bathroom facilities for special events. Restroom facilities will be added as demand increases and funding allows. Opportunities to provide restrooms for greenway users within adjacent businesses and nearby developments will also be pursued. Permanent facilities will be designed with the following characteristics:

- Durability, vandal-resistance and ease of maintenance
- Safety and ADA accessibility
- Energy, water, natural light and ventilation
- Picnic canopies and storage
- Water fountains

"ADD POWER STATIONS, RESTROOMS AND BENCHES"

Restroom Bldg, Sioux City

Photo: SmithGroup

LIGHTING STANDARDS

Exterior lighting serves a number of functions, including assisting with navigation and wayfinding, illumination of social areas, highlighting features and obstacles, promoting safety and security and contributing to the overall experience and design character of the Joe Louis Greenway.

Site lighting should be designed to meet site-specific needs and define the aesthetic character of the space. Care should be taken to provide adequate lighting while not over-lighting areas. Good lighting design carefully balances the intensity, timing, color and placement of lights to achieve the optimum level of illumination while, at the same time, managing light pollution, light trespass and glare.

The Illumination Engineering Society (IES) recommends the following lighting standards where safety can be a concern for public spaces, parks and greenways.

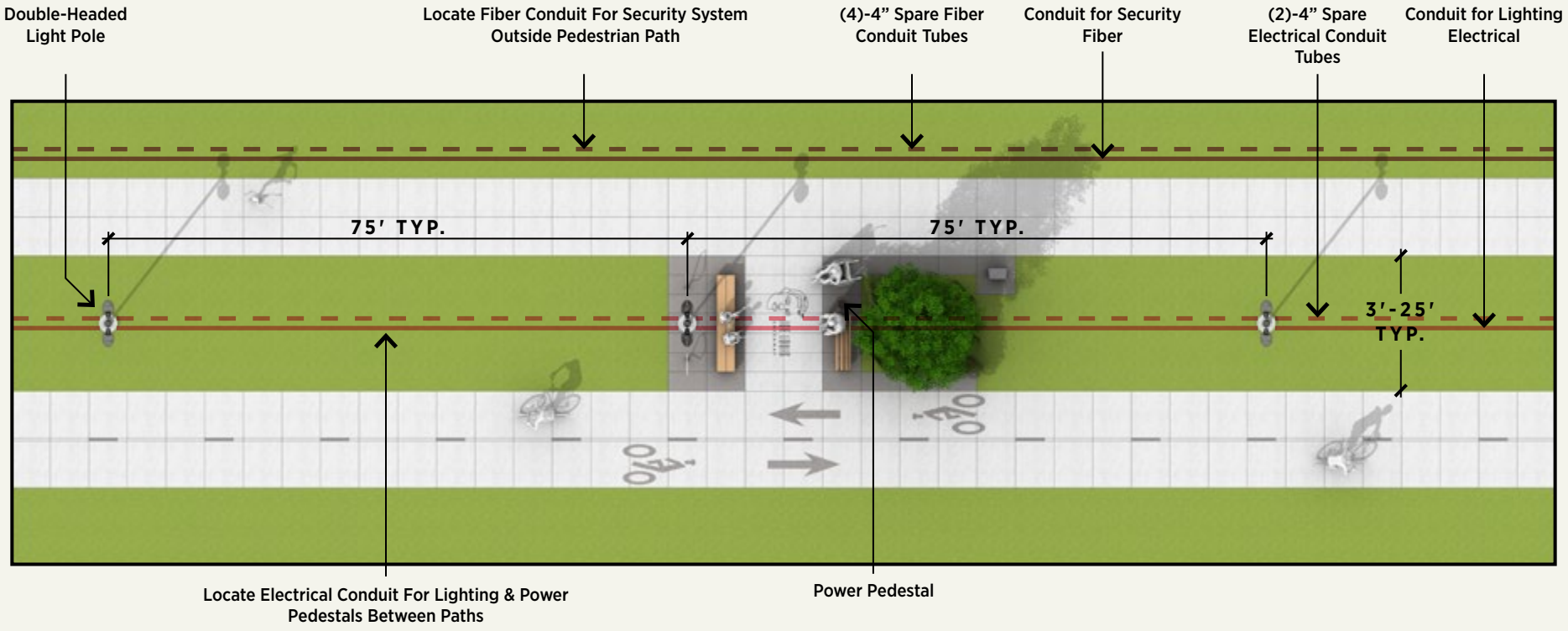
- 3.0 footcandles (fc) horizontal illuminance on average on the ground surface and to a 5 ft. height above ground surface
- Average to minimum uniformity ratio no greater than 4:1
- Shared-use pathways should have illumination to a distance of 30 ft. on both sides

Greenway light poles should be coordinated with the overall site design to support the overall design objectives, intended aesthetics and to avoid conflicts with other features. In lighting the greenway, a hierarchical priority should be established:

- **Primary:** focus on high activity areas, road crossings, bridges/viaducts and major event areas
- **Secondary:** focus on the greenway shared-use paths
- **Tertiary:** specialty lighting for signage, artwork and other similar features

Source: Nathan Dumlau, Unsplash

"WHEN I FIRST CAME TO OUR NEIGHBORHOOD, THE CHILDREN WOULD BE OUT ON THE STREET, EVERYONE WOULD BE ON THEIR FRONT PORCHES. YOU'D HEAR THE LAUGHTER OF CHILDREN, NEIGHBORS WORKING IN THEIR YARDS. MY KIDS WOULD GO AROUND THE CORNER AND THEY'D PLAY UNTIL THE STREETLIGHTS CAME ON. IT WAS A WONDERFUL THING."


Double-Headed Light Pole
Locate Fiber Conduit For Security System Outside Pedestrian Path
(4)-4" Spare Fiber Conduit Tubes
Conduit for Security Fiber
(2)-4" Spare Electrical Conduit Tubes
Conduit for Lighting Electrical
75' TYP.
75' TYP.
3'-25' TYP.
Locate Electrical Conduit For Lighting & Power Pedestals Between Paths
Power Pedestal

In areas where the bike and pedestrian paths are separated by 25′ or less, double-headed light poles should be centered between the paths. Separate poles will be needed to light each path when the space between paths exceeds 25′.

For simplicity and efficiency in maintenance, electrical conduit for lighting and power pedestals should be located between bike and pedestrian paths where possible. Conduit for the security system should always be outside of the pedestrian path.

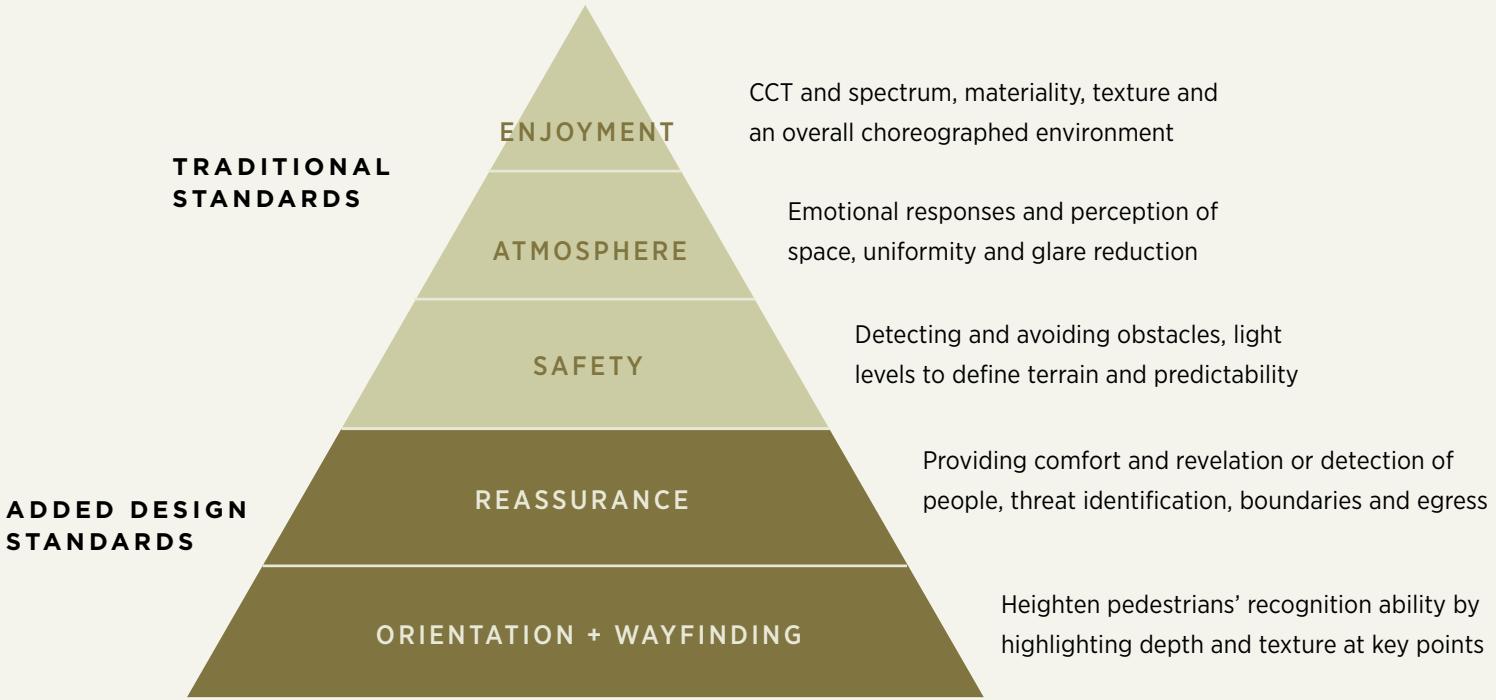
Greenway lighting enhances the nighttime safety of the shared-use paths, highlights warnings about potential hazards and increases the overall security. The design of the lighting should coordinate with the site design to place an emphasis on access points, building entrances and other key site features.

The off-street greenway will be lit primarily by LED luminaires mounted on pedestrian scale poles at an approximate height of 15 feet. To achieve the illumination levels noted above, the light poles will be spaced 60 to 80 feet apart. The LED luminaires in a warm color temperature will provide a number of benefits, including energy efficiency, night sky cut-offs and reduced glare and light pollution. Modern LED luminaires have a great deal of flexibility in their optic patterns, which can extend the spacing requirements of light poles and direct the lighting in a more specific and consistent pattern. The greenway luminaires will be fitted with a rectangular optic pattern that best correlates with the design of the shared-use paths.

On-street greenway segments will be integrated and designed to meet the Detroit Public Lighting Authority (PLA) standards and requirements for street lighting. Additional pedestrian lighting—located on separate poles and/or mounted on streetlight poles—will be provided as needed to meet the same greenway standards as the off-street segments.

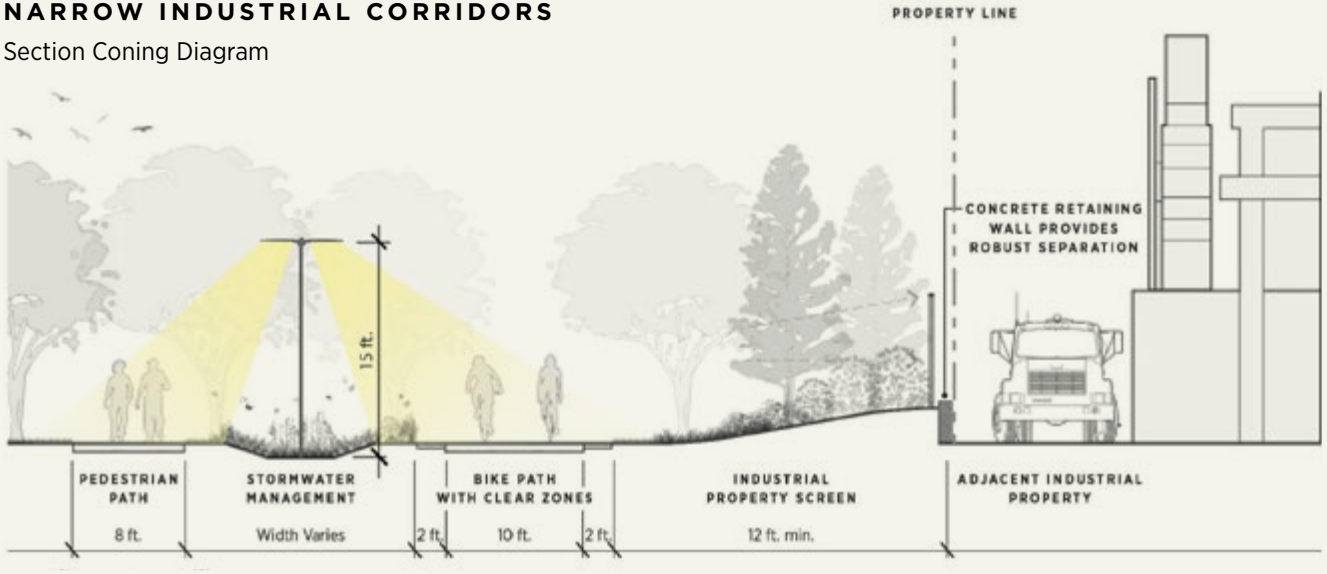
Lighting control, particularly with respect to LED lighting, has advanced dramatically over the last few years, resulting in a greater ability to regulate light levels, timing, energy use—and other innovative uses. The following lighting system control systems will be investigated for inclusion into the off-street greenway segments.

- LED dimming and management to control light levels and energy usage
- Control equal lighting uniformity and intensity throughout the lumen depreciation period to control power to the LED luminaire
- LED luminaire end-of-life alerts enabling a more efficient re-lamping process
- Motion-sensing controls


TRADITIONAL STANDARDS
ADDED DESIGN STANDARDS
ENJOYMENT
ATMOSPHERE
SAFETY
REASSURANCE
ORIENTATION + WAYFINDING
CCT and spectrum, materiality, texture and an overall choreographed environment
Emotional responses and perception of space, uniformity and glare reduction
Detecting and avoiding obstacles, light levels to define terrain and predictability
Providing comfort and revelation or detection of people, threat identification, boundaries and egress
Heighten pedestrians' recognition ability by highlighting depth and texture at key points

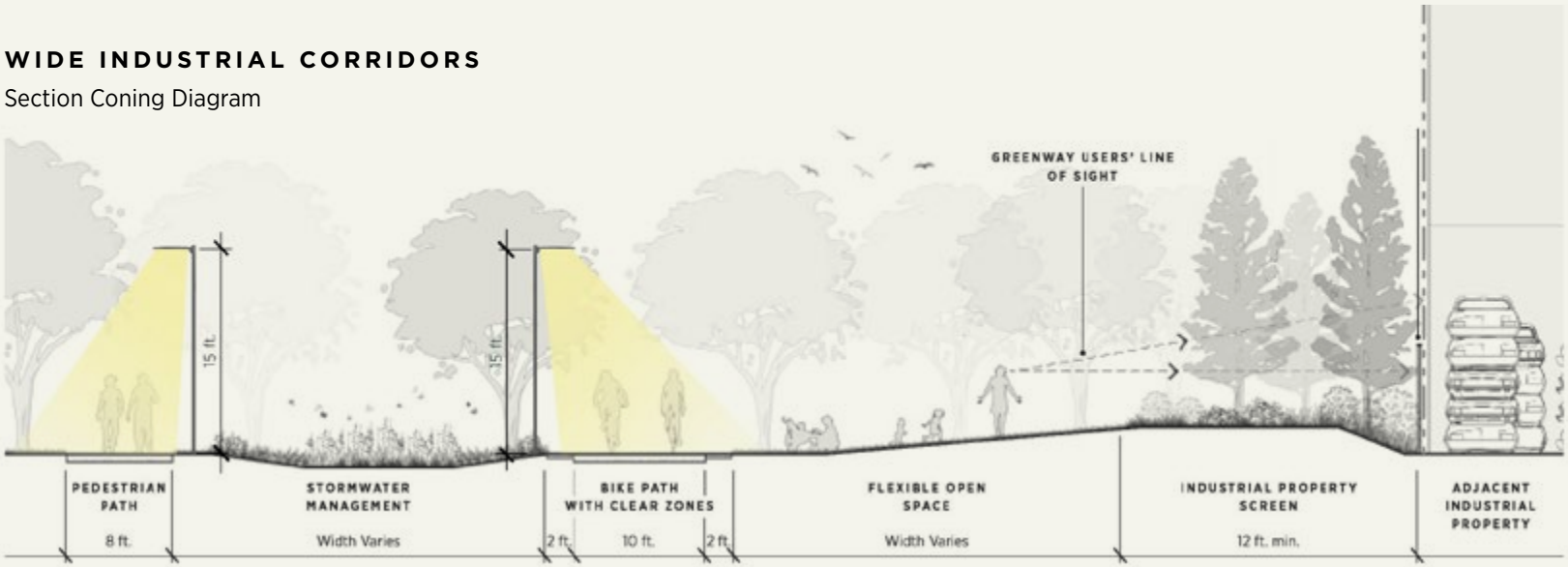
NARROW INDUSTRIAL CORRIDORS

Section Coning Diagram



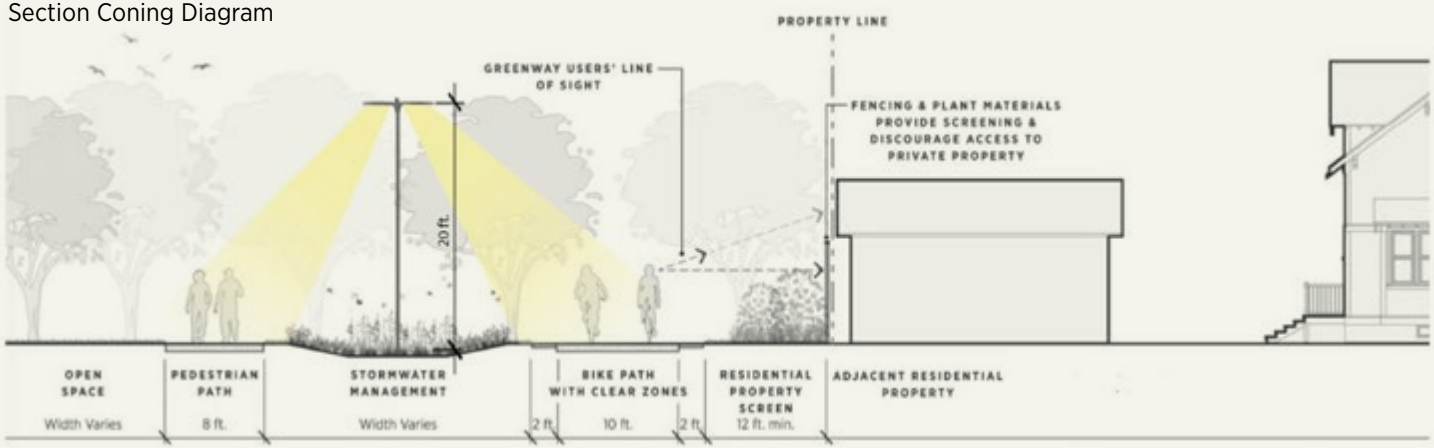
WIDE INDUSTRIAL CORRIDORS

Section Coning Diagram



NARROW RESIDENTIAL CORRIDORS

Section Coning Diagram

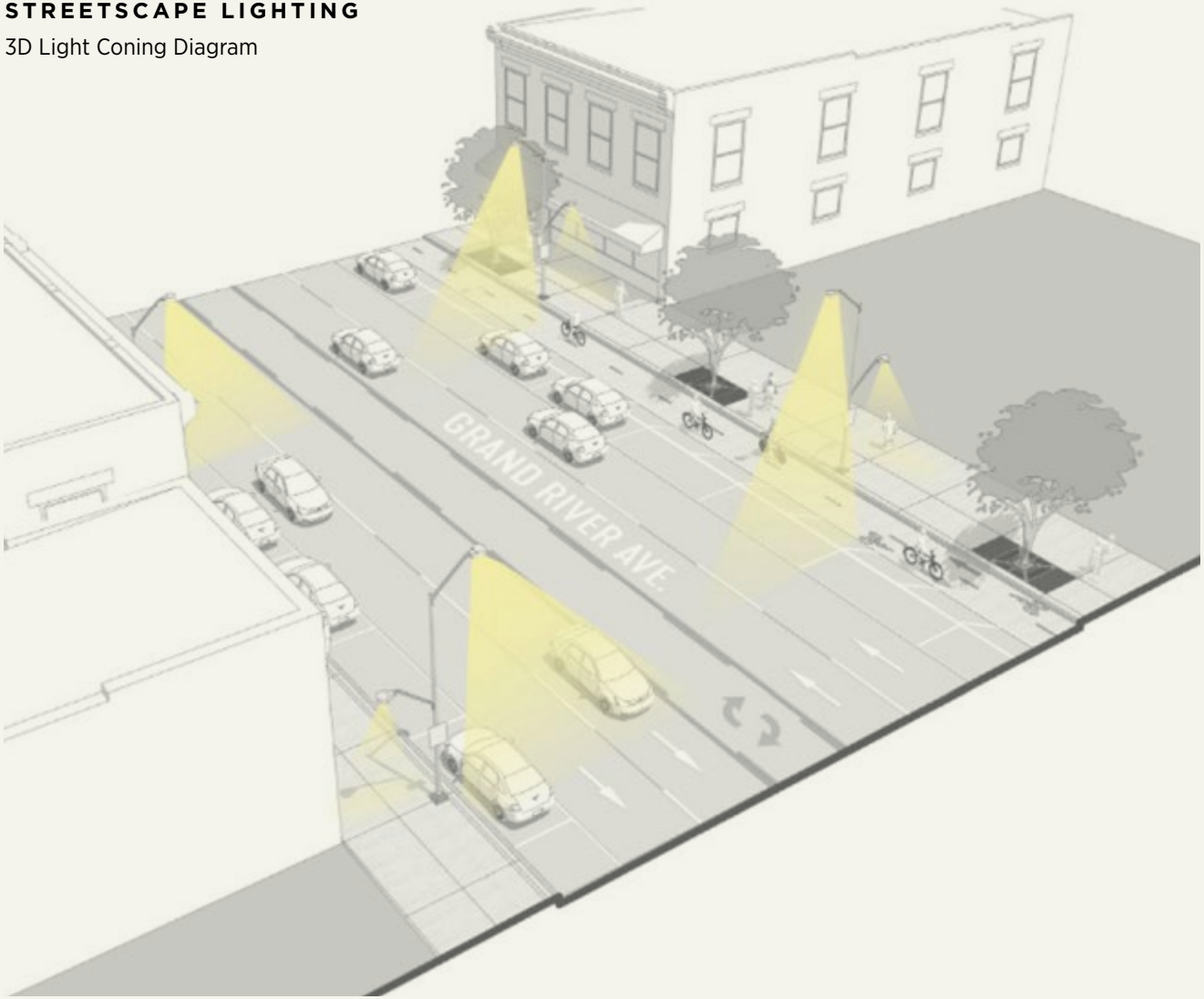


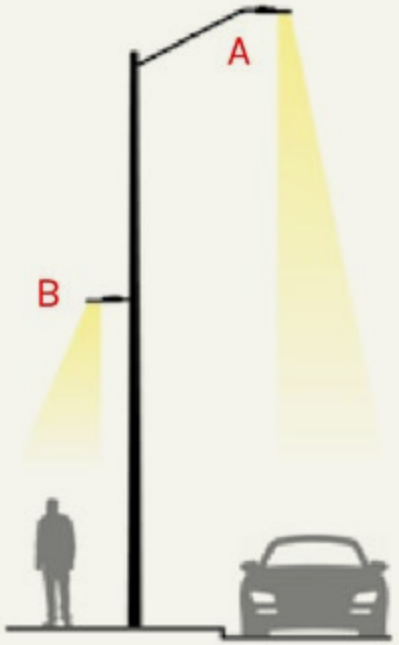
WIDE RESIDENTIAL CORRIDORS

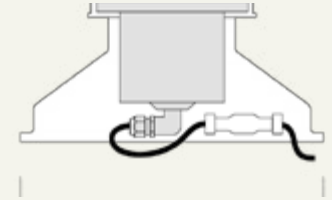
Section Coning Diagram

STREETSCAPE LIGHTING

3D Light Coning Diagram







ON-STREET LIGHT

Product: HAPCO - Single Mast 4-bolt base

Description: Round tapered aluminum pole

Dimensions: 30 ft. height

Variation: PLA light poles and fixtures may be used where appropriate

Location: Locate along on-street greenway segments with pedestrian fixture added on sidewalk side when appropriate.

OFF-STREET & PATH LIGHT

Product: Cree Lighting - Edge Area Flood Square

Description: LED area light, full cut-off (no uplight component) 4000K color temperature, 90 watts, 7000 lumens.

Color: Black or Dark Bronze, Include Power Outlets at Bottom

Location: Locate along off-street greenway segments.

PLAZA LIGHT

Product: WE-EF: FLC (Free Light Chains)

Description: 131 LED floodlight

Dimensions: Structural pole 15 ft. in height. GFCI Outlet at bottom of pole

Color: Black and dark bronze

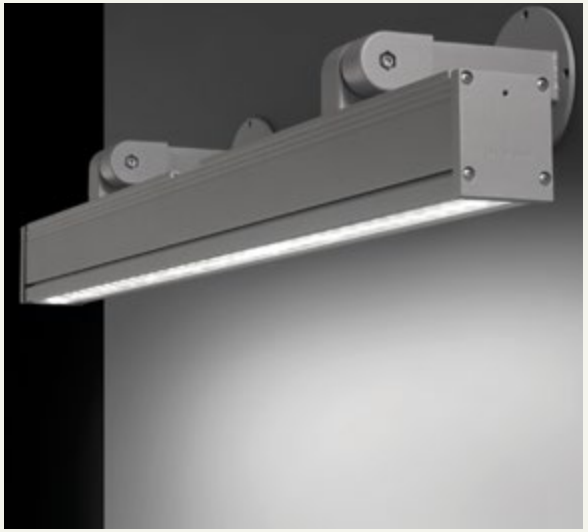
Location: Utilize in seating areas, access points, plazas and gathering spaces, and to highlight public artwork.

UPLIGHT

Product: WE-EF - ETC320-FS LED, Inground Uplight

Description: Flush Installation; Effects and distributions achieved with linear lens, flood lens, 20° wall wash lens, or color filters.

Location: Utilize in seating areas, access points, plazas and gathering spaces, and to highlight public artwork.



LINEAR LIGHT

Product: Insight Lighting - Medley View II Active White light (color changing lighting avail. for special accents)

Color: Black

Location: In underpasses below bridges, viaducts and culverts. The light fixtures will be located at the top of the side walls of the culvert or bridge.

IN-GROUND POWER

Product: Legrand - Wiremold Outdoor Ground Box

Description: Air pocket design: maintains air pocket protecting the device from water, snow & ice.
Flush to the finished ground surface, locking cover.
outlets: 2-gang, 2-20 amp duplex GFCI outlets.

Color: Black

Location: At access points, plazas and large gathering areas for special events, food trucks, etc.

POWER PEDESTAL

Product: Legrand - Wiremold Outdoor Charging Station

Description: Includes area light. 48 ½" height. Outlets: 3-gang with 1-USB outlet and 2-GFCI outlets.

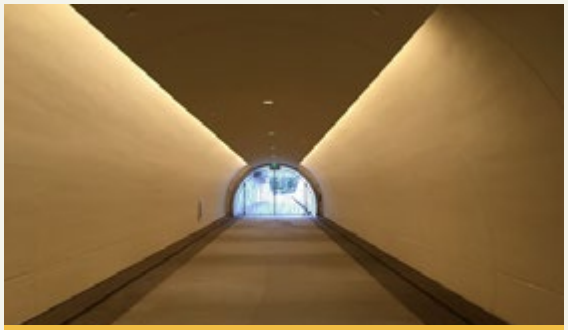
Color: Black or Bronze

Location: At access points, plazas, large gathering areas, seating areas and other locations requiring access to power for use by the public.

SPECIAL LIGHTING CONDITIONS
BRIDGE UNDERPASSES

LIGHT POLES

COLUMN/WALL MOUNTED - DOWNLIT



COLUMN/WALL MOUNTED - UPLIT

ARTFUL LIGHTING - COMMISSIONED

Where feasible, lighting for bridge underpasses will maintain a consistent pattern of light poles. In cases where height clearances do not accommodate poles, wall- or column-mounted fixtures can be utilized, with conduits concealed as much as possible. Special lighting that serves as a feature or amenity along the greenway can be commissioned and integrated, assuming it meets safe lighting criteria relative to glare and photometric distribution.

Dequindre Cut Greenway, Detroit

Photo: SmithGroup

GREENWAY ACCESS POINTS

DESIGN CONSIDERATIONS

Access point design will reflect the overarching aesthetic language and features of the broader greenway while highlighting safety and access for greenway users. Design will address safety, service access, and maintenance, and will be sized to provide visibility, access and flexibility for changes in the number of users.

MINOR TRAIL ACCESS POINTS

Minor access points feature smaller footprints and offer limited, but essential amenities. Key elements may include:

- Wayfinding and Interpretive signage
- Seating areas
- Bike parking
- Bike repair stations
- Litter receptacles
- Drinking fountains
- Lighting and outdoor power stations
- Service access
- Barriers to prevent vehicle access
- Public art and cultural amenities
- Site landscaping
- Other site-specific improvements and enhancements

MAJOR TRAIL ACCESS POINTS

In addition to the features of the minor trail access points, major access points provide a greater degree of services and will serve a large number of users. Key elements may include:

- Restrooms
- Shade structures or pavilions
- Vehicle parking
- Gathering and event spaces
- Seating and dining areas

TYPICAL MAJOR TRAIL ACCESS POINT LOCATIONS AND CONDITIONS

Woodward Viaduct

Warren at Conrail

PHOTOS

1. Dequindre Cut Gratiot Street Entrance. Credit: SmithGroup

2. Midtown Loop, Detroit. Credit: SmithGroup

3. East Riverwalk, Detroit. Credit: SmithGroup

4-5. Dequindre Cut Wilkins Street Entrance. Credit: SmithGroup

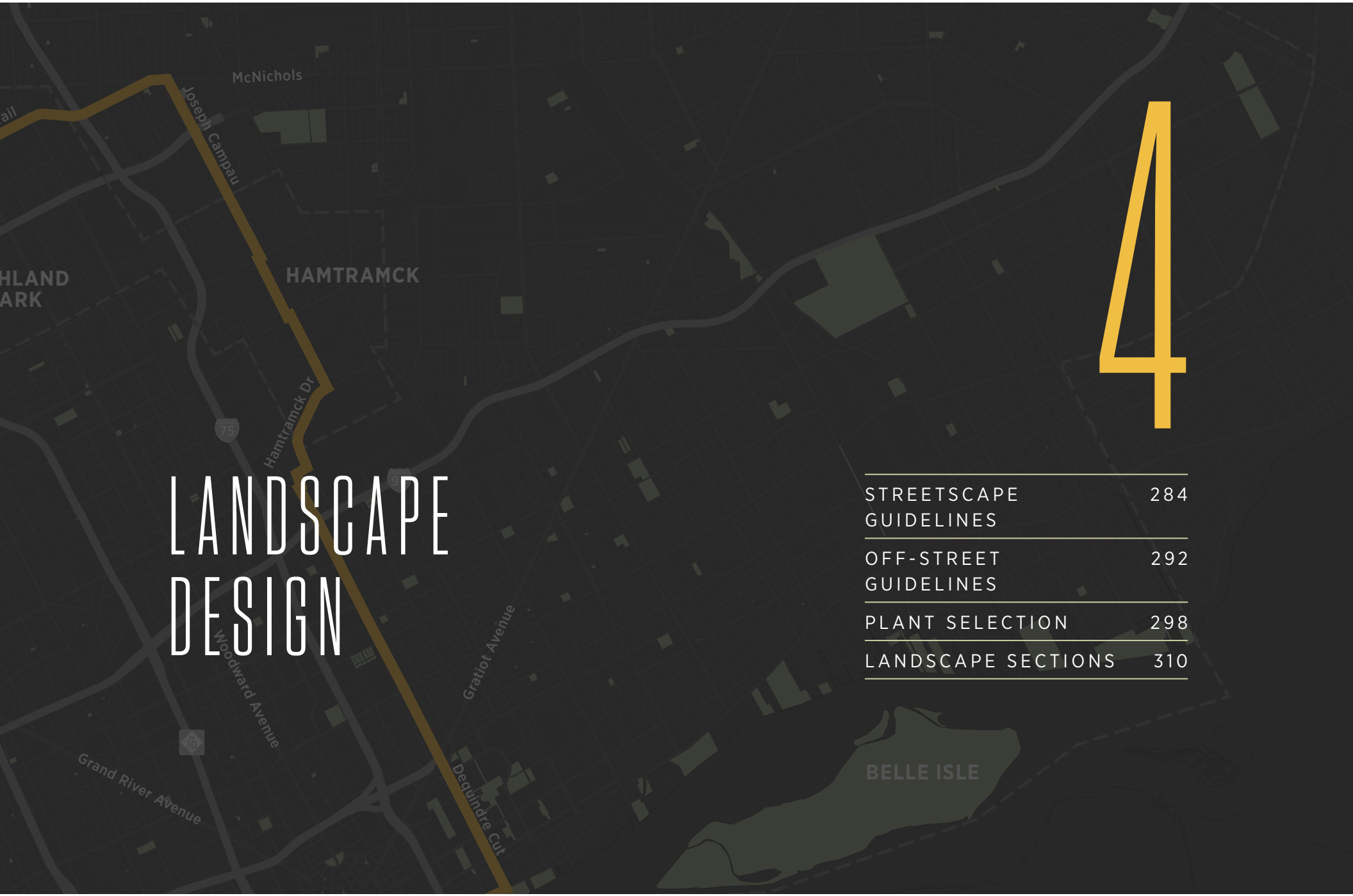
6. Dequindre Cut Wilkins Street Entrance. Credit: SmithGroup

Elizabeth Park Northpointe Riverwalk, Trenton
Credit: SmithGroup

CHAPTER 4

LANDSCAPE DESIGN

Source: James Brown



4

LANDSCAPE DESIGN

LANDSCAPE DESIGN

PRIORITIZING SUSTAINABILITY AND ENVIRONMENTAL DESIGN STANDARDS

The landscape design strategy for the Joe Louis Greenway prioritizes plantings that enhance aesthetic and recreational experiences, create spaces, provide habitat and promote comfort and safety. Plant materials should be native (or near-native) and non-invasive. They should be selected for their drought and salt tolerance, hardiness and maintenance level.

The level of landscape implementation should be considered in two primary zones. Higher priority zones such as trail access points, gathering spaces, crossings and programmed areas should include more extensive landscaping. These areas may include stormwater management and rain gardens, planting beds, “showy” or seasonal plantings and vegetative screenings. These plants may require higher maintenance and irrigation.

Lower priority zones, such as off-street greenway segments and habitat restoration areas, typically use a more passive landscape approach. These areas use plants selected for their hardiness and low maintenance needs and may prioritize natural habitat or environmental restoration, intermittent shading and vegetative screening.

Landscape strategies may be mixed along the length of the greenway to support program, design and experience. The landscape strategy should also reflect and build on the environmental sustainability goals outlined in the Environmental Mitigation & Sustainability chapter. This can be accomplished by increasing tree canopy, enhancing green infrastructure and by using native landscapes and low-water usage plants. Additionally, habitat restoration zones should be incorporated as appropriate, particularly in relationship with stormwater management improvements.

The types of landscape areas recommended for the Joe Louis Greenway include:

- Lawn & Low-Mow Open Spaces
- Low Maintenance and Passive Landscapes
- Landscape Beds and Planters
- Street, Shade and Ornamental Trees
- Bioretention Facilities and Rain Gardens

Dequindre Cut

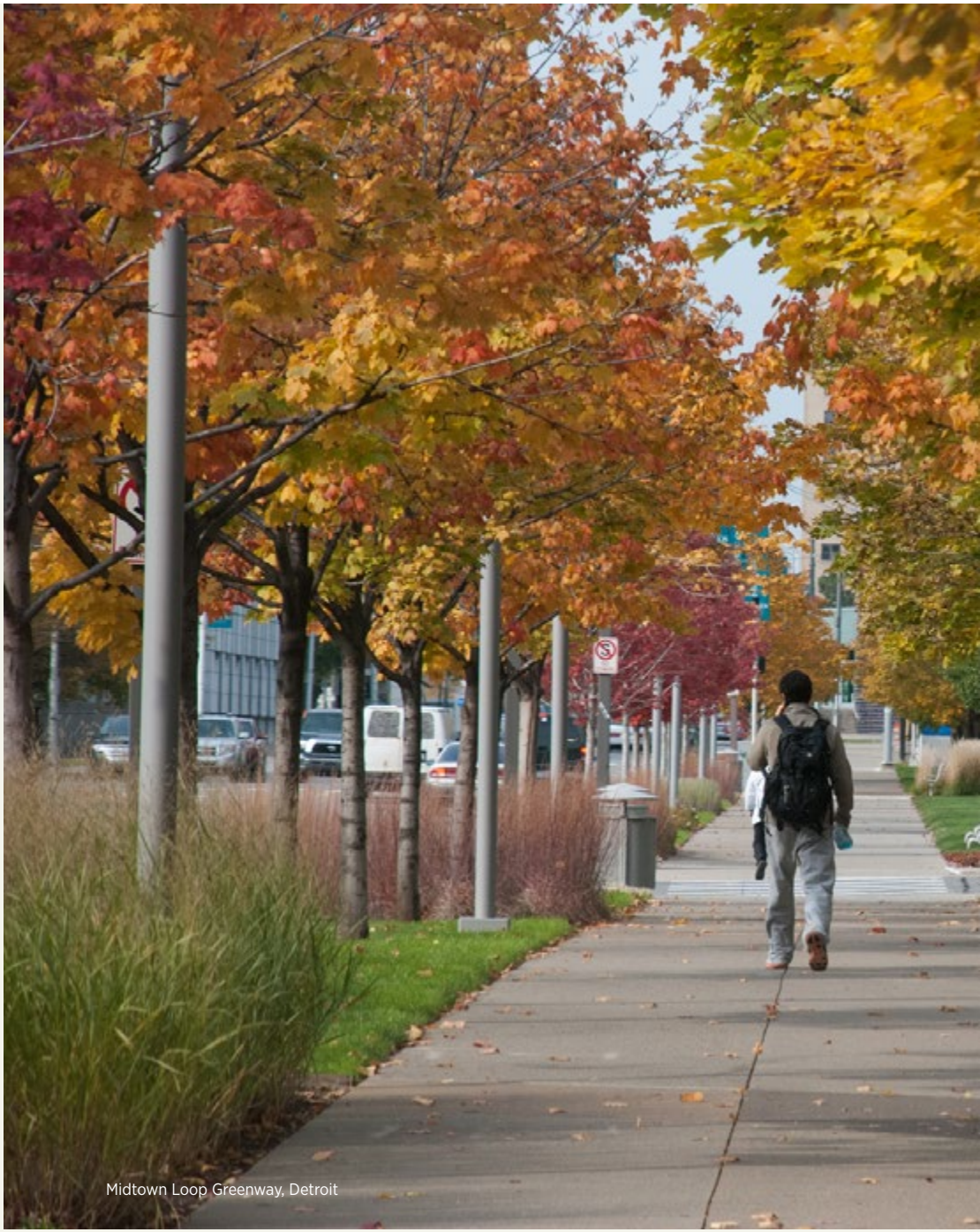
Photo: SmithGroup

MAJOR CONSIDERATIONS

A variety of factors influence the success of urban greenway landscape plantings and the ability for landscape areas to help achieve environmentally beneficial objectives.

Some of the major factors considered for landscape design guidelines for the Joe Louis Greenway include:

- Maintenance Requirements and Resources
- Salt Tolerance and Hardiness
- Contribution to Habitat Creation
- Stormwater Management Potential
- Screening and Buffering
- Pollution and Noise Control/Mitigation
- Public Safety
- Shade Creation
- Aesthetics



Midtown Loop Greenway, Detroit

Photo: SmithGroup

GUIDING PRINCIPLES

To implement landscape aesthetics and functions that reflect community values, several guiding principles have been developed. These principles are based on a combination of public feedback and best practices for developing landscape standards.

1. PRESERVE OPEN SPACE AND NATURAL AREAS
2. PROVIDE HABITAT FOR URBAN WILDLIFE
3. OFFER FLEXIBLE SPACES AND YEAR-ROUND INTEREST
4. ADHERE TO THE HIGHEST STANDARDS OF SUSTAINABILITY
5. CREATE BEAUTIFUL AND INSPIRING LANDSCAPES

STREETSCAPE GUIDELINES

" STREETS AND THEIR SIDEWALKS—THE MAIN PUBLIC PLACES OF A CITY–ARE ITS MOST VITAL ORGANS."

—JANE JACOBS, THE DEATH AND LIFE OF GREAT AMERICAN CITIES

The term "streetscape" describes the corridors in which much of our daily lives take place. These are dynamic and active spaces where we meet our neighbors, dine, shop, wait and gather. These are spaces where we can exercise our rights—and our bodies.

As pedestrians and cyclists take back the street, so do trees, grasses, shrubs and flowers. These plantings enhance the pedestrian experience by providing visual interest, shielding us from the wind and sun and restoring our environment.

STREET TREES

The addition and maintenance of street trees brings numerous environmental, economic, social and health and benefits to corridors of all types.

ENVIRONMENTAL

Pavement and hardscape contribute to a growing trend of "urban heat island effect"—the measurable difference of temperature between urban environments and their suburban and rural counterparts. Street trees help mediate some of this impact by cooling air, providing shade, reducing energy needs for buildings and reducing greenhouse gases. Trees provide habitat for birds and other animal species, help manage stormwater and provide wind breaks in urban areas.

ECONOMIC

Street trees enhance the streetscape and pedestrian experience. This investment often attracts new businesses, encourages walkability and business viability and increases property values.

Street trees reduce "urban heat island effect," reducing energy costs for home and business owners. They also contribute to a stormwater management system, decreasing the damage caused by heavy rain events.

Finally, street trees increase the lifespan of pavement and parking, mitigate pollution and decrease vehicle dependency.

ON-STREET LANDSCAPE STRATEGIES

1. Downtown Midland Streetscape Redevelopment, Midland, MI. Credit: SmithGroup

2–3. Midtown Loop Greenway, Detroit. Credit: SmithGroup

4–5. Eastern Market District Development, Detroit. Credit: SmithGroup

SOCIAL AND HEALTH

Street trees provide many social and health-related benefits. They bring nature into the city and help create comfortable gathering and circulation spaces by providing shade. They also encourage a healthy and sustainable lifestyle, which may have a positive impact on health—reducing healthcare costs and infrastructure.

ACCESS AND CLEARANCE

The design, location and spacing of street trees and tree grates will be in compliance with ADA standards. This includes specification of ADA compliant tree grates and maintenance of adequate clear space around trees, utilities and curbs as appropriate.

Street tree species that exhibit a natural upright branching pattern and are tolerant of pruning will be selected, as they preserve clear views and visibility—a key factor in maintaining safe environments and avoiding blocking adjacent businesses and properties. A branching height of 7 to 8 feet should be maintained in pedestrian areas. Depending upon the tree species, a larger tree caliper may be required for initial planting in order to achieve the desired branching height.

SOIL VOLUME

A tree installed in an urban area will be subject to a relatively wide range of environmental challenges. A key component of mitigating these challenges is providing an adequate volume of quality planting mix. A minimum soil volume of 500 cu. ft. should be provided for each tree. Where possible, this soil volume should be increased to 750 to 1000 cu. ft.

These soil volumes can be achieved by using large tree grates to expand the tree pit area, by adding soil cells adjacent to tree pits to increase soil volumes below adjacent pavement or by providing in-ground planting beds.

DRAINAGE

Detroit's urban soils typically exhibit high clay content and compaction rates, which leads to poor drainage conditions. Proper drainage is required in order to maintain the health of the trees as well as to extend their life cycle.

Trees should be planted with a well-drained planting mix with a drainage aggregate sub-base below. An underdrain should be provided within the drainage aggregate layer that connects to the nearby sewer system. If a sewer connection is not available due to distance or utility obstruction, then the drainage aggregate layer should be increased to a minimum of 12 inches in depth.

WATERING

Street trees are susceptible to dehydration caused by reduced infiltration, impervious surfaces and increased temperature resulting from urban heat island effect. Additionally, street trees may be more prone to water loss during the establishment phase and times of reduced rainfall. Care should be taken to ensure adequate water supply through adequate infiltration and soil volume. Hand watering may be necessary during initial tree establishment but may not be feasible as a long-term maintenance strategy. Irrigation is ideal if feasible, and the addition of a watering or aeration pipe in the tree pit helps maintain trees during extended periods of drought.

SALT ACCUMULATION

Soil salinity builds up over time from winter sidewalk and road de-icing. In order to reduce salt buildup, curbs or raised steel edging should be provided around the planting area, and paved areas should be graded to drain snowmelt and water away from street trees. Where possible, limit the use of salt based de-icing products or switch to alternative de-icing products like calcium magnesium acetate (CMA) or potassium chloride. In areas of high salt use or accumulation, salt-tolerant tree species should be used to avoid die-off.

TREE SELECTION

When selecting tree size, there are a number of considerations to keep in mind:

- Larger caliper tree sizes (6″ or more) are good for higher limb height, but can cost significantly more and require larger planting areas for root ball and a longer establishment period.
- Smaller caliper sizes such as 3″ to 4″ benefit from a shorter establishment period but have lower limb heights that may impact visibility of businesses and signs and block pedestrian circulation.
- Selection of specific tree species and locations should be coordinated with placement of light poles, security cameras, utilities and other site improvements.

Eastern Market Development District, Detroit

Photo: SmithGroup

FREESTANDING PLANTERS

Freestanding planters are unique design features than can enhance streetscape aesthetics. When they are placed in buffer lanes, planters may increase safety for greenway users. They may planted with perennials or updated throughout the year with seasonal plantings and displays.

Freestanding planters delineate and define space. They create vertical interest, provide physical buffers, elevate plants to eye level and contribute to the identity of an area.

However, the nature of freestanding planters does present several challenges with regard to the health of the vegetation selected. Due to the reduced volume of soil and increased exposure to the elements, plants may experience greater temperature fluctuations, increasing their susceptibility to frequent freeze-thaw cycles, which can damage or kill plant roots. To help prevent this, foam insulation can be added to the inside of the planters.

Additionally, this exposure and reduced soil volume may also cause soils to lose moisture faster in summer months, increasing susceptibility to drought conditions. A consistent watering plan, particularly for July and August, is critical to maintaining the health and longevity of the plant material. The addition of a watering tube and a drainage aggregate base can help increase the time needed between waterings.

As a result of these environmental challenges, remarkably hardy, urban tolerant and drought tolerant species should be selected.

Even with these precautions in place, annual die-off should be expected over time. The selection of plant material should also take the cost of replacement into account. It's also advisable to partner with local neighborhood and business organizations that can help support maintenance requirements.


4’
20’
4’
20”

Little Caesars Arena, Detroit

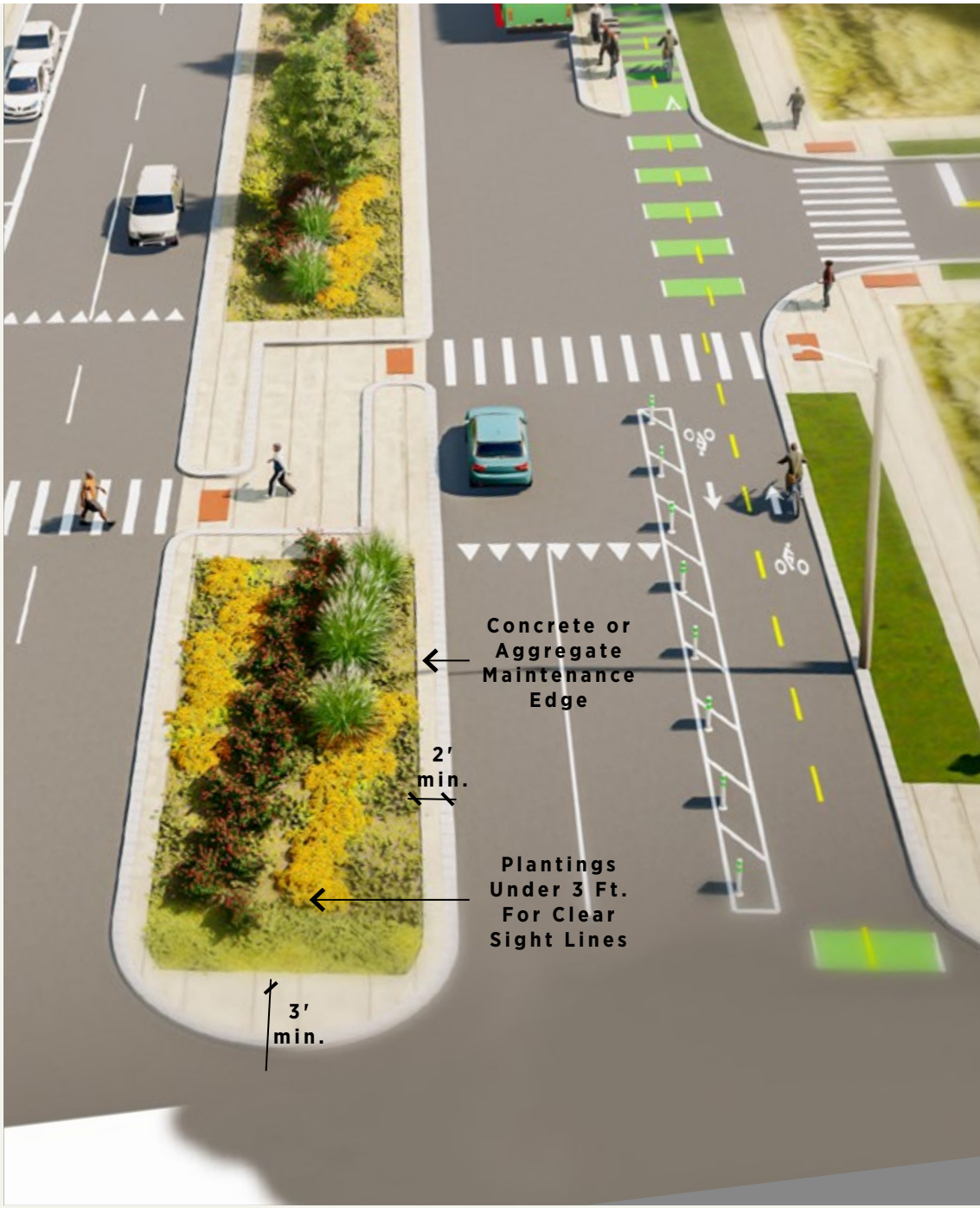
Photo: SmithGroup

LANDSCAPE MEDIANS

Medians provide a range of benefits in streetscape design and will be used in some portions of the Joe Louis Greenway that are on or adjacent to roadways. Benefits of medians include helping slow traffic, providing pedestrian refuge islands, helping manage stormwater and buffering greenway users from vehicular traffic, among other things.

Where medians will be part of streetscape improvements, the following should be considered:

- Provide concrete or aggregate maintenance edge around perimeter (2′ preferred min.)
    - Reduces salt burnout and vehicle damage
    - Hold plantings back (3 ft. to 5 ft. or more) from narrowing ends of islands
- Maintain vehicle sight lines at Michigan lefts, crossings, intersections, openings, etc. by reducing plant height to less than 3 ft. and by not planting trees at the ends of medians.
- Take maintenance and operations into account and design accordingly
- Some locations will need to be lawn and trees only.



OFF-STREET GUIDELINES

"CITIES HAVE THE CAPABILITY OF PROVIDING SOMETHING FOR EVERYBODY, ONLY BECAUSE, AND ONLY WHEN, THEY ARE CREATED BY EVERYBODY."

—JANE JACOBS, THE DEATH AND LIFE OF GREAT AMERICAN CITIES

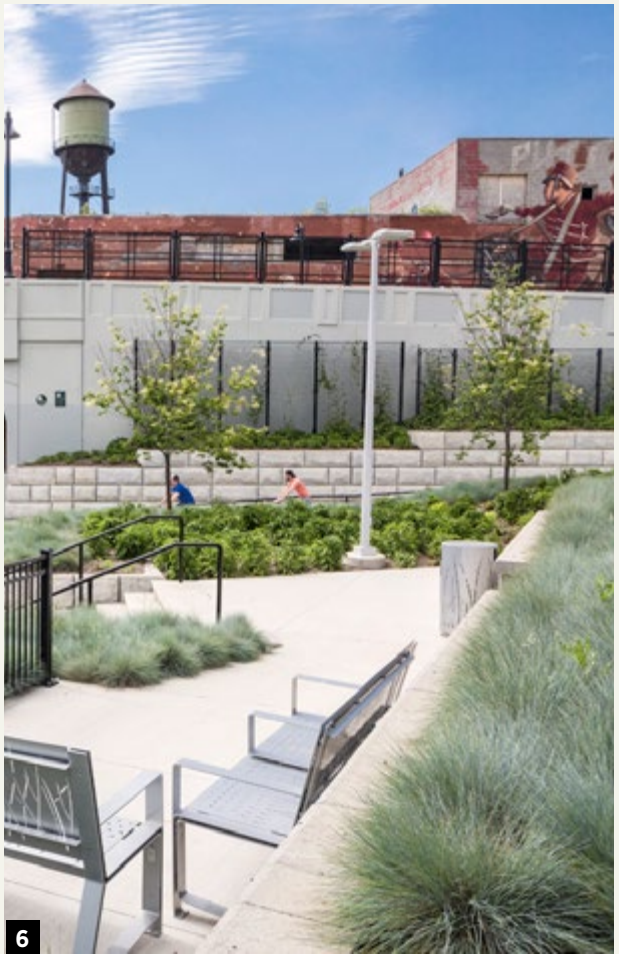
6–8. Dequindre Cut Greenway, Detroit. Credit: SmithGroup

9. Toledo Metroparks. Credit: SmithGroup

10. Milliken State Park and Detroit Riverwalk. Credit: SmithGroup

11. Dequindre Cut, Detroit. Credit: SmithGroup

OFF-STREET



LANDSCAPE SCREENS & BUFFERS

A variety of land uses exist along the Joe Louis Greenway corridor. From residential neighborhoods and commercial corridors to industrial facilities and municipal services—each of these land uses contributes to the function and identity of the City of Detroit, and each changes the experience of the greenway.

Where adjacent land uses are less compatible with the greenway, landscape areas can be strategically located and designed to mitigate the negative impacts of noise and air pollution. Where possible, these areas should be widened to increase distance and buffering between trail users and adjacent land uses. Additionally, dense, closely-spaced plant material and screening can provide buffering at the trail's edge. Finally, canopy trees should be used to mitigate air pollution and deflect particulate matter.

Atlanta BeltLine. Photo: SmithGroup

LANDSCAPE CONNECTIONS

ENHANCING AND INTERPRETING SUSTAINABILITY

Throughout the public engagement process, stakeholders expressed that landscape areas along the Joe Louis Greenway should be about more than just visual aesthetics and ease of maintenance. Strategies such as increasing tree canopy and integrating green stormwater infrastructure help ensure management of air and water quality, while selecting native plants and habitat communities contributes to the local ecological systems along the greenway.

Community members indicated that best practices in landscape sustainability should be integrated into landscape areas and that educational or interpretive opportunities relating to sustainability and ecosystems also be included. This can be achieved through interpretive signage, art or interactive elements along the Joe Louis Greenway route.

Milliken State Park, Lower Wetland, Detroit
Photo: SmithGroup

Detroit RiverWalk Butterfly Garden, Detroit

Photo: SmithGroup

"CREATE SPACE FOR REFLECTING AND BEING STILL IN NATURE"

—COMMUNITY INPUT

WILDLIFE HABITAT

Though the Joe Louis Greenway is an urban trail created for the use and enjoyment of humans, landscape areas along the corridor can provide food and shelter for wildlife such as birds, insects and small animals. Some animals may thrive in urban environments, such as seagulls, squirrels and rabbits—while others prefer more intentional habitat space, such as pheasants, amphibians and foxes.

By expanding habitat along its trail, the Joe Louis Greenway can reinforce the migratory paths of birds and butterflies, restore pollinator populations and reconnect ecological cycles and systems.

The experience of greenway users will be enhanced by the sights, sounds and smells of a vibrant ecological system, while educational opportunities through signage and path markers will provide a chance for users to learn about plants, animals and habitats along the greenway.

PLANT SELECTION

SELECTION OF PLANT MATERIALS

The following section describes the recommended plant materials to be used in the Joe Louis Greenway corridor. These plants represent species that have been successfully used in projects across Detroit and perform well in the urban context of the greenway. The plant species identified in the following sections are representative of the types of vegetation that are appropriate for the respective landscape types and uses, and will be supplemented as appropriate with additional species to accommodate specific site conditions and design objectives.

Specific plant materials chosen for use in the Joe Louis Greenway have been selected from several categories, including:

- Grasses and Ground Covers
- Trees
- Shrubs
- Perennials
- Annuals

The design of the greenway segments will use a combination of plant species from these categories as indicated in the types of landscapes and spaces section that follows below.

NEIGHBORHOOD, CULTURAL AND HISTORIC SIGNIFICANCE

In many communities and cultures, certain plants and trees have profound historic, social and cultural significance. Continued community engagement can bring residents' perceptions to light, revealing what plant species have positive or negative associations for them. Community input will ensure that residents' preferences are acknowledged, respected and integrated into the final planting design of the greenway.

EXISTING VEGETATION

Existing vegetation exists in a variety of forms along the Joe Louis Greenway route. Where vegetation is established and maintained, such as in historic boulevard medians, efforts will be made to preserve plants where possible and to maintain the design character and intent. However, along Conrail corridors and vacant land, plants are more likely to be unmaintained, invasive or not conducive to greenway uses. To determine which plants will be preserved or removed, plant inventories and assessments will be conducted for the length of the greenway during the design and implementation of future phases.

Howard Marsh, Toledo Metroparks

Source: SmithGroup

GRASSES & GROUNDCOVERS

In addition to the turf and sod that is recommended for use in active recreation areas and lawns, native or near-native grasses and groundcovers will be used along the Joe Louis Greenway corridor to provide aesthetic interest and variety, stormwater management and native habitat. These plants offer many benefits, including stormwater management, providing food and shelter to birds and small animals, and reducing urban heat island effect.

USE AND APPLICATION

Grasses and groundcovers should be used in passive landscape areas or as massings to serve as backdrops to focal plantings when used closer to the trail amenities. Passive grass or groundcover plantings may include trees and shrubs for variety. Specific recommendations for grass mixes can be found in the Landscape Areas section of this chapter.

DESIGN REQUIREMENTS

These plant materials should be planted intermittently in relatively large swaths to provide variety along the corridor. Planted areas should be a minimum of 5 ft. from bike and pedestrian paths. The location of planting areas using taller growing species should be taken into account in areas where visibility is prioritized.

RECOMMENDED GROUNDCOVERS

- *Achillea millefolium* 'Oertel's Rose' (Oertel's Rose yarrow)
- *Ajuga reptans* (bugleweed)
- *Allium schoenoprasum* (chives)
- *Aster dumosus* 'Wood's Purple' (aster)
- *Baptisia* 'Solar Flare' Prairieblues (false indigo)
- *Calamintha nepeta* 'Montrose White' (calamint)
- *Caryopteris x clandonenis* 'Blue Mist' (Blue Mist bluebeard)
- *Hemerocallis* 'Rocket City' (Rocket City daylily)
- *Iris germanica* 'Immortality' (reblooming bearded iris)
- *Iris sibirica* 'Kamayama' (Siberian iris)
- *Lavandula angustifolia* 'Blue Cushion' (Blue Cushion English lavender)
- *Liriope muscari* 'Big Blue' (lilyturf)
- *Miscanthus sinensis* 'Little Kitten' (Chinese silver grass)
- *Nepeta* x *faassenii* 'Walker's Low' (catmint)
- *Perovskia atriplicifolia* 'Little Spire' (Little Spire Russian sage)
- *Sedum* 'Carl' (stonecrop)

RECOMMENDED GRASSES

- *Andropogon gerardii* (big bluestem)
- *Andropogon gerardii* 'Indian Warrior' (Indian Warrior big bluestem)
- *Carex vulpinoidea* (fox sedge)
- *Panicum virginiatum* (switchgrass)
- *Schizachyrium scoparium* (little bluestem)
- *Sorghastrum nutans* (Indiangrass)
- *Sporobolus heterolepis* (prairie dropseed)
- *Panicum virgatum* 'Cape Breeze' (Cape Breeze switchgrass)

GRASSES

These grasses are selected for their regional appropriateness, hardiness, seasonal color and form.

Andropogon gerardii (big bluestem)

Carex vulpinoidea (fox sedge)

Panicum virgatum 'Cape Breeze' (Cape Breeze switchgrass)

Panicum virginiatum (switchgrass)

Schizachyrium scoparium (little bluestem)

Sorghastrum nutans (Indiangrass)

Sporobolus heterolepis (prairie dropseed)

GROUNDCOVERS

These perennial groundcovers are selected for their variety, color, seasonal interest, hardiness and ability to stabilize soil and reduce erosion.

Achillea millefolium 'Oertel's Rose' (Oertel's Rose yarrow)

Ajuga reptans (bugleweed)

Allium schoenoprasum (chives)

Aster 'Wood's Purple' (aster)

Hemerocallis 'Rocket City' (Rocket City daylily)

Liriope muscari 'Big Blue' (lilyturf)

Miscanthus sinensis 'Little Kitten' (Chinese silver grass)

TREES

TREES RECOMMENDED FOR THE JOE LOUIS GREENWAY FALL INTO TWO CATEGORIES:

Street trees are located along streets and boulevards. There are specific considerations to height, density, form, salt tolerance, fruit or nut production, aesthetic and hardiness. These trees reinforce the street edge while providing a broad range of benefits such as shade, stormwater management, air quality improvement, reduction of heat island effect and winds and enhancement of the aesthetic character of vehicular corridors.

Open space trees have reduced restrictions when compared to street trees. As such, they may come in a wider variety of forms, heights, mass and hardiness. Because these trees do not have the same restrictions as street trees, these may have broader forms, such as conifers, or may have fruit or flowers that appeal to local wildlife but are not conducive to streetscape functions.

USE AND APPLICATION

Street trees should be used when the greenway travels along roadways or in active spaces such as trail entry points, gathering areas or near play and exercise areas.

Open space trees should be used in passive landscape areas or as part of green infrastructure treatments. These trees can also be used as screening to block views of unsightly adjacent land uses.

DESIGN REQUIREMENTS

The final selection and planting requirements for street trees will be coordinated with—and will meet the standards of—the City of Detroit Department of Public Work. In a similar fashion the open space trees will be reviewed with and will meet the requirements of the City of Detroit General Services Department.

STREET TREES

- *Acer rubrum* (Red Maple)
- *Carya cordiformis* (Bitternut Hickory)
- *Crataegus crus-galli var. inermis* (Thornless Cockspur Hawthorn)
- *Gleditsia triacanthos var. inermis* (Thornless Honey Locust)
- *Liquidambar styraciflua* (Sweetgum)
- *Nyssa sylvatica* (Black Tupelo)
- *Quercus bicolor* (Swamp White Oak)
- *Quercus imbricaria* (Shingle Oak)
- *Taxodium distichum* (Bald Cypress)
- *Ulmus americana* ‘New Harmony’ (New Harmony Elm)

TREES FOR OPEN SPACES

- *Acer saccharum* (Sugar Maple)
- *Cercis canadensis* (Eastern Redbud)
- *Quercus ellipsoidalis* (Northern Pin Oak)
- *Quercus macrocarpa* (Burr Oak)
- *Quercus palustris* (Pin Oak or Swamp Spanish Oak)
- *Quercus rubra* (Northern Red Oak)

STREETSCAPE TREES

Acer rubrum
(red maple)

Carya cordiformis
(bitternut hickory)

Gleditsia triacanthos
var. inermis
(thornless honey locust)

Liquidambar styraciflua
(sweetgum)

Nyssa sylvatica
(black tupelo)

Quercus bicolor
(swamp white oak)

OPEN SPACE TREES

Acer saccharum
(sugar maple)

Cercis canadensis
(eastern redbud)

Quercus ellipsoidalis
(northern pin oak)

Quercus macrocarpa
(burr oak)

Quercus palustris
(pin oak or swamp Spanish oak)

Quercus rubra
(northern red oak)

SHRUBS

Shrubs are woody plants that vary greatly in size, form, density, color, hardiness and seasonal interest. They can be used to achieve a variety of landscape design goals. Based on specific species, shrubs may provide winter color, attract butterflies and bees, provide screening or buffering, contribute to natural habitat or have attractive flowers.

USE AND APPLICATION

Massings of shrubs provide great backdrops for areas of activity along the greenway. They also offer opportunities for greenway users to experience seasonal color almost year round. However, cost and maintenance considerations dictate that landscape beds with shrubs should be used sparingly. In passive landscape areas, shrub can be used to enhance variety, interest and public acceptance of such areas.

DESIGN REQUIREMENTS

Tall, dense or unmaintained shrubs may inadvertently obstruct views. This may increase vehicular and pedestrian conflicts, create shadowed or inaccessible areas or obstruct paths. Care should be taken in the selection and locating of shrubs to achieve desired landscape design effects.

SHRUBS FOR HEDGES

- *Aronia arbutifolia* (Red Chokeberry)
- *Aronia melanocarpa* (Back Chokeberry)
- *Aronia melanocarpa* 'autumn magic' (Autumn Magic Black Chokeberry)
- *Clethra alnifolia* 'Hummingbird' (Hummingbird Sweet Pepperbush)
- *Corylus americana* (American Hazelnut)
- *Diervilla lonicera* (Honeysuckle)
- *Hypericum kalmianum ames* (Kalm St. Johns Wort)
- *Ilex verticillata* (Winterberry)
- *Physocarpus opulifolius* Diabolo (Diabolo Ninebark)
- *Rhus aromatica* ('Gro-low' Sumac)
- *Spiraea x bumalda* 'Anthony Waterer' (Anthony Waterer Spirea)

SHRUBS AS SPECIMENS

- *Amelanchier x grandiflora* (Serviceberry)
- *Amelancier laevis* (Allegheny Serviceberry)
- *Cornus sericea* (Redosier Dogwood)
- *Hamamelis virginiana* (American Witch-hazel)
- *Physocarpus opulifolius* 'summer wine' (Summer Wine Ninebark)
- *Viburnum plicatum var tomentosum* (Japanese Snowball Viburnum)
- *Viburnum prunifolium* (Blackhaw Viburnum)

HEDGE & SCREENING SHRUBS

These shrubs were selected for their dense, compact forms. These are hardy species, and many have season interest such as vibrant fall leaves, winter berries or spring and summer flowers.

Aronia arbutifolia
(red chokeberry)

Aronia melanocarpa
(black chokeberry)

Clethra alnifolia
'Hummingbird'
(Summersweet)

Corylus americana
(American hazelnut)

Ilex verticillata
(winterberry)

Physocarpus opulifolius
'Diabolo'
(Diabolo ninebark)

Spiraea x bumalda
'Anthony Waterer'
(Anthony Waterer spirea)

SELECT SPECIMENS

These specimen shrubs have been selected to provide focal points and interest and can be used in high visibility locations.

Amelanchier x grandiflora
(serviceberry)

Amelancier laevis
(Allegheny serviceberry)

Cornus sericea
(redosier dogwood)

Hamamelis virginiana
(American witch-hazel)

Physocarpus opulifolius
'Summer Wine'
(Summer Wine ninebark)

Viburnum plicatum var tomentosum
(Japanese snowball viburnum)

Viburnum prunifolium
(blackhaw viburnum)

PERENNIALS

Perennials are available in a diverse array of sizes, hardiness, form, color, scent, seasonality and ideal use. These plants may be valued for their spring aroma or bold winter stem colors , their long-lasting summer blooms or their ability to attract bees and butterflies. Unlike annuals, perennials—when selected for suitability in their environment—will typically return year after year.

In addition to selection for design and function, consideration for sun, shade, microclimate, salt exposure, moisture and maintenance should be given when choosing perennial plants.

USE AND APPLICATION

Perennials should be used at key locations and may find homes in passive landscapes, landscape beds, planters and raingardens. They can enhance the aesthetic and experience of the greenway, while also contributing to its overall identity.

DESIGN RECOMMENDATIONS

Provide a defined edge between paths and plantings. Plants may be selected for maintenance level, with higher-maintenance planting designs located at greenway access points. Some perennials may require irrigation, depending on establishment, location, specific species needs and site conditions.

PERENNIALS FOR BIORETENTION CONDITIONS

- *Asclepitas incarnata* (Swamp Milkweed)
- *Eutrochium dubium* (Coastal Plain Joe Pye Weed)
- *Helenium autumnale* (Common Sneezeweed)
- *Iris virginica* (Virginia Iris)
- *Liatris spicata* (Dense Blazing Star)
- *Lobelia cardinalis* (Cardinal Flower)
- *Lobelia siphilitica* (Blue Cardinal Flower)
- *Physostegia virginiana* (Obedient Plant)
- *Rudbeckia fulgida var. sullivantii* 'Goldsturm' (Black-eyed Susan)
- *Symphyotrichum novae-angliae* 'Purple Dome' (New England Aster)

PERENNIALS FOR UPLAND & BORDER CONDITIONS

- *Achillea millefolium* (Yarrow)
- *aquilegia canadensis* (Red Columbine)
- *Asclepias tuberosa* (Butterfly Weed)
- *Baptisia australis* (Blue False Indigo)
- *Coreopsis lanceolata* (Lanceleaf Coreopsis)
- *Echinacea purpurea* 'PowWow Wild Berry' (Coneflower)
- *Echinacea purpurea* 'White Swan' (Purple Coneflower)
- *Hemerocallis* varieties (Daylily)
- *Iris sibirica* 'Prussian Blue' (Siberian Iris)
- *Liatris aspera* (Rough Blazing Star)
- *Monarda fistulosa* (Wild Bergamot)
- *Nepeta faassenii* 'Walker's Low' (Catmint)
- *Penstemon digitalis* (Beardtongue)
- *Perovskia atriplicifolia* 'Little Spire (Russian Sage)
- *Phlox paniculata* (Garden Phlox)
- *Sedum spectabile* (Showy Stonecrop)

BIORETENTION

These perennials were selected for their interest, seasonal color and form.

Asclepitas incarnata
(Swamp milkweed)

Eutrochium dubium
(coastal plain Joe Pye weed)

Iris virginica
(Virginia iris)

Liatris spicata
(dense blazing star)

Lobelia cardinalis
(cardinal flower)

Rudbeckia fulgida var. *sullivantii* 'Goldsturm'
(black-eyed Susan)

Symphyotrichum novae angliae 'Purple Dome'
(New England aster)

UPLANDS & BORDERS

These specimen shrubs have been selected to provide focal points and interest and can be used in high visibility locations.

Aquilegia canadensis
(red columbine)

Coreopsis lanceolata
(lanceleaf coreopsis)

Hemerocallis varieties
(daylily)

Monarda fistulosa
(wild bergamot)

Nepeta faassenii
'Walker's Low'
(catmint)

Penstemon digitalis
(beardtongue)

Phlox paniculata
(garden phlox)

ANNUALS

Annuals may be used as supplementary or seasonal plantings in landscape beds and planters. Unlike perennials, these plants must be replanted every year or season and require extensive maintenance, given their intensive use at key locations, such as major gateways and trail entry points. These annuals will provide bold colors and forms and alert greenway users that they are in a special part of the greenway.

DESIGN REQUIREMENTS

Annuals may be used as border plantings in landscape beds or as accents in freestanding planters. They may be updated as needed throughout the year to achieve a desired seasonal or design effect. Annuals should be planted only in prepared planting beds and may require irrigation during the warmest and driest months of the year.

ANNUALS FOR GATEWAYS, THRESHOLDS AND EMPHASIS

- *Alstroemeria ligtu* 'Dr. Salters' (Peruvian Lily)
- *Asparagus densiflorus* 'meyerii' (Asparagus Fern)
- Begonia varieties
- *Bougainvillea spectabilis* (Bougainvillea)
- Calibrachoa
- *Celosia plumosa* 'First Flame' (Purple Cock's Comb)
- Geranium
- *Origanum vulgare hirtum* (Greek Oregano)
- *Phlox drummondii* (Annual Phlox)
- *Salvia nemorosa* 'Pink Profusion' (Perennial Salvia)
- Sweet potato vines
- *Thunbergia mono* 'Orange A-Peel' (Black-eyed Susan vine)
- *Verbena* 'EnduraScape'
- *Glandularia canadensis* 'Homestead Purple' (Rose Verbena)
- Ornamental Cabbage
- Pansies
- Petunias

USE AND APPLICATION

The use of annuals requires significant maintenance and replanting and should be used sparingly. Less than 10% of plant materials in landscape beds should be annuals.

SELECT ANNUALS

These annuals were selected for their hardiness, seasonal color and form.

Asparagus densiflorus 'meyerii' (asparagus fern)

Begonia varieties

Bougainvillea spectabilis (bougainvillea)

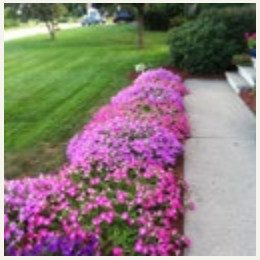
Calibrachoa

Celosia plumosa 'First Flame' (purple cock's comb)

Geranium

Origanum vulgare hirtum (Greek Oregano)

Ornamental cabbage



Petunia

Phlox drummondii (Phlox)

Salvia nemorosa 'Pink Profusion' (perennial salvia)

Sweet potato vines

Verbena 'EnduraScape

Verbena glandularia canadensis 'homestead purple'

LANDSCAPE AREAS

TYPES OF LANDSCAPES & SPACES

Landscape and open space areas provide many benefits for greenway users and their communities. These spaces showcase the natural environment and offer opportunities for both passive and active recreation.

The five general types of landscape areas and places found along the Joe Louis Greenway include:

- Lawn and Low-mow Open Spaces
- Low-maintenance and Passive Landscapes
- Landscape Beds and Planters
- Shade, Street and Ornamental Trees
- Bioretention and Rain Gardens

These general landscape types have been identified as building blocks that will guide future landscape design development based on site specific, context, conditions and intended programming.

WHAT AND WHERE TO USE

	LAWN & LOW-MOW SPACES	PASSIVE LANDSCAPES	LANDSCAPE BEDS & PLANTERS	STREET, SHADE & ORNAMENTAL TREES	BIORETENTION & RAIN GARDENS
GRASSES & GROUNDCOVERS	✓	✓	!	✓	✓
TREES	!	!	!	✓	✓
SHRUBS	X	!	✓	!	✓
PERENNIALS	X	✓	✓	X	✓
ANNUALS	X	X	!	X	!

This matrix describes which plant materials listed at the end of this section are compatible with the general landscape types that will be found along the Joe Louis Greenway corridor.

PLANT MATERIAL AND LANDSCAPE TYPE COMPATIBILITY

✓ Highly Compatible X Not Compatible

! Compatible, but with Limitations

Dequindre Cut

Source: SmithGroup

LAWN AND NO-MOW OPEN SPACES

Lawn and no-mow areas will be found along pedestrian and bike paths, as well as in parks and open spaces along the route of the greenway. These flexible spaces provide opportunities for events, gathering, play and activities.

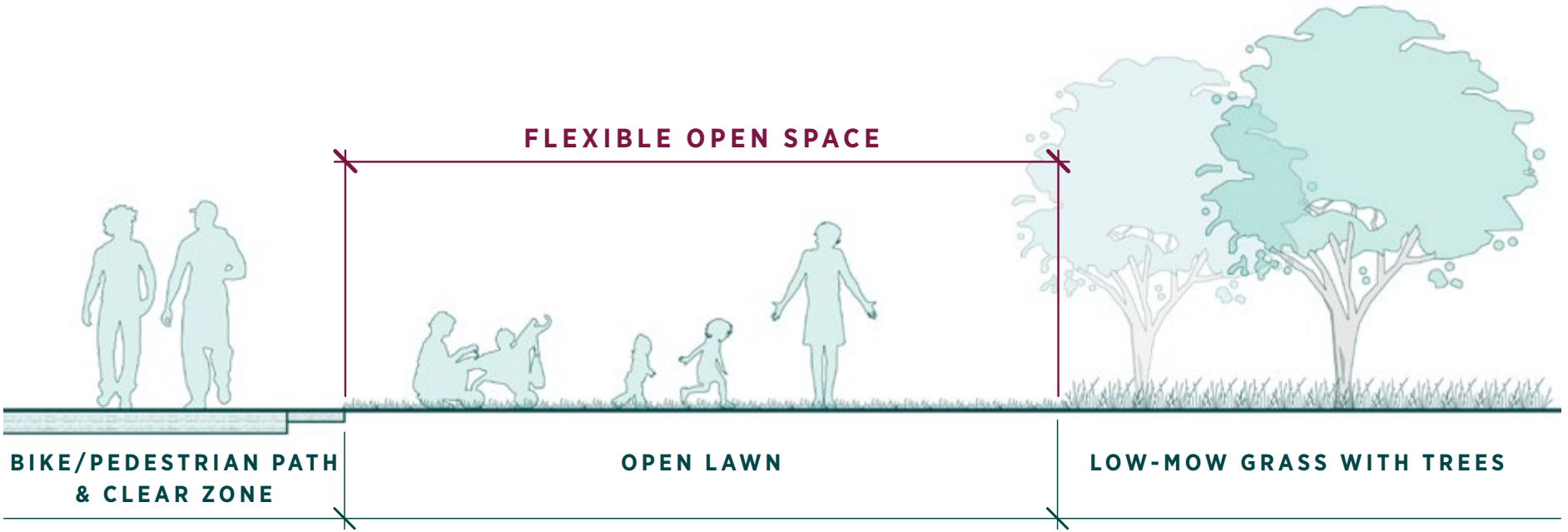
While traditional lawn space requires regular mowing and maintenance, low-mow areas provide a similar space with greatly reduced need for upkeep.

BENEFITS

Lawns and open space provide many benefits such as:

- Lower maintenance than ornamental plantings, and low-mow grasses require less maintenance than lawn.
- Low intensity event and gathering space and overflow space for larger events.
- Accommodates passive and active recreation.
- Slows and filters stormwater.
- Reduces urban heat island effect.

TYPE OF PLANT TO USE	
Grasses & Groundcovers	✓
Trees	!
Shrubs	X
Perennials	X
Annuals	X



MDOT ENVIRONMENTAL SEED MIX

QUANTITY	BOTANICAL NAME	COMMON NAME
24 lbs.	*Phleum pratense*	Timothy (PLS)
11 lbs.	*Lolium perenne*	Perennial Ryegrass (PLS)
9 lbs.	*Andropogon gerardii*	Big Bluestem (PLS)
4 lbs.	*Panicum virgatum*	Switchgrass (PLS)
3 lbs.	*Sorghastrum nutans*	Indian Grass (PLS)
3 lbs.	*Schizachyrium scoparium*	Little Bluestem (PLS)

1) Seeding rate: 54 lbs./acre

2) Weight of seed shown must be Pure Live Seed

NO-MOW SEED MIX

QUANTITY	BOTANICAL NAME	COMMON NAME
10%	*Festuca brevipila*	Hard Fescue
10%	*Festuca ovina*	Sheep Fescue
30%	*Festuca rubra subs. Fallax*	Chewings Fescue
25%	*Festuca rubra*	Red Fescue
25%	*Festuca rubra var. rubra*	Creeping Red Fescue

1) “No-Mow” Lawn (Percentage of mix are estimates, actual percentage TBD)

2) “No-Mow” mixes should never be cut less than 4 inches in height

3) Seeding rate: 5 lbs. / 1000 square feet or 220 lbs. / acre

4) Weight of seed shown must be Pure Live Seed

NATIVE MEADOW, LOW MAINTENANCE AND PASSIVE LANDSCAPES

Native meadow and low maintenance planting areas bring color, habitat and beauty to the Joe Louis Greenway. These areas effectively manage stormwater and adapt to seasonal weather shifts.

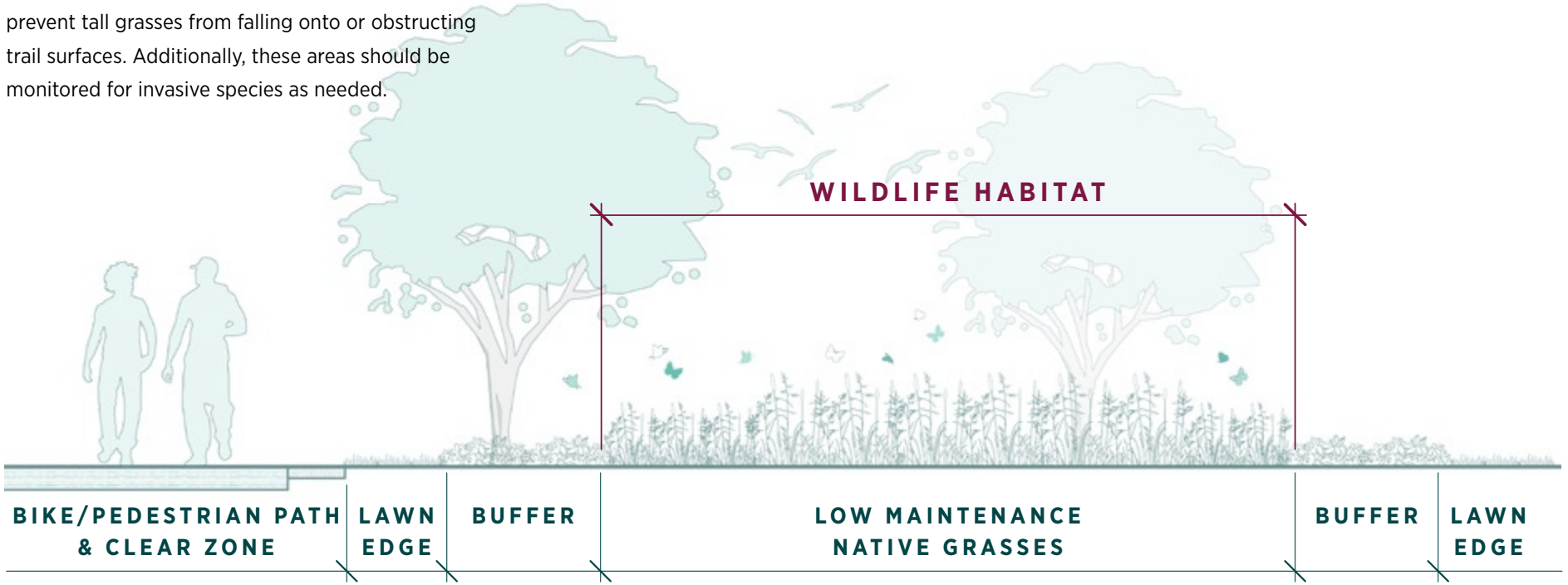
Although these areas require very little maintenance, care should be taken to manage these passive spaces. Maintained turf shoulders will prevent tall grasses from falling onto or obstructing trail surfaces. Additionally, these areas should be monitored for invasive species as needed.

BENEFITS

Native planted areas have many benefits such as:

- Less required maintenance, including little or no irrigation.
- Reduced or eliminated need for chemical pesticides and fertilizers.
- Improved tolerance to harsh weather conditions.
- Creation of habitat for wildlife.
- Enhancement to natural systems such as stormwater and air quality management.

TYPE OF PLANT TO USE	
Grasses & Groundcovers	✓
Trees	!
Shrubs	!
Perennials	✓
Annuals	X



NATIVE GRASSES & PERENNIALS FOR POLLINATORS & PASSIVE LANDSCAPES

BOTANICAL NAME	COMMON NAME
Allium cernuum	Nodding Onion
Andropogon gerardii	Big Bluestem
Asclepias tuberosa	Butterfly Weed
Baptisia australis	Blue False Indigo
Carex brevior	Plains Oval Sedge
Carex pensylvanica	Common Oak Sedge
Coreopsis lanceolata	Lance-leaved Coreopsis
Coreopsis palmata	Prairie Coreopsis
Dale purpurea	Purple Prairie Clover
Echinacea purpurea	Purple Coneflower
Elymus hystrix	Bottlebrush Grass
Eryngium yuccifolium	Rattlesnake Master
Liatris aspera	Rough Blazing Star
Monarda fistulosa	Bee Balm
Panicum virgatum 'Shenandoah'	Switchgrass
Penstemon digitalis	Foxglove Beardtongue
Penstemon hirsutus	Hairy Beardtongue
Phlox stolonifera	Creeping Phlox
Pycnanthemum tenuifolium	Narrowleaf Mountainmint
Rudbeckia hirta	Black-eyed Susan
Schizachyrium scoparium	Little Bluestem
Solidago rigida	Stiff Goldenrod
Sporobolus heterolepis	Prairie Dropseed
Sorghastrum nutans	Indian Grass
Zizia aurea	Golden Alexander

NATIVE TREES FOR PASSIVE LANDSCAPES

BOTANICAL NAME	COMMON NAME
Acer saccharum	Sugar Maple
Amelanchier laevis	Serviceberry
Asimina triloba	Common Pawpaw
Corylus americana	American Hazelnut
Crataegus crus-galli var. inermis	Thornless Hawthorn
Gymnocladus dioicus	Kentucky Coffeetree
Liquidambar styraciflua	Sweetgum
Ostrya virginiana	Hophornbeam / Ironwood
Quercus alba	White Oak
Quercus ellipsoidalis	Northern pin oak
Quercus macrocarpa	Bur Oak
Quercus palustris	Pin Oak
Quercus rubra	Red Oak

NATIVE SHRUBS FOR PASSIVE LANDSCAPES

BOTANICAL NAME	COMMON NAME
Cornus drummondii	Rough-leaf Dogwood
Diervilla lonicera	Dwarf Bush Honeysuckle
Hamamelis virginiana	Witch-hazel
Physocarpus opulifolius	Ninebark
Potentilla fruticosa 'Goldfinger'	Goldfinger Potentilla
Rhus aromatica 'Gro-Low'	Gro-low Fragrant Sumac
Spirea alba	Meadowsweet
Viburnum lentago	Nannyberry
Viburnum prunifolium	Blackhaw Viburnum

BIORETENTION AREAS & RAIN GARDENS

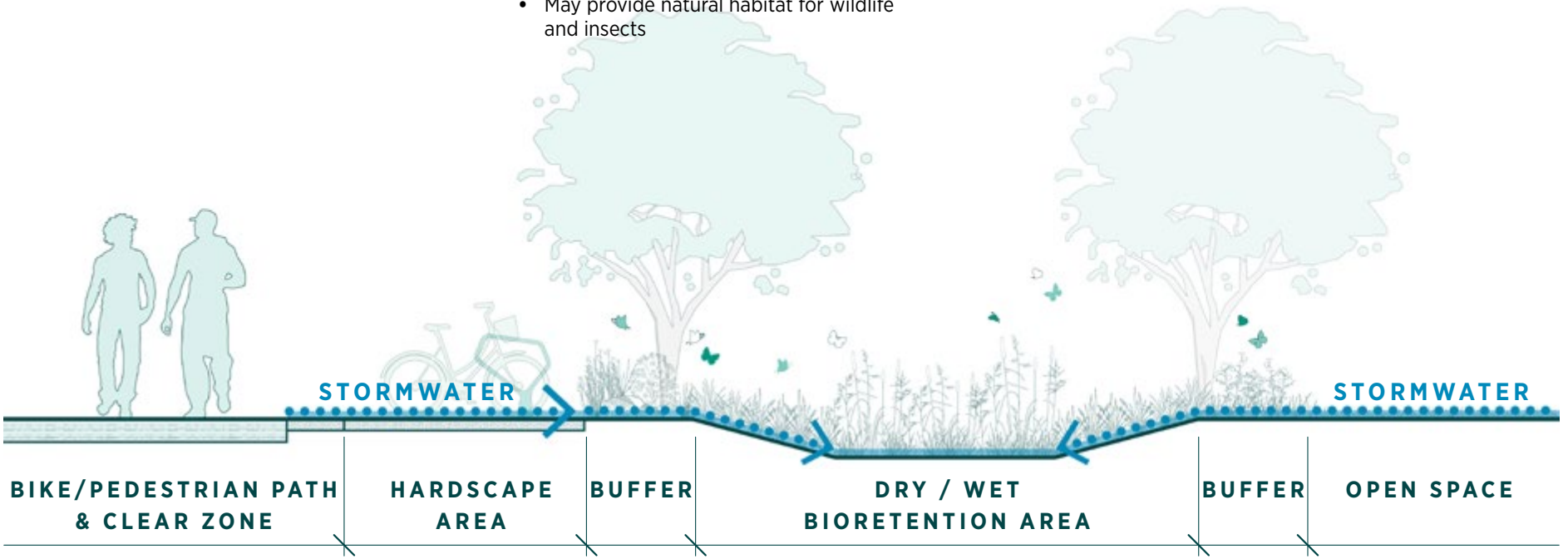
Bioswales and rain gardens are designed to retain, detain, slow down or redirect stormwater runoff. In doing so, they manage the collection and infiltration of stormwater, reducing erosion, flooding, ponding and stress of city infrastructure. Additionally, vegetated stormwater management installations reduce the amount of sediment, pollutants, minerals and contaminants from entering the sewer system and groundwater supply.

BENEFITS

The benefits of bioretention areas and rain gardens are significant and may include:

- Flexible design application can fit a variety of locations and stormwater capacity needs
- Requires little irrigation
- Reduces the need to use chemical pesticides and fertilizers
- Provides aesthetic variety and seasonal color
- May serve as a buffer between land uses
- May provide natural habitat for wildlife and insects

TYPE OF PLANT TO USE	
Grasses & Groundcovers	✓
Trees	✓
Shrubs	✓
Perennials	✓
Annuals	✗



GRASS/PERENNIAL BORDER

(0-3" INUNDATION)

BOTANICAL NAME	COMMON NAME
Asclepias tuberosa	Butterfly Weed
Baptisia australis	Blue False Indigo
Coreopsis lanceolata	Lance-leaved Coreopsis
Echinacea purpurea 'Pow Wow Wild Berry'	Pow Wow Wild Berry Coneflower
Echinacea purpurea 'White Swan'	White Swan Purple Coneflower
Liatris aspera	Rough Blazing Star
Monarda fistulosa	Bee Balm
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass
Sporobolus heterolepis	Prairie Dropseed

BOTTOM OF FACILITY

(6-12" INUNDATION)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Carex vulpinoidea	Brown Fox Sedge
Eutrochium dubium 'Little Joe'	'Little Joe' Coastal Plain Joe Pye Weed
Helenium autumnale	Sneezeweed
Iris virginica (may substitute *I. versicolor)*	Northern Blue Flag Iris
Liatris spicata	Marsh Blazing Star
Lobelia siphilitica	Great Blue Lobelia
Panicum virgatum 'Shenandoah'	Switchgrass
Phlox glaberrima	Smooth Phlox
Physostegia virginiana	Obedient Plant
Rudbeckia fulgida 'Goldsturm'	Goldsturm Black-eyed Susan
Symphyotrichum 'Wood's Purple'	Woods Purple Aster

CANOPY TREES

(0-6" INUNDATION)

BOTANICAL NAME	COMMON NAME
Acer x freemanii 'Autumn Blaze'	Red Maple
Acer rubrum	Red Maple
Nyssa sylvatica	Black Tupelo
Quercus bicolor	Swamp White Oak
Quercus rubra	Red Oak

SHRUBS

0-6" INUNDATION

BOTANICAL NAME	COMMON NAME
Aronia arbutifolia 'Brilliantissima'	Chokeberry
Aronia melancarpa	Black Vhokeberry
Aronia x prunifolia	Purple-fruited Chokeberry
Clethra alnifolia	Sweet Pepperbush
Cornus sericea	Red-twig Dogwood
Hypericum kalmianum ames	Kalm's St. John's Wort
Ilex verticillata varieties	Winterberry
Physocarpus opulifolius	Ninebark

SIDE SLOPES AND TRANSITION AREAS

3-6" INUNDATION

BOTANICAL NAME	COMMON NAME
Monarda bradburiana	Bee Balm
Panicum virgatum 'Cape Breeze'	Switchgrass
Penstemon digitalis 'Husker Red'	Foxglove Beardtongue
Rudbeckia fulgida 'Goldsturm'	Orange Coneflower 'Goldsturm'

LANDSCAPE BEDS AND PLANTERS

Ornamental flower, shrub and perennial beds are used at strategic locations to enhance the experience of greenway users and to serve as a component of wayfinding or branding.

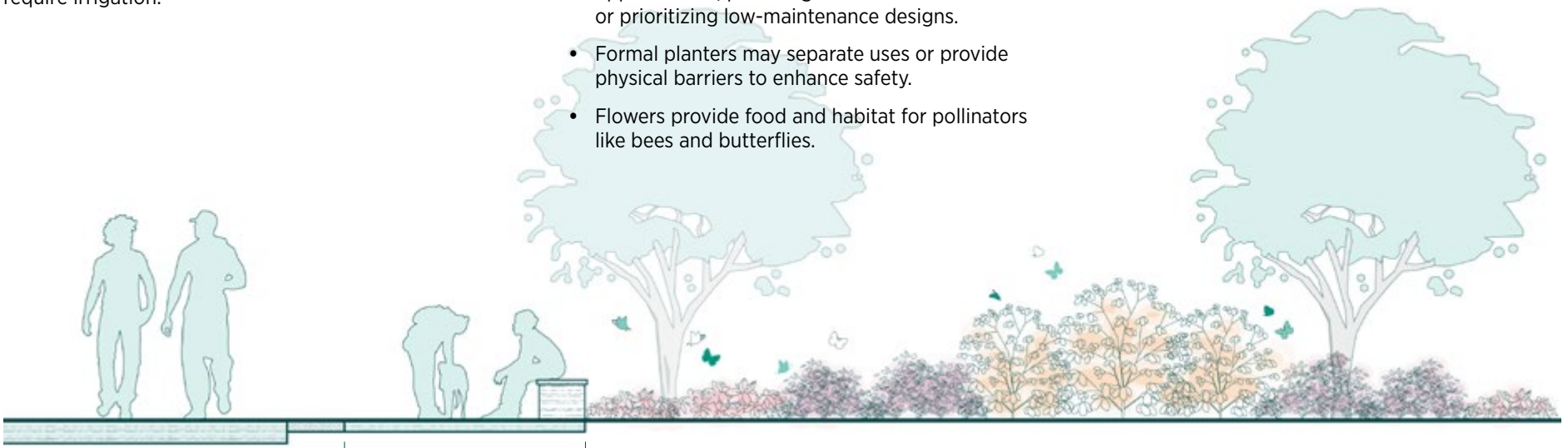
These plantings identify greenway entry points and beautify on-street portions of the greenway. Depending upon the specific locations, site conditions and plant material selected, the planting beds may require irrigation.

BENEFITS

Planting beds and planters offer a number of benefits. For example, they:

- Can be integrated with seating and other site furnishings.
- Enhance visibility, interest and identity of the greenway.
- Can offer seasonal variety through a mix of perennials, trees, shrubs, grasses and annuals.
- Can be customized to accomplish different uses and spatial needs such as providing shade, attracting butterflies, creating educational opportunities, providing color or seasonal interest or prioritizing low-maintenance designs.
- Formal planters may separate uses or provide physical barriers to enhance safety.
- Flowers provide food and habitat for pollinators like bees and butterflies.

TYPE OF PLANT TO USE	
Grasses & Groundcovers	!
Trees	!
Shrubs	✓
Perennials	✓
Annuals	!



STREET, SHADE AND ORNAMENTAL TREES

Trees of all kinds are important to the long-term health of everyone and everything: our cities, our people and our environment.

While they help provide an attractive definition to the street edge for on-street portions of the greenway, they provide shade on warm days and can help reduce air pollution, noise and wind. They even help slow stormwater runoff.

BENEFITS

Trees provide a wide range of benefits. Among other advantages, they:

- Provide both shade cover and visual interest.
- Can increase property values and promote business activity.
- Provide food and habitat for wildlife.
- Create energy savings through passive cooling and can reduce urban heat island effect.

TYPE OF PLANT TO USE	
Grasses & Groundcovers	✓
Trees	✓
Shrubs	!
Perennials	X
Annuals	X

BIKE/PEDESTRIAN PATH & CLEAR ZONE

SHADE & ORNAMENTAL TREES IN LAWN

Source: Studio Incognita

5

IDENTITY DESIGN

AN IDENTITY MADE FOR AND BY DETROITERS

Because this greenway is being built for Detroiters—not tourists—we put Detroit residents at the center of every decision about the Joe Louis Greenway identity.

Source: Sidewalk Detroit

When we began this work, we knew that this greenway's identity needed to reflect the unique needs and perspective of Detroiters. To do this, we needed to build a design process that was rooted in intention, listening, and a heartfelt respect for Detroit and her people.

Part of the work of the greenway is empowering residents to shape their own neighborhoods. It involves asking ourselves what the greater meaning of this project is—and how it translates to implementation in each neighborhood. And it demands that we find a way to create something that will realize the collective vision of the life-long residents.

The role Joe Louis will play in the greenway's identity is an equally important consideration.

As his namesake, it must both honor and further his legacy. But we must ask ourselves how we can make his legacy resonate with Detroiters 80 years later since he first found fame. And how can we do this by focusing on the future, not the past?

We established three main processes to drive this work:

HISTORIC RESEARCH

We hit the books. To understand Joe Louis more intimately—beyond the famous fights and world championship—we dug deep to find out how he saw himself in the world, what he cared about and how he influenced both Detroit culture and America, at large. In doing this, and working directly with Joe Louis' family, we were able to compose an identity that reflects Joe Louis' legacy and life purpose.

PUBLIC ENGAGEMENT

Beginning early on, we developed exercises to use at public engagement events to help us understand what Detroiters want for the future of their city, what values they care about and how the greenway can help bring it all to life.

COLLABORATIVE DESIGN PROCESS

Through a year-long process, we engaged countless Detroiters who quickly became passionate collaborators. We worked closely with them—gathering input through exercises and one-on-one conversations—to guide the distinctive look, feel, form and meaning of the Joe Louis Greenway brand identity. In this process, it was of utmost importance that the brand identity be made for and by Detroiters—and that it embodies the desires of committed residents who live here, grew up here and are committed to staying here.

A GREENWAY WITH PURPOSE

In building the greenway's identity—comprised of brand messaging, visuals and actions—we focused on a few main concepts that would determine its success. What type of place would Joe Louis be proud to call his namesake? What would that place look and feel like? How can it bring to life vision and aspirations of Detroit residents?

IT MUST BE

UNIFYING

The urban ‘reconstruction’ of the 1950s displaced and destroyed many of Detroit’s neighborhoods and communities. Part of the duty of this greenway is an undoing. We cannot change the past, but we can do our part to reunify districts and neighborhoods that were separated by freeways and long stretches of road. It will provide an opportunity for connection and community building.

IT MUST BE

EMPOWERING

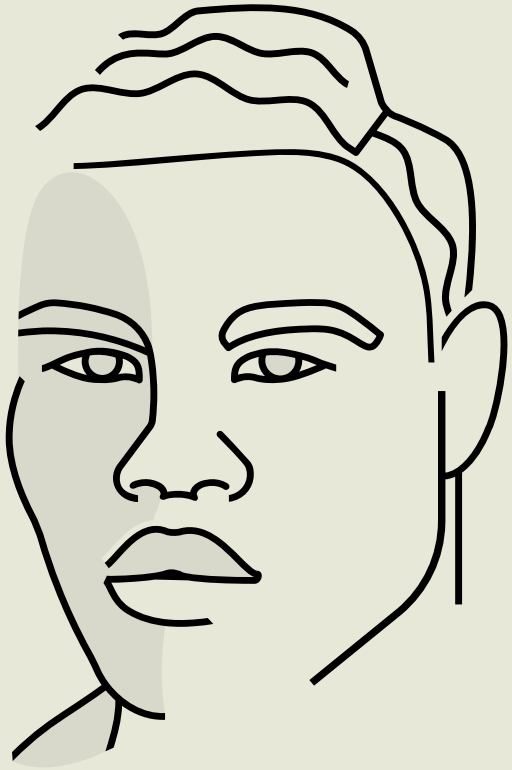
Because we believe that voices are powerful, we lift the voices of our most underserved communities. The greenway encourages programming that disrupts the status-quo and empowers Detroiters to lean into the fullest expression of themselves.

IT MUST BE

HEALING

We understand the importance of safe spaces and their role in healing urban trauma. We believe in the power of nature to sooth and restore. We understand that self expression is a vehicle for healing, processing and connecting.

BRANDMARK



JOE LOUIS GREENWAY

THE LIKENESS OF JOE LOUIS IN THE BRANDMARK CELEBRATES DETROIT'S BLACK COMMUNITY

This design allows us to celebrate Joe Louis and to provide representation to the city's African American community.

STYLE + TYPE

This timeless, simplified style bridges the gap between the past and the present. The Gotham font is both assertive and elegant, which makes it appropriate for many different environments.


JOE
LOUIS
GREENWAY
JOE
LOUIS
GREENWAY
JOE
LOUIS
GREENWAY
JOE
LOUIS
GREENWAY
JOE
LOUIS
GREENWAY
JOE
LOUIS
GREENWAY

COLOR & TYPE

PRIMARY, HEADLINE

TUNGSTEN COMPRESSED BOOK

SECONDARY, SUBHEAD

GOTHAM BOLD
GOTHAM NARROW BOLD

TERTIARY, BODY COPY

Gotham Narrow Light

A POWERFUL

LEGACY

TYPE

Strength meets elegance with the type combination of Gotham and Tungsten.

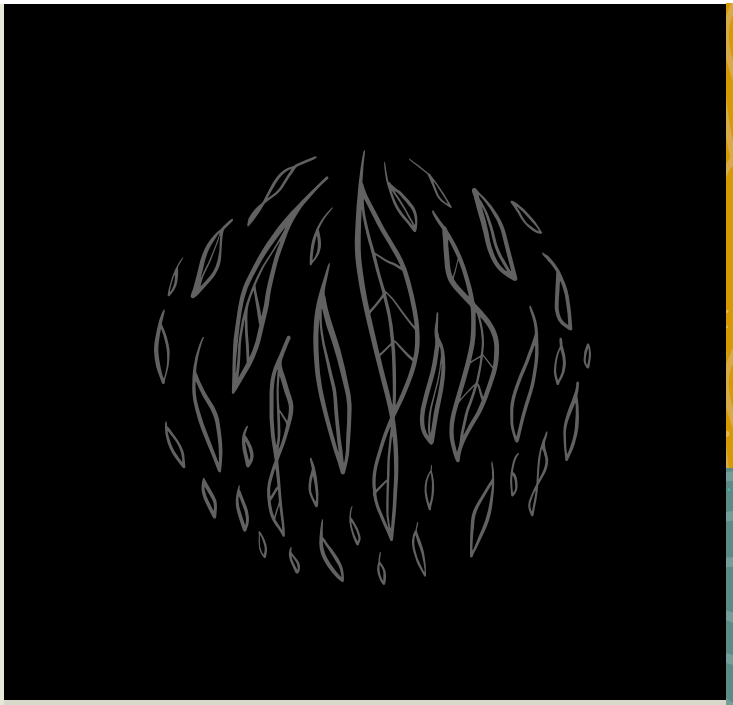
COLOR

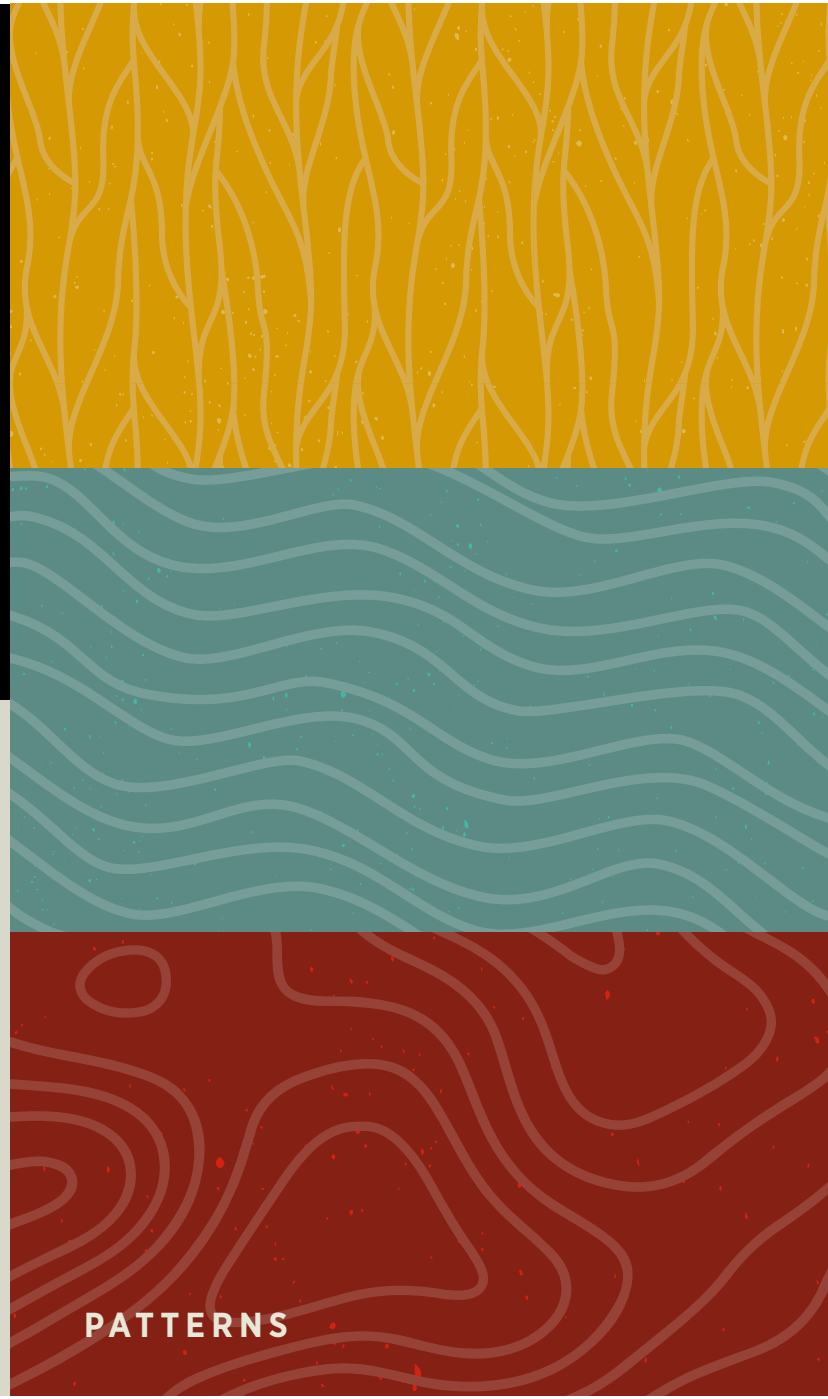
This grounded, earthy color palette commands attention while also allowing the expression of peace and solitude.

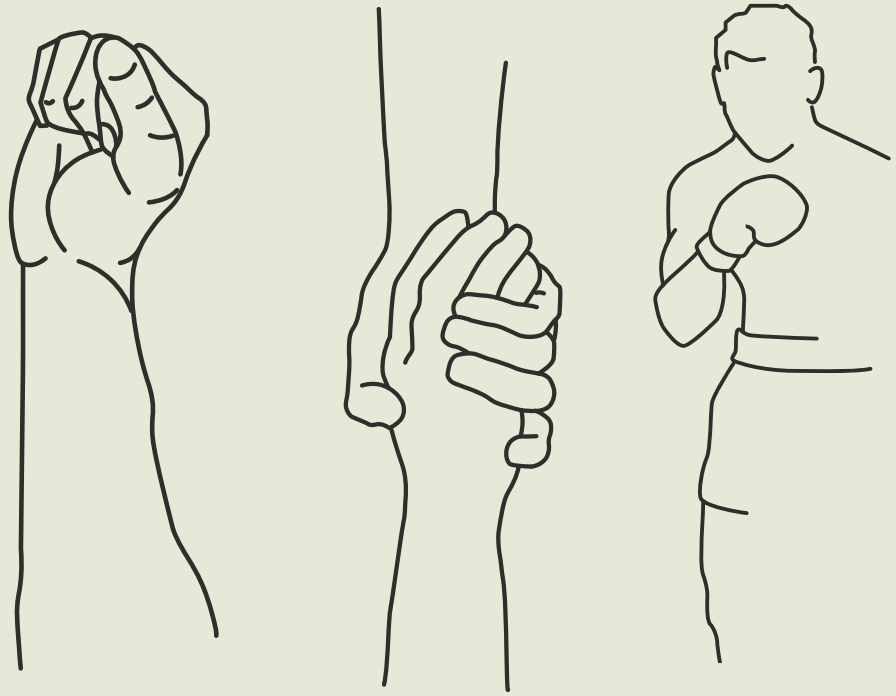
HEAVYWEIGHT	KNOCK OUT
BREWSTER'S	
MARVA	
BLACK BOTTOM	DETROIT MAGIC
PURPOSE	
HEALING	
BELLE ISLE	SUNDAY SKY
CALVARY	
STONE GRAY	DETROIT WINTER
CREAM	
PURE WHITE	
MILITARY GREEN	KHAKI GREEN
FOREST	
SAGE	
DARK WHEAT	ALABAMA
DANDILION	
SOFT SUN	
JET BLACK	BLACKBURN
MEDIUM GRAY	
LIGHT GRAY	

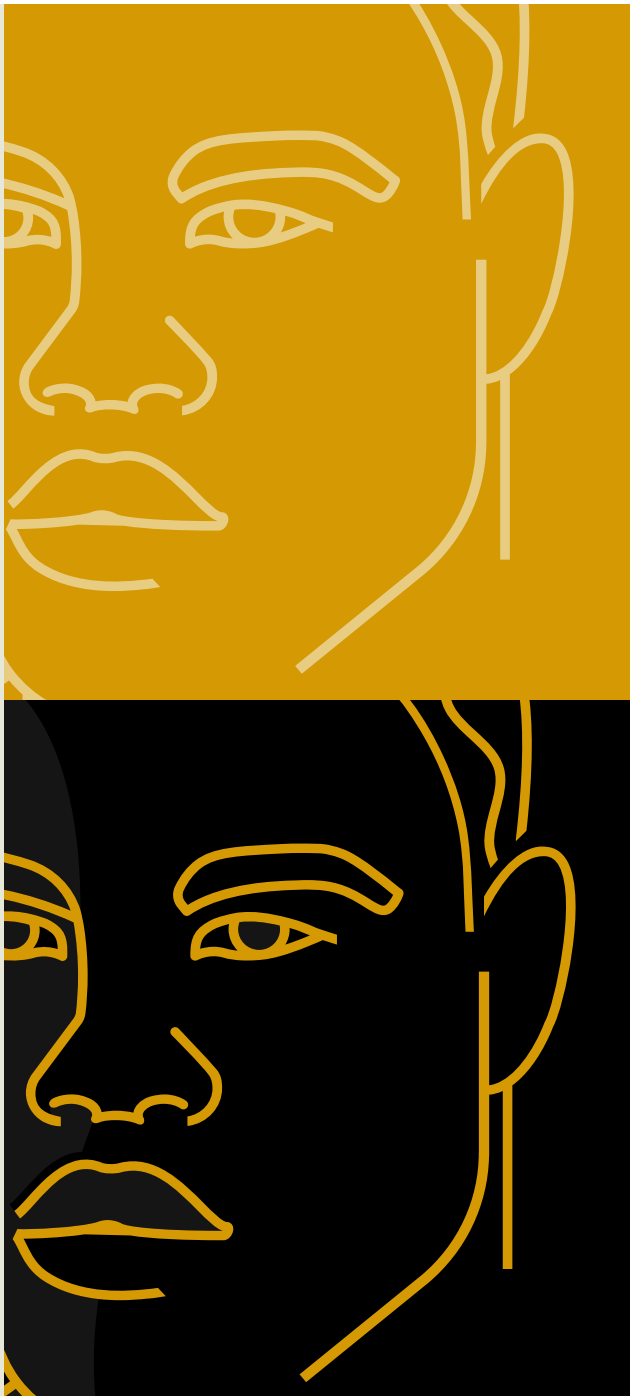
Brand elements give us tools to visually express the brand identity.

BRAND ELEMENTS

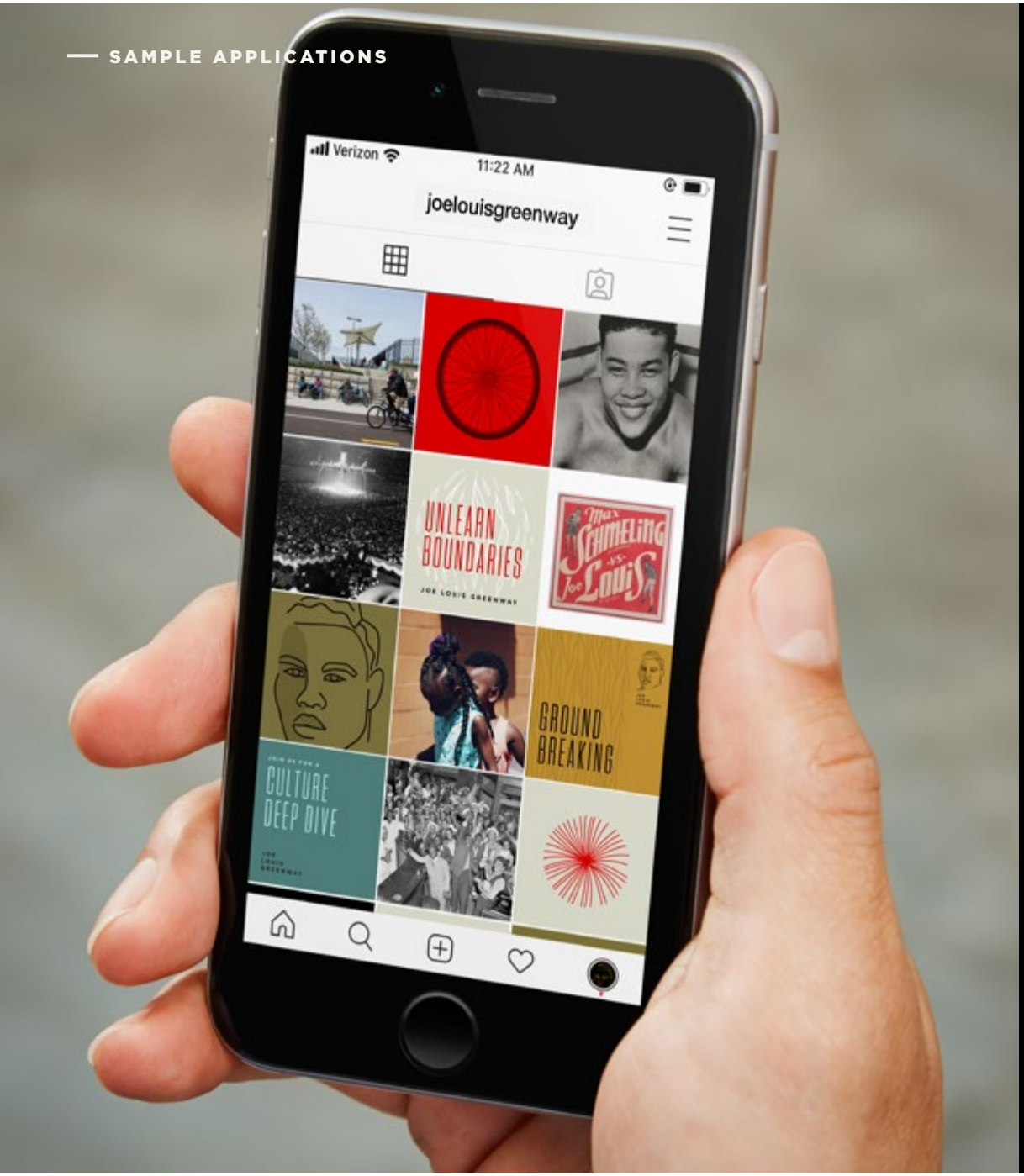








ILLUSTRATIONS



As part of the design process, we explored various sample applications to make sure all elements of the identity were suitable for the different environments and would translate across communication channels. environment.

APPLICATIONS


CULTURE
FEST


DETROIT
STRONG
I RIDE


BIKE LANE
DETROIT
JOE
LOUIS
GREENWAY
FUTURE
FORWARD
DETROIT IS POWER
STRENGTH


JOE
LOUIS
GREENWAY

LIGHTPOLE BANNERS

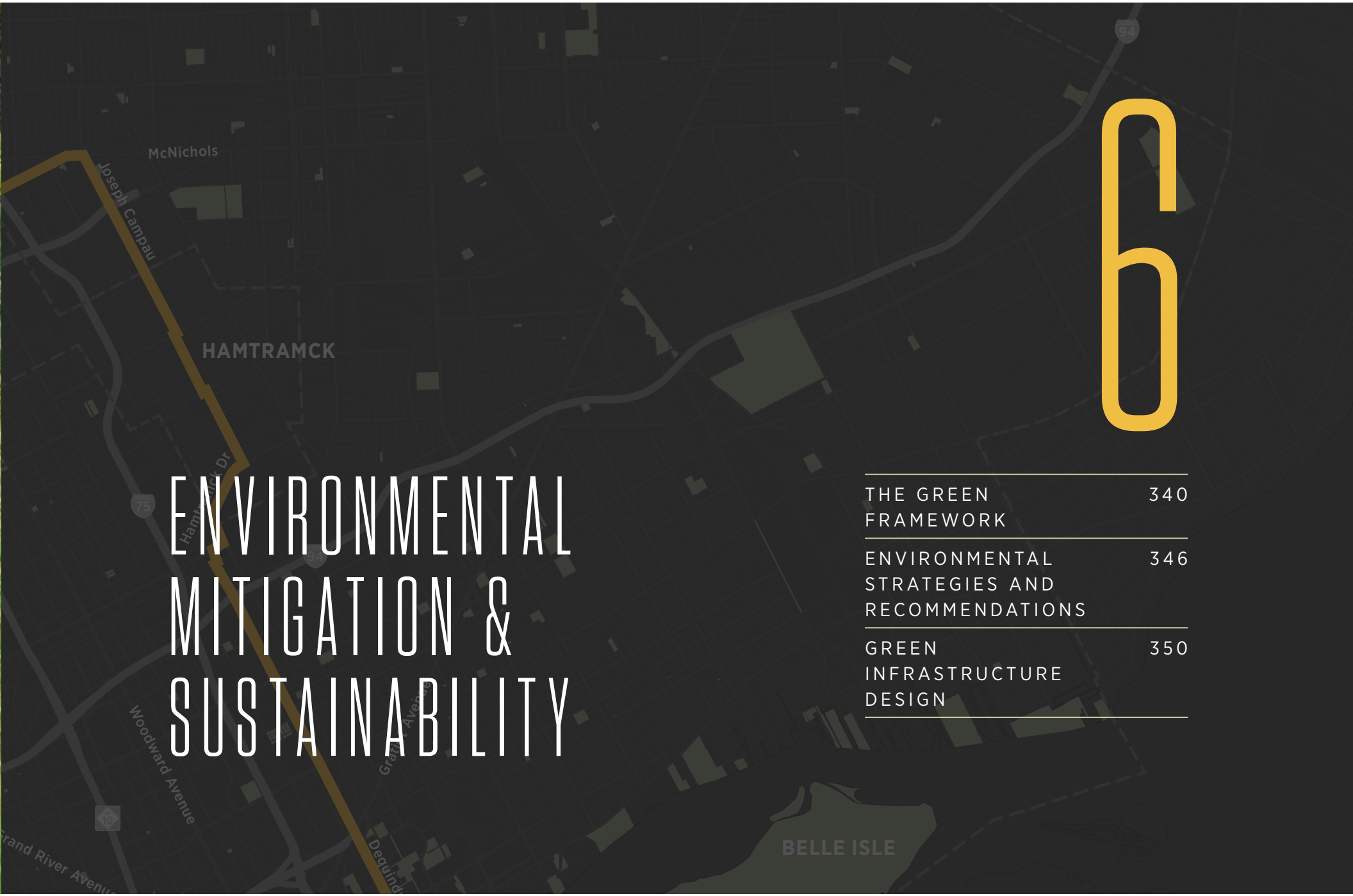
Light pole banners provide an on-greenway example of how the brand can communicate the themes Unity, Empowerment and Healing.


HERO &
HEALER
POWER
FOR ALL
ONE
DETROIT

CHAPTER 6

ENVIRONMENTAL MITIGATION & SUSTAINABILITY

Source: SmithGroup



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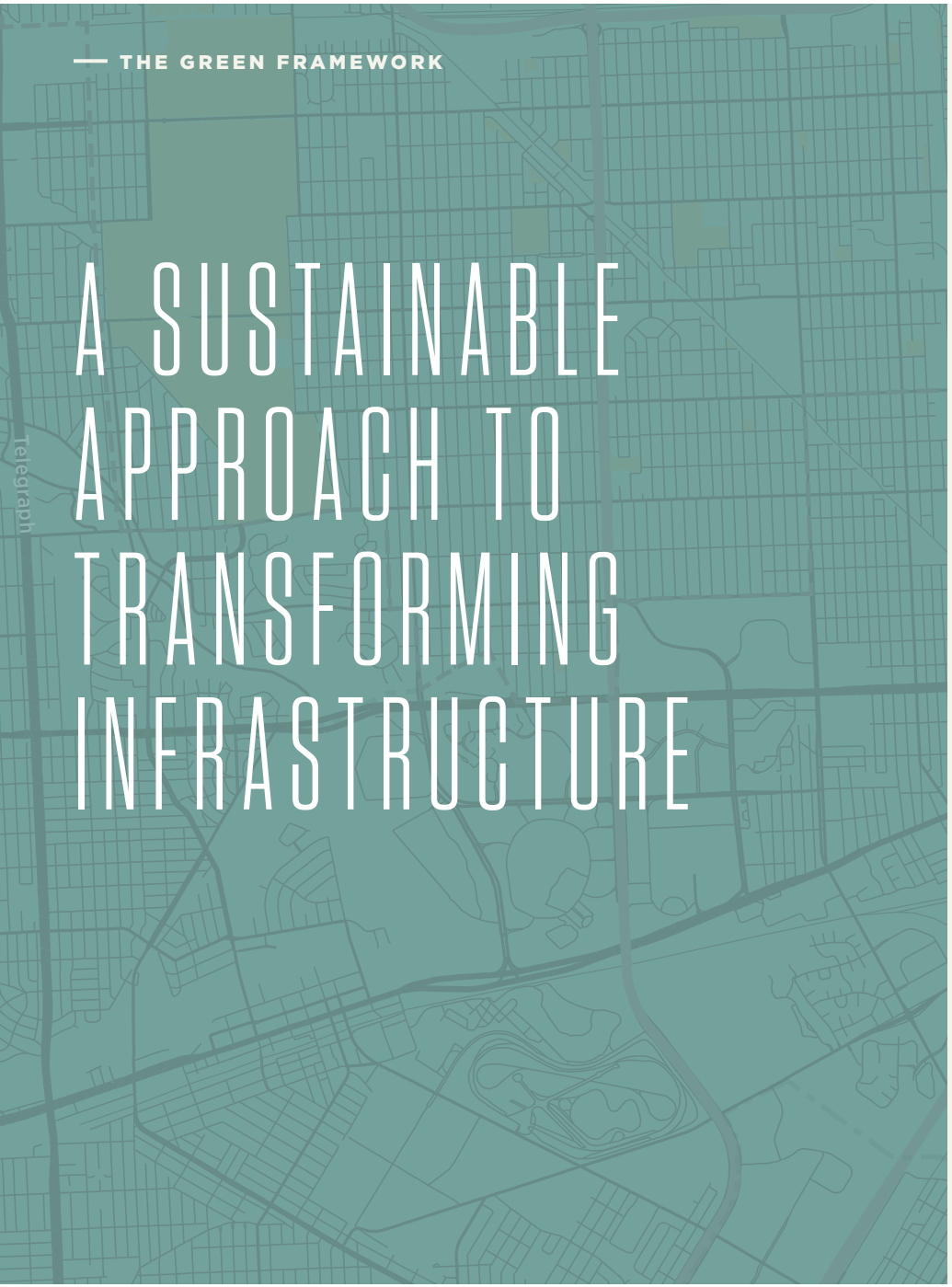
ENVIRONMENTAL MITIGATION & SUSTAINABILITY



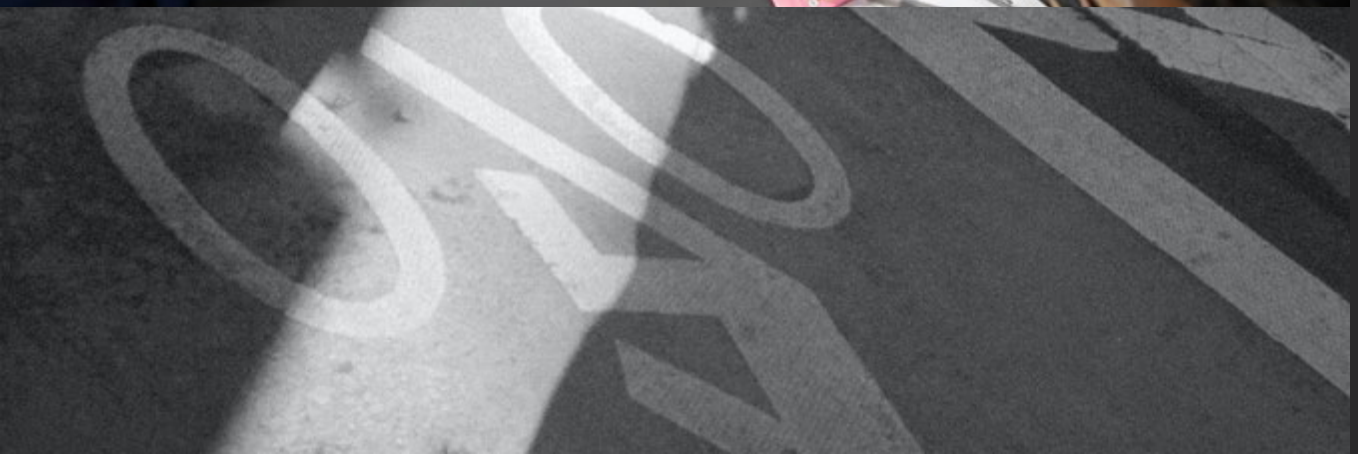
A SUSTAINABLE APPROACH TO TRANSFORMING INFRASTRUCTURE

We typically think of sustainability as a strictly environmental concern—as it affects the design of natural landscapes and green stormwater infrastructure (GSI), for example.

But sustainability has many facets. Public health. Economic development. Neighborhood stabilization. Park access and connectivity. The Framework Plan ensures that the Joe Louis Greenway will transform an infrastructure that previously divided neighborhoods into one that unites community and reconnects natural systems, catalyzes economic redevelopment and supports a resilient social network. The community expressed a strong desire to see the design of the greenway apply nature-friendly strategies. This chapter outlines a sustainable design approach to integrating habitat, managing stormwater and reconnecting people with nature—an important factor in improving public health and attracting and retaining a talented workforce.

You'll also read about the possibility of features that celebrate rainwater, and the potential of Detroit's unique abundance of vacant land.

Source: Sidewalk Detroit



"AS DETROIT STRIVES TO BECOME A NATIONAL LEADER IN ENVIRONMENTAL SUSTAINABILITY EFFORTS, THE PARKS AND RECREATION SYSTEM CAN SET A STRONG EXAMPLE FOR RESIDENTS AND BECOME A SITE FOR GREEN INFRASTRUCTURE EDUCATION AND IMPLEMENTATION."

—THE 2017 DETROIT PARKS AND RECREATION IMPROVEMENT PLAN

THE GREEN FRAMEWORK

"[THE GREENWAY SHOULD HAVE] ENVIRONMENTAL JUSTICE CONSIDERATIONS (AIR POLLUTION, INDUSTRY PROXIMITY, ETC.)"

—COMMUNITY ENGAGEMENT PARTICIPANT

REFERENCING THE PAST TO GUIDE THE FUTURE

The urban environment provides a dynamic means for people to live and take part in commerce—the exchange of goods, services and ideas. Increased density, mixed land uses and mixed-use development increase access and decrease the required resources and energy to deliver goods. Unfortunately, while development may increase quality of life for residents, workers and visitors, unregulated conventional development frequently results in an altered landscape that is detrimental to the natural environment. The spread of urban and suburban development has resulted in fragmented habitats, disrupted natural processes, massive resource expenditure and increasing volumes of carbon released into the atmosphere. While humans and societies are part of the landscape, the relationship to the environment must be redefined in order to ensure that a viable and healthy place to live, play and work for future generations is maintained.

Photo: Ryutaro Tsukata

Volunteers at Cadillac Urban Gardens.
Photo: Erik Hill

"PLANT LOTS OF TREES"

—COMMUNITY INPUT

As of 2019, the city of Detroit has an estimated population of 675,000 residents, approximately 36% of the city's peak population, recorded in 1950.[1] There are an estimated 14,800 acres of vacant land in Detroit, which equates to 16.75% of the city's 88,800 acres.[2] Detroit is at a pivotal moment for the reuse of vacant land. The future of the city requires careful planning that takes advantage of opportunities to reconnect the various social, economic and environmental aspects that have been fragmented for too long.

PLANNING FOR RESILIENCY

As urban environments face growing challenges, resilient planning and design strategies focus on environmental stewardship, resource sustainability, equity and inclusion, and economic benefits for present and future generations. The greenway will transform an infrastructure that once divided neighborhoods into something that unites communities and provides more equitable transportation options and a higher quality of life. Sustainable design also integrates natural systems and processes into the built environment, as they are considered to be of equal value to the built infrastructure. The following pages lay out a sustainable design approach to manage stormwater, integrate habitat and reconnect people with nature. The greenway reconnects communities, commerce and natural systems to provide healthy and desirable places to live.

1. U.S. Census Bureau. Detroit's population peaked in 1950 with a population of 1.8 million.
2. Data Driven Detroit, 2019 via Associated Press

BENEFITS OF INTEGRATING GREEN DESIGN IN THE GREENWAY

SOCIAL

- Foster community strength, cohesion, and engagement
- Encourage active lifestyles, improving physical health
- Enhance mental health and well-being
- Decrease crime rates
- Decrease negative health impacts due to poor air quality
- Provide equitable access to public resources
- Preserve and strengthen cultural connections between people and place
- Encourage growth and learning through active experiences

ECONOMIC

- Strengthen local economy and create job opportunities
- Increase business & talent attraction
- Reduce property damages resulting from natural disasters
- Reduce resource expenditure through improved infrastructure efficiency
- Reduce health care costs due to improved air quality and physical and mental health
- Increase economic development & build local wealth
- Promote tourism, visitor spending & earned income

ENVIRONMENTAL

- Support natural systems & processes
- Provide ecosystem services
- Improve quality of natural resources
- Increase biodiversity
- Preserve and restore native habitat
- Improve environmental resiliency to the impacts of natural disasters
- Reduce heat island effect
- Reduce carbon emissions through reduced electricity consumption

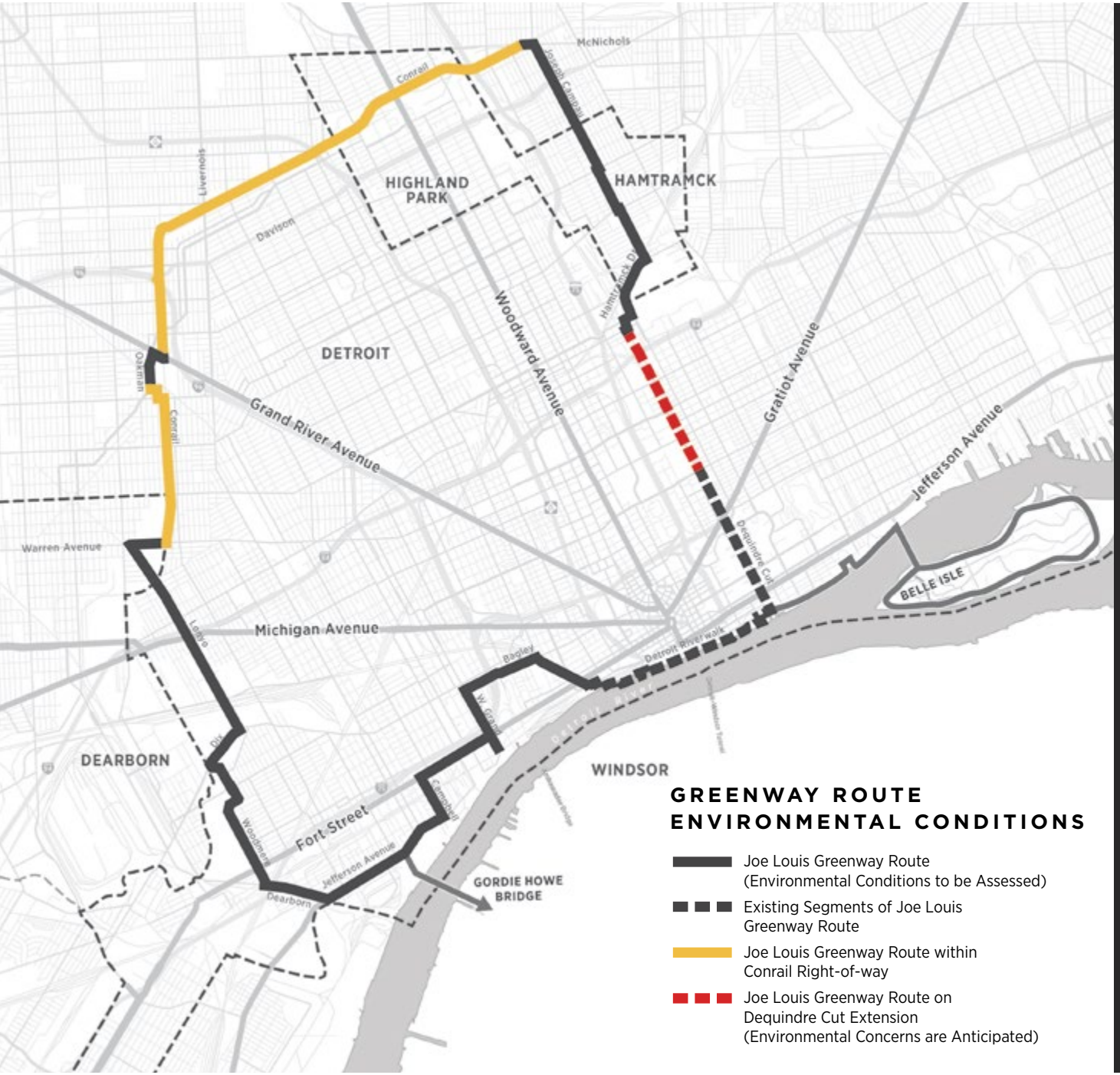
ENVIRONMENTAL ASSESSMENTS

Environmental assessments and mitigation plans are an important part of any major greenway project. Here we have included a summary of the environmental assessment work to date so that readers understand the impacts it can have on the construction process.

The City of Detroit has received a commitment to be reimbursed by a federal grant for the purchase of approximately 7.6 miles of continuous, former Conrail railroad right-of-way to be used for the Joe Louis Greenway. Reimbursement depends on the property being converted to a public trail and open space network. An environmental review of the property[1] determined there are contaminants in the soil that exceed residential standards. The baseline environmental assessment (BEA) was disclosed to the Michigan Department of Environment, Great Lakes, and Energy (EGLE), which protects the city from liability for cleanup of existing contamination.[2] The presence of contaminants influences the alignment and design of the greenway, however, under Part 201 Due Care requirements, a Response Activity Plan (ResAP), or a Due Care Plan, will be coordinated with EGLE to address public health and safety concerns identified during the environmental investigation. The contaminants identified in the BEA present risks to human health primarily through direct exposure (e.g. ingestion or prolonged skin contact), therefore remediation strategies will focus on minimizing the exposure path. One way that this can be achieved is by providing a clean soil cap over the contaminated materials to prevent direct contact. Other remediation methods may be required to address specific site conditions or areas with more extensive or greater degrees of contamination. This may include the physical removal of contaminated materials and disposal at appropriate disposal facilities. There are other sites that have been proposed for the greenway that may need remediation for which we do not currently have environmental data. One example of this would be the Dequindre Cut Extension which is also a former railroad corridor located adjacent to industrial properties. As the greenway is constructed over time, the environmental conditions will need to be assessed and mitigated as appropriate.

Additional environmental assessments, field investigations, and laboratory testing of soil samples will be required throughout the greenway corridor to verify the site conditions. This is particularly applicable for segments of the greenway that have not been evaluated and that existing information about the environmental conditions is not known. The environmental assessment process from field investigations to laboratory testing to analysis to establishing mitigation measures to final reviews and approvals by EGLE is a long process that can take six months or more to complete. The planning and scheduling of the design, construction and project funding will need to be coordinated with the requirements and timelines for the environmental assessment and mitigation requirements.

1 Phase I and Phase II Environmental Assessments per ASTM standards
2 Per Part 201 of the Natural Resources and Environmental Protection Act, 1994 PA 451



GREENWAY ROUTE ENVIRONMENTAL CONDITIONS

- Joe Louis Greenway Route (Environmental Conditions to be Assessed)
- Existing Segments of Joe Louis Greenway Route
- Joe Louis Greenway Route within Conrail Right-of-way
- Joe Louis Greenway Route on Dequindre Cut Extension (Environmental Concerns are Anticipated)

KEY TERMS

Remediation Process: Response activity to address sites of environmental contamination generally proceeds in a sequence of steps, which can include initial evaluation, interim response, remedial investigation, remedial action, operation and maintenance, and monitoring

ResAP: A Response Activity Plan, or ResAP, is a plan which may include one or more of the following: (i) A plan to undertake interim response activities, (ii) A plan for evaluation activities, (iii) A feasibility study or (iv) A remedial action plan.

BEA: Also known as a Baseline Environmental Assessment, demonstrates that the new owner or operator has performed due diligence in evaluating if the site has environmental contamination. Liability protection under many state laws can be provided if the BEA is disclosed to EGLE.[1]

Due Care: Actions required by the owners and operators of property that is contaminated to ensure that the contamination does not cause unacceptable exposures, and the contamination is not exacerbated or worsened.

All terms are illustrated as defined by EGLE. Learn more on EGLE's website.

1 https://www.michigan.gov/egle/0,4561,7-135-3311_4109_4212---,00.html

ENVIRONMENTAL STRATEGIES AND RECOMMENDATIONS

"CONNECT AS MUCH AS POSSIBLE TO CITY PARKS & GATHERING SPACES"

—COMMUNITY INPUT

A GREEN APPROACH

Community input during the development of this plan showed a strong interest in vegetated and nature-based strategies throughout the greenway. Green stormwater infrastructure (GSI) has the potential to provide many environmental, economic and public health benefits, including reduced burden on city stormwater infrastructure, habitat creation and preservation, and reduced frequency and severity of damage due to severe rain events. Strategic stormwater management strategies can restore natural drainage patterns, pre-treat runoff for improved water quality, and recharge aquifers, increasing groundwater supply.

The Joe Louis Greenway Framework Plan prioritizes green stormwater infrastructure strategies for the management of stormwater in the corridor and, when feasible, parcels adjacent to the greenway. For large rain events, and to minimize impacts from flooding, the design will ensure each stormwater treatment area has an outlet and overflow connection to either another treatment area or the city sewer. Limitations to infiltrate, and in some cases detain, stormwater exist within the corridor. In these locations, conventional engineering practices will be applied to manage runoff. The plan was developed through an analysis of the area's environmental conditions; an understanding of local policy, including the City of Detroit Post-Construction Stormwater Management Ordinance (PCSWMO); and coordination with government agencies and city departments. The proposed strategies have been coordinated with the greenway elements and future redevelopment opportunities near the corridor.

Lake Trust Credit Union Headquarters, Brighton, MI
Source: SmithGroup

"INCREASE ACCESS AND EXPOSURE TO NATURE AND WILDLIFE (THIS PROMOTES MENTAL AND PHYSICAL HEALTH)"

—COMMUNITY INPUT

Where does water go?

Pervious and impervious surfaces are very important to managing stormwater. These two surface types are opposite of each other:

Pervious surfaces allow water to flow through them. Soils and planted areas are the most common types of pervious surfaces. When it rains, these surfaces behave like a sponge; they absorb rainwater and allow it to penetrate into the soil.

Impervious surfaces do not allow water to flow through them. Most concrete, asphalt, pavers, rooftops and other structures are impervious. This causes water to travel across the surface until it reaches a low point, where it may pool, or a drain or pervious surface, where it can infiltrate or be redirected to another location.

Permeable pavement is a surface that is usually impervious, like concrete, asphalt or pavers, but has been engineered to allow water to flow through at a controlled rate. This significantly reduces the amount of stormwater runoff from large paved areas like parking lots and plazas.

The Joe Louis Greenway provides an opportunity to address environmental concerns in the area and to provide an example for future planning and design projects in Detroit. The following highlights a few key strategies to include as the plan is implemented.

Plant Trees—A young sapling can sequester about 1.0 lbs. of carbon each year, while a 50-year-old tree can sequester over 100 lbs. annually.[1] Moreover, trees are well known for their ability to filter air pollutants and particulates and to reduce the impacts of urban heat island effect—the elevated surface and air temperatures that urban areas tend to experience in comparison to rural areas.[2]

Implement Green Stormwater Infrastructure—The National Oceanic & Atmospheric Administration (NOAA) provides data indicating that more extreme precipitation events and greater changes in annual precipitation are on the rise due to climate change.[3] Much of Detroit's infrastructure is aging or has reached capacity and requires replacement. As infrastructure is replaced or upgraded, water resources should be restored, including the daylighting of buried creeks and restoring fractured ecosystems.

Create a Contiguous Green Network—In addition to stormwater management, the greenway seeks to create connections to existing parks and open spaces (e.g. Patton Park, Romanowski Park, Palmer Park, Jayne Field, etc.), while being mindful of future development patterns. This is the time to preserve and restore vacant parcels and develop a larger systems-based approach to public open space that extends into the neighborhoods.

1 US Department of Energy, 1998, via Quantifying the Greenhouse Gas Benefits of Urban Parks Trust for Public Land, August 2008: http://cloud.tpl.org/pubs/benefits_greenhouse_gases_and_parks_whitepaper.pdf
2 US Environmental Protection Agency, Heat Island Compendium: https://www.epa.gov/heatislands/heat-island-compendium
3 NOAA: National Centers for Environmental Information, State Climate Summaries: https://statesummaries.ncics.org/chapter/mi/

"[THE GREENWAY SHOULD HAVE] GREEN ENVIRONMENT INITIATIVES"

—COMMUNITY INPUT

Indianapolis Cultural Trail
Credit: United Consulting, https://ucindy.com/project

Use Appropriate Species—Each segment of the greenway will be evaluated for its capacity to sustain vegetation and designed with plants appropriate to each planting area type, such as landscape buffers, passive areas, green stormwater infrastructure, lawn extensions, seating areas, etc. Each of these functions will enhance the corridor as a green amenity within an urban context. Native, or regionally-adapted, plant species should be utilized where possible. All plant species should be selected based on benefits for native wildlife and pollinators, hardiness to regional[4] and microclimate[5] conditions, progeny, tolerance of urban conditions, seasonal color display, biodiversity and root structure.

Stormwater facilities can be designed as conveyance and containment amenities in a way that provides community access to nature and recreation opportunities and provide a multitude of ecological, social and economic benefits.

4 Detroit is classified as USDA Zone 6a climate

5 Due to factors such as urban heat island effect, soil contamination, winter salt distribution, soil drainage and other contextual factors, microclimates may exist along the greenway that do not support typical native species.

Indianapolis Cultural Trail
Credit: DaCosta Mermoz

Michigan State University Grand Rapids Research Center
Source: SmithGroup

GREEN INFRASTRUCTURE DESIGN

"I WANT TO SEE UNCULTIVATED WILDFLOWER FIELDS"

—COMMUNITY INPUT

STORMWATER MANAGEMENT IN DETROIT

In 2018, the City of Detroit issued the Stormwater Management Design Manual (SMDM).[1] This document frames the City's approach and vision for management of stormwater and strategies for the implementation of GSI. When properly designed and constructed, GSI can alleviate the demand and stress on public infrastructure. Stormwater from private parcels and non-right-of-way public land that enters the sewer is required to meet three performance standards: treatment for water quality, flow rates for means of conveyance, and containment for reducing the volume and rate of stormwater entering the city's sewer system (refer to chart on opposite page).

The Joe Louis Greenway will be a publicly accessible linear corridor constructed within existing public right-of-ways, adjacent to existing streets and off-street (former railroad Right-of-way). As part of Detroit's public transportation network the greenway will be treated as a right-of-way similar to other roads and streets in Detroit. This means that the Post Construction Stormwater Management Ordinance and SMDM are not requirements, however because GSI is the recommended approach to managing stormwater in the corridor, these documents set the basis for stormwater management performance standards in the region and have been used to inform the design in the Framework Plan. The Framework Plan assumes the following:

1 City of Detroit Stormwater Management Design Manual

- **Water Quality**—Facilities in the greenway will treat the first flush storm event (1-inch in a 24-hour period) that falls within the entire corridor, regardless of the size of the construction activity relative to the development site. In on-street applications, the long term vision for the entire streetscape is for reconstruction using complete-streets standards. This may need to be installed in phases as funding is available and in relationship to other city priorities.
- **Infrastructure / Channel Protection—**Conveyance strategies will be designed to meet or exceed the SMDM requirements.
- **Flood Control**—The greenway will have designated discharge points to the city sewer to minimize the effects of large rain events and flooding. These discharge points will be spaced appropriately to manage stormwater—both within the corridor, and, when feasible, utilizing parcels adjacent to the greenway. The scale and spacing of these drainage areas will be informed by typical precipitation event frequency and volume. The discharge points will be designed as overflows, allowing time for infiltration and evaporation to decrease the volume of water discharged and to slow down the timing of discharge.

Where does our water come from?

When water filters through soil or is stored underground in the spaces between soil particles and rock fractures, it is called **groundwater**. Large, natural zones also exist underground—these zones are called **aquifers**, and they are the source of our water supply, including the water we drink.

The greenway's typical drainage areas are anticipated to be less than the 5 acres in size. Based on this scale, drainage areas will be designed to manage a target 10-year, 24-hour storm event.[1] If drainage areas entering the city sewer exceed the 5-acre threshold, then adjacent publicly-owned land or city parks, may accommodate additional green stormwater infrastructure to managing larger storm events.[2] All flow leaving the greenway corridor will be discharged at no more than the maximum allowable rate of 0.15 cubic feet per second, per acre.[3]

1 3.31 inches, per the The City of Detroit Stormwater Management Design Manual
2 See the discussion at the end of this section regarding a district-scale approach to managing stormwater
3 This rate maximum is for a 2-year, 24-hour storm event

STORMWATER MANAGEMENT PERFORMANCE STANDARDS & REGULATED AREA BY DISCHARGE LOCATION

DISCHARGE TO:	WATER QUALITY	INFRASTRUCTURE / CHANNEL PROTECTION	FLOOD CONTROL
Combined Sewer System (97% of the Detroit System)	Match natural conditions for peak flow and volume for the 90th percentile storm event. Remove a minimum of 80% of the total suspended solids compare to the uncontrolled runoff or to a discharge concentration less than or equal to 80mg/L of total suspended solids. Regulated Area: Construction activity less than 50% of development site = construction activity area Construction activity greater than 50% of development site = entire development site	The peak flow rate of stormwater runoff shall not exceed the predevelopment peak flow rate for the 2-year, 24-hour storm. Regulated Area: Entire development site	*Peak flow only Drainage Area <5 acres, manage 10-year, 24-hour storm Drainage Area >5 acres, manage 100-year, 24-hour storm Release rate of 0.15 cfs/acre Regulated Area: Entire development site
Separate Sewer System	Remove a minimum of 80% of the total suspended solids compared to the uncontrolled runoff or to a discharge concentration less than or equal to 80mg/L of total suspended solids. Regulated Area: Regulated construction activity	*Peak flow and volume Match natural conditions for peak flow and volume for the 2-year, 24-hour storm event Regulated Area: Regulated construction activity	

*Discharge via a DWSD-owned separate storm sewer system to Detroit River or Rouge River downstream of the Rouge Turning Basin are not subject to Channel Protections and Flood Control performance standards

WHY IS GREEN STORMWATER INFRASTRUCTURE IMPORTANT?

Green stormwater infrastructure (GSI) provides for a wide array of environmental and community benefits.[1]

Using native plants and natural processes as filters for stormwater runoff, GSI slows the flow of water into the city's sewer system, reducing the number of untreated combined sewer overflow discharges into the Detroit and Rouge Rivers, and ultimately keeping our local waterways and Great Lakes clean and healthy.

By managing stormwater where it falls, GSI also helps to reduce surface flooding during rain events and keeps that runoff from overwhelming the combined sewer system. Depending on the project, the cost of GSI is often equal to or less than that of traditional gray infrastructure, and it is more resilient, which helps with water and sewer affordability.

In addition, GSI brings nature into the city, making streets and neighborhoods more beautiful, increasing health and well-being, and improving air quality.

1 https://detroitstormwater.org/faqs

ECOSYSTEM SERVICES FROM GSI

- Resiliency / hazard mitigation (e.g. flood control)
- Nutrient management (e.g. carbon, nitrogen)
- Air quality (e.g. pollutants and particulates)
- Climate (e.g. heat island mitigation, windbreaks)
- Environmental sensory (e.g. dark sky management, noise reduction)
- Habitat (e.g. wildlife corridors, sustainable food web, restoration for threatened and endangered species)
- Contamination mitigation/remediation
- Stormwater management

ENVIRONMENTAL CONTAMINATION MANAGEMENT STRATEGIES

Strategies for the environmental remediation of contaminated areas such as those along the former Conrail rail corridor.

Through previous baseline environmental assessments, the City of Detroit has determined that there are contaminated sites along the former Conrail rail corridor. These contaminated former industrial lands are often referred to as “brownfield” sites. Their soils often contain heavy metals, and other pollutants left over from production, transportation, and processing services. Left uncontained, these substances may come in contact with people who use the greenway. There may be higher levels of contamination or environmental concern along the greenway that may require additional measures to alleviate leeching of contaminants into the groundwater supply or potential water supply systems.

The act of brownfield redevelopment and remediation includes strategies for isolating or, where possible, removing dangerous substances from the site. Three primary factors determine whether removal or isolation strategies will be used:

1. On-site risk: depending on pollutant and soil types, there may be very little or no risk to isolating contaminated soils. Capping measures will effectively isolate contaminants and prevent them from leeching into groundwater, affecting local communities, impacting local wildlife, or posing a risk to users of the greenway.

2. Risk of removal: While some pollutants may pose no or little risk when isolated, these same contaminants may present significantly more danger to local communities, the environment, or workers when disturbed or removed. For contaminants unable to be contained by capping measures may need to be removed. Removal of contaminants can provide a clean and safe site, however, extensive care and safety measures should be in place during removal activities to ensure limited secondary exposure. Additionally, proper disposal sites and methods should be identified and utilized.

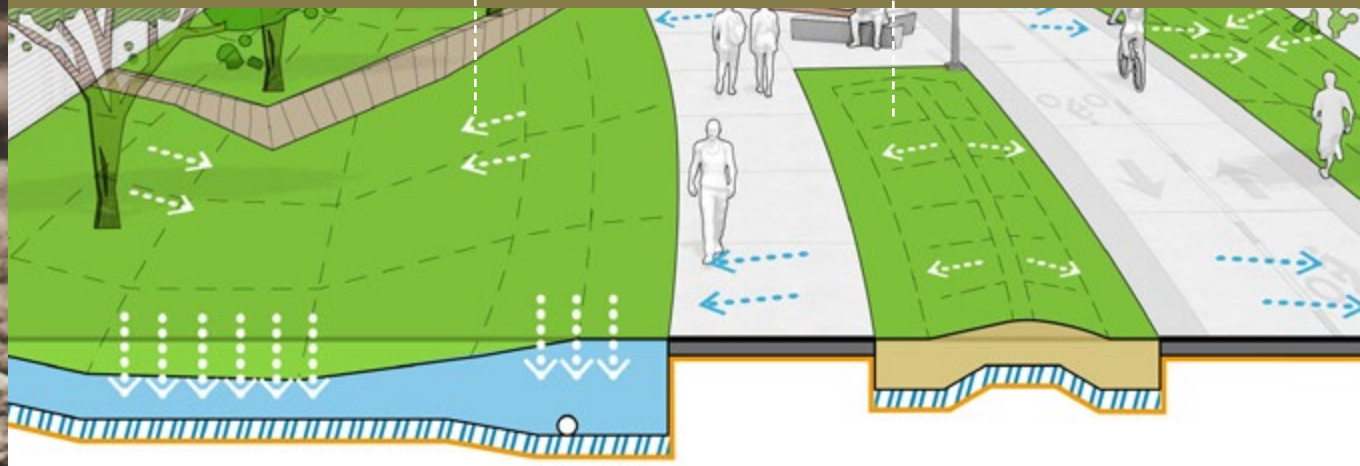
3. Cost and Feasibility: Where risk of isolation and risk of removal are relatively similar, the removal, processing and proper disposal of contaminated soils, as well as the resupply of clean soils, may be cost prohibitive. When compared with the beneficial environmental, social and economic benefits of the greenway, isolation of contaminated soils may be the preferred option.

PASSIVE ZONE

These areas have lighter occupancy than active areas and may include landscaping, art, stormwater management and other similar features

ACTIVE ZONE

High use areas with primary circulation



Brightly-colored non-woven geotextile can serve as a demarcation of environmental contaminants below

Riverside Park, Detroit, MI
Source: SmithGroup

Due to the type of contamination along the Conrail portion of the Joe Louis Greenway, capping—an effective means of managing contamination on-site—is the remediation strategy likely to be used in this area.

An environmental cap is used to safely cover the contaminants on site to prevent the vertical and horizontal migration of contaminants by keeping the pollutants in place. A cap will eliminate surficial exposures and prevent stormwater and wind from carrying the contaminants off-site. It also reduces fossil fuel use and associated greenhouse gas generated with traditional excavation, hauling and disposal methods. Caps can be comprised of asphalt, concrete, a geosynthetic membrane, vegetated soils, or compacted clay. Three types of caps are envisioned, the final depth and configuration of each will be specified in the ResAP, including:

- **Impermeable barrier:** The greenway's hardened pavement surface, typically concrete or asphalt, prohibits direct contact to the contaminated soil below.
- **Active zone cap:** A thick layer of clean fill soil with an environmental demarcation geotextile fabric will be placed over the contaminated soils below. The location and extent of the active zone cap area will be defined in the ResAP and will be extended as needed to ensure a safe greenway for the public.
- **Passive zone cap:** Vegetation alone or in concert with a layer of clean fill to be placed where the public does not have direct access from the trail. Signs and landscape strategies will be placed to discourage public use.

As the form of the trail, trailheads, seating areas and amenity zones are further developed, site grading should account for the depth of cap material. Off-site disposal of this soil is prohibitively expensive. Fortunately, the known contaminants in the Conrail property do not prohibit earthmoving of the existing soil, so keeping the soil on-site is an option. Earthwork of the existing soil should be used only when necessary to minimize the volume of contaminated material moved on site. Site grading of the existing soil can create features such as berms, elevated trail sections, and other creative landforms to enhance the user experience in the greenway.

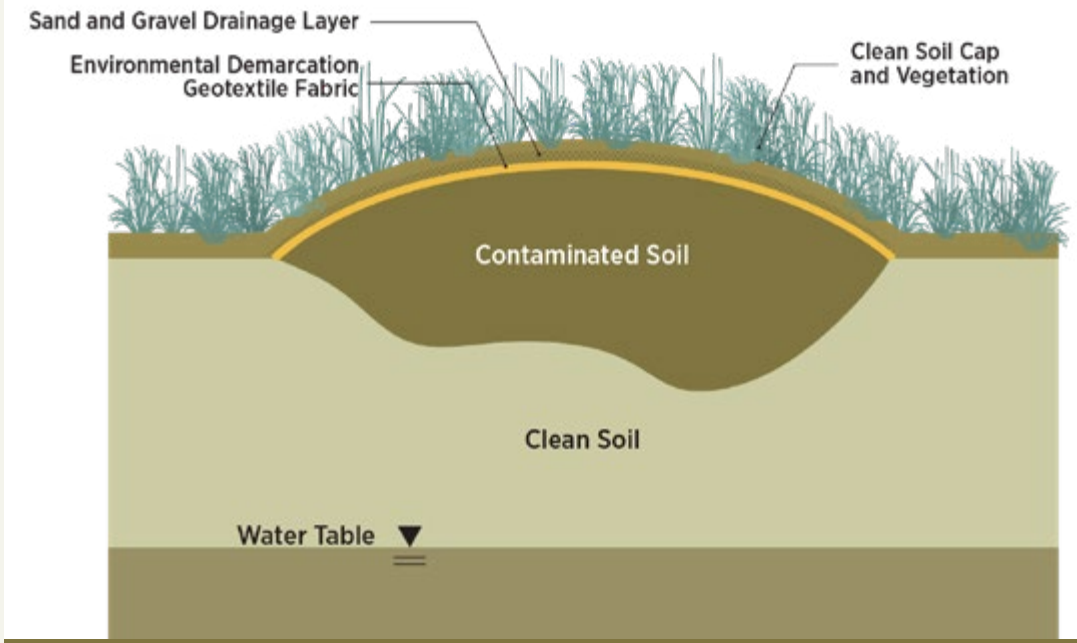
Below the cap, an environmental demarcation geotextile fabric is required to separate the contaminated soil from the cap. A brightly-colored non-woven geotextile fabric should be used to draw attention to the limits of the cap, serving as a warning for post-construction improvements, digging and erosion.

In general, small storm events (1-inch of rainfall in 24 hours) that fall in the corridor are anticipated to be managed on site through infiltration, plant nourishment and evaporation. However, like most soils typical of the Detroit metro area—the underlying soils in the railroad corridor are expected to be clay, so the potential for infiltration is likely to be low. Larger and more intense storm events are to be detained and conveyed to larger green stormwater infrastructure (GSI) facilities, detention basins, linear swale detention areas, rain gardens and other similar facilities within the

greenway corridor. Stormwater strategies are addressed in more detail later in this section.

If high ground water is encountered, the ResAP may require an impermeable liner to eliminate the risk of groundwater contamination. Fencing, or other site barriers, may be required when the trail is adjacent to known or perceived contaminated sites.

A ResAP needs to be developed in coordination with anticipated funding sources and their associated requirements. The Res-AP process may take some time to complete. EGLE will likely require additional testing throughout the corridor to verify the conditions across the entire right-of-way and testing will be required for the parcels that were not previously tested. It will be important to maintain the project's momentum on various stretches of the greenway while simultaneously advancing the Res-AP process for contaminated sites.



WHAT IS CAPPING?

An environmental cap is used safely covers contaminants on site to keep them in place and prevent migration of pollutants

These measures ensure users of the greenway—and communities along its route—stay safe and healthy. Most capping along the Joe Louis Greenway will consist of several layers:

1. Contaminated Soil: this layer includes stabilized pollutants that aren't at risk of further infiltration

2. Environmental Demarcation Geotextile Fabric: This brightly-colored geotextile fabric will be placed above contaminated soils and will serve as a warning to anyone who may be digging or performing utility services in the area1

3. Clean Soil "Cap": these soils are brought in to serve as a barrier between greenway users and contaminated soils—and to provide a clean growing medium for new plants.

1 The publicly-accessible greenway property limits will be clearly-defined and fenced where appropriate

In addition to creating opportunities to reconnect people to jobs, schools, surrounding neighborhoods and businesses, the Joe Louis Greenway Framework Plan creates opportunities for people to connect to nature, restore natural processes in the urban fabric, and resilient strategies for stormwater management.

Atlanta Beltline
Photo Source: SmithGroup

Michigan State University Grand Rapids Research Center
Source: SmithGroup

Source: SmithGroup

Source: SmithGroup

Milliken State Park, Detroit, MI
Source: SmithGroup

Lake Trust Credit Union Headquarters, Brighton, MI
Source: SmithGroup

Source: SmithGroup

STORMWATER PRACTICE ELEMENTS

In order to facilitate the design and implementation of green stormwater management infrastructure in both on and off-street greenway segments, a set of responsive green stormwater infrastructure design typologies have been developed.

STORMWATER MANAGEMENT PRACTICES

Stormwater management practices are the different installations that can be put in place to allow for water infiltration, to hold stormwater and to reduce water runoff. Two common stormwater practice types are detention and retention.

Detention stormwater management approaches temporarily hold back water and slow the infiltration rate of water into the soil.

Retention stormwater management approaches capture water permanently, such as in a pond. This reduces the overall water volume and flow rate and allows the water to be reused for purposes such as irrigation.

Bioswales are modified swales that use soil to increase water infiltration. Bioswales help improve water quality and reduce water runoff.

The design typologies and strategies reflect the range of corridor conditions along the Joe Louis Greenway and correspond to the Framework Plan GSI categories. The final design will use a variety of stormwater practice elements that fall into three categories:

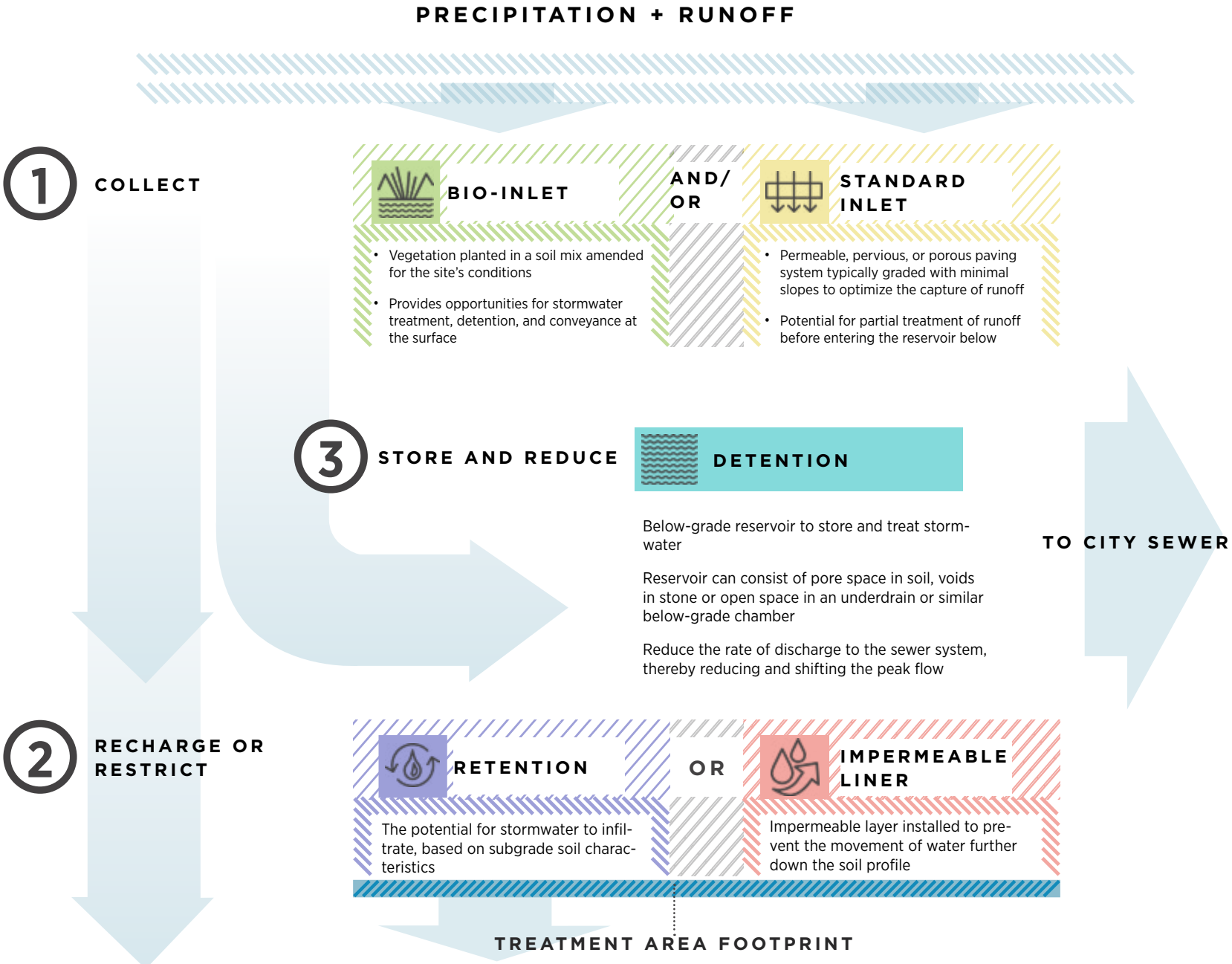
Collect: Capture precipitation and runoff at the surface. Water not lost to evaporation, evapotranspiration or plant uptake is filtered then either infiltrated or conveyed to another facility.

Recharge or Restrict: Optimize the potential infiltration capacity of the subgrade. Recharge groundwater resources and eliminate stormwater from entering the city sewer. Install an impermeable liner where infiltration is not desired due to below grade conflicts such as utilities.

Store and Reduce: Release stormwater not lost at the surface or to infiltration to the city sewer system at a controlled rate. This provides potential for additional treatment.

DESIGN CONSIDERATIONS

The successful design and implementation of green stormwater infrastructure is influenced by several key considerations. These factors may include a detailed understanding of site topography, soils, infrastructure, vegetation, circulation, and climate—as well as considerations for cost and maintenance. The design of GSI located in urban environments present additional conditions that need to be taken into consideration including slow infiltration rates due to below grade structures or clay soils, soil contamination, utility infrastructure, larger areas of paved and impermeable surfaces and space constraints.


PRECIPITATION + RUNOFF
1
COLLECT
BIO-INLET
AND/
OR
STANDARD
INLET
• Vegetation planted in a soil mix amended for the site's conditions
• Provides opportunities for stormwater treatment, detention, and conveyance at the surface
• Permeable, pervious, or porous paving system typically graded with minimal slopes to optimize the capture of runoff
• Potential for partial treatment of runoff before entering the reservoir below
3
STORE AND REDUCE
DETENTION
Below-grade reservoir to store and treat storm-water
Reservoir can consist of pore space in soil, voids in stone or open space in an underdrain or similar below-grade chamber
Reduce the rate of discharge to the sewer system, thereby reducing and shifting the peak flow
TO CITY SEWER
2
RECHARGE OR
RESTRICT
RETENTION
OR
IMPERMEABLE
LINER
The potential for stormwater to infil-trate, based on subgrade soil charac-teristics
Impermeable layer installed to pre-vent the movement of water further down the soil profile
TREATMENT AREA FOOTPRINT

GREEN INFRASTRUCTURE STRATEGIES

"I WANT THE CITY TO ANALYZE AIR QUALITY AND PLANT TREE BUFFER ZONES"

—COMMUNITY INPUT

STRATEGIES

1. There exist a diversity of ecological, functional and dimensional conditions along the Joe Louis Greenway. Given these conditions, certain approaches may be more or less feasible or appropriate. Three primary approaches have been identified for implementation along the greenway. These strategies may be mixed and applied as conditions, needs and funding allow. Each of these approaches are designed to achieve the recommended performance standards, optimize the value of ecosystem services provided and maximize the productivity of the system.
2. Maximize pervious surfaces and prioritize vegetated stormwater management strategies such as bioretention, biodetention and bioswales where feasible.
3. Maximize the footprint of the catchment area below grade.
4. Overcome extremely difficult site conditions by managing first flush stormwater in the corridor and then conveying large or high-intensity storm events to facilities appropriately sized and located in wider segments of the greenway or within adjacent publicly owned properties.
5. This process has resulted in three general categories to managing stormwater with GSI in the corridor. The three following categories with their respective colors define different strategies that are defined and illustrated in the following section:

SURFACE MANAGEMENT

Surface-level stormwater management uses of a variety of facility types, including detention basins, linear detention swales, raingardens, pervious pavements and permeable pavers.

Vegetated interventions can be designed to optimize treatment for water quality and to create open storage volumes of water at the surface. Pervious surfaces maximize the opportunity for stormwater to enter the subgrade for retention and detention. In most instances, the footprint of the catchment area below grade is able to match the space required for the facility at the surface. This approach has the greatest opportunities in the following applications: off-street (railroad ROW), off-street (park areas), boulevards, and off-street adjacent greenway segments.

Note: The green color shown in the diagrams and cross-sections on subsequent pages indicates surface management of stormwater

INFILTRATION & BELOW-GRADE MANAGEMENT

Management of stormwater occurs primarily below grade in storage aggregate, soil cells, exfiltration chambers, or other below-grade open volume storage features. This approach manages stormwater in the corridor where the demand for space by existing or proposed site improvements leaves little to no space for management at the surface. The footprint of the area can be optimized by extending below the greenway paths, pavement or other impervious surfaces. The larger the footprint of the facility, the greater the potential for infiltration. Properly-designed systems can treat, infiltrate and detain runoff. Use this application in the following scenarios: on-street applications, off-street applications where limitations prohibit using surface stormwater management strategies. Vegetated strategies should be integrated when appropriate.

Note: The blue color shown in the diagrams and cross-sections on subsequent pages indicate below-grade infiltration management strategies

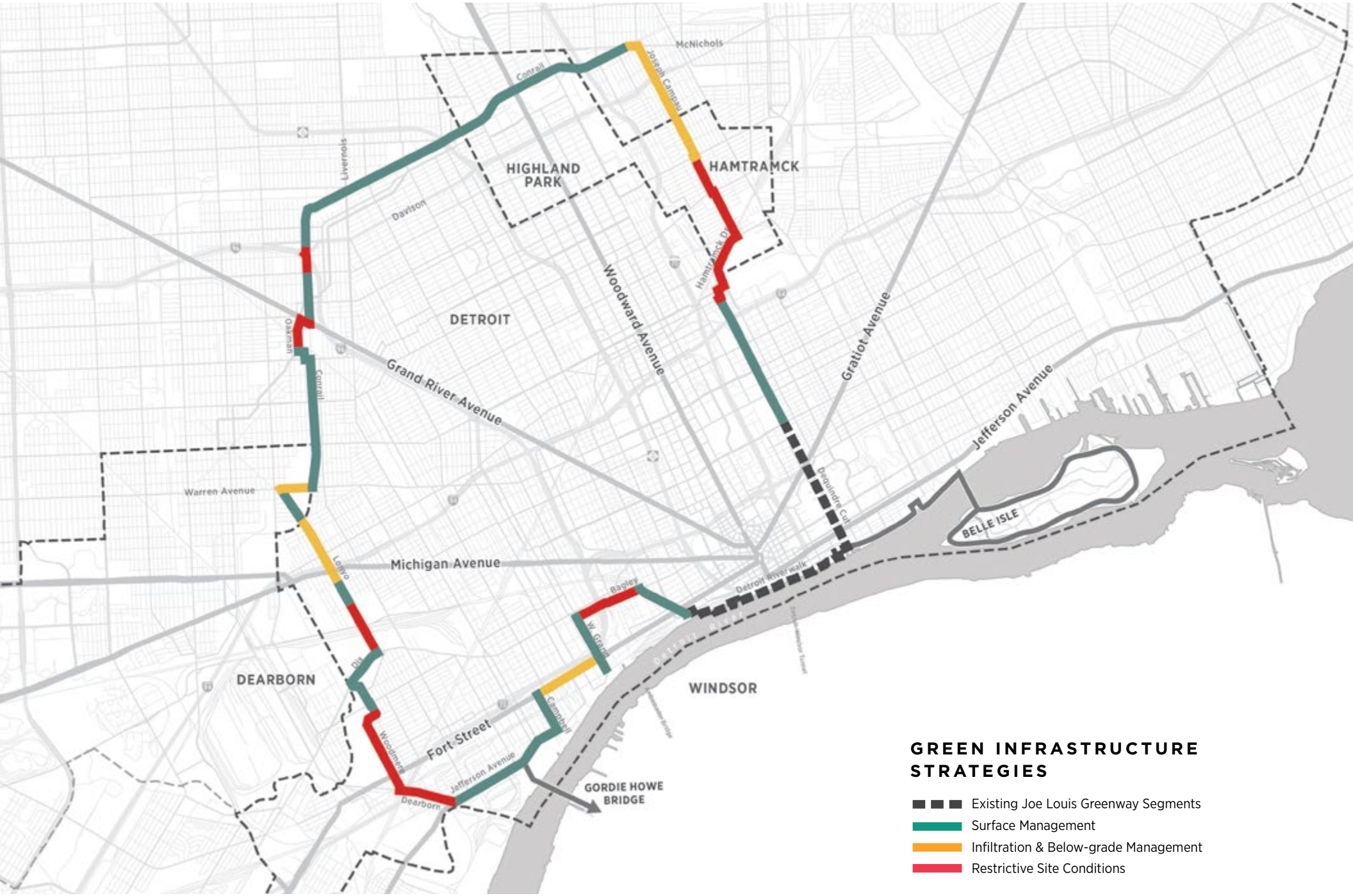
RESTRICTIVE SITE CONDITIONS

Stormwater is managed via a treatment train in a larger system. In scenarios where challenging site conditions are present (i.e. the presence of contaminants in the soil, high water table, utilities, or other below grade conflicts) a systems-based approach to achieving the recommended performance standards is required. These more restrictive site conditions will likely use more traditional stormwater management strategies including connecting to, and discharging to, the Detroit sewer system. GSI along the greenway will be designed to:

1. Manage the first flush (the initial surface runoff of a rainstorm)[1]
2. Convey large or high-intensity storm events
3. Integrate appropriately sized and accessible facilities outside of the corridor

Contaminated sites require site -specific strategies to be coordinated with a Response Activity Plan, which are addressed in other parts of this plan. This application is anticipated to be required in the following cases: off-street, alleys on former railroad sites.

Note: The brown color shown in the diagrams and cross-sections on subsequent pages indicate restrictive site conditions for management of stormwater

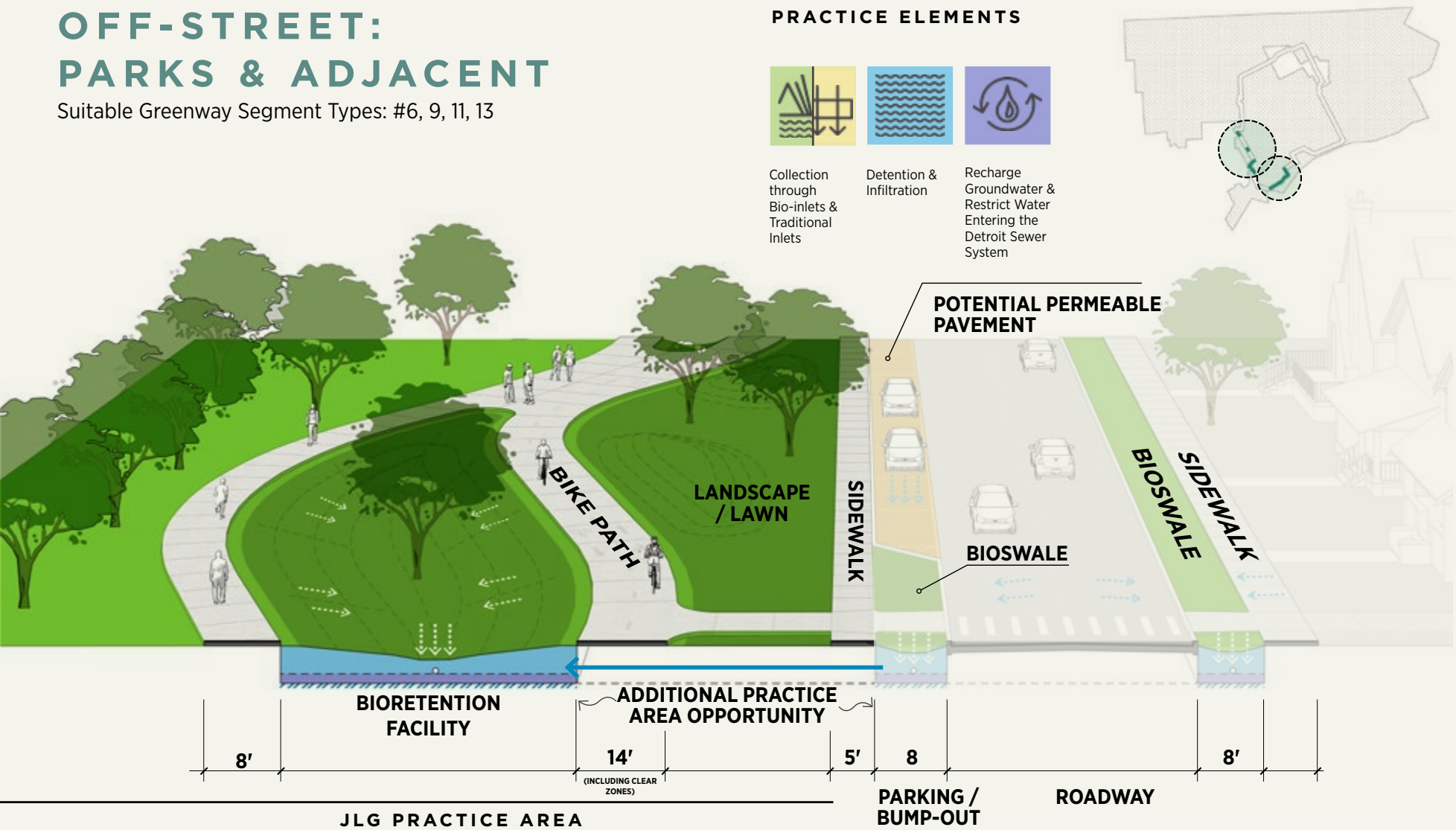


GREEN INFRASTRUCTURE STRATEGIES

- Existing Joe Louis Greenway Segments
- Surface Management
- Infiltration & Below-grade Management
- Restrictive Site Conditions

OFF-STREET: PARKS & ADJACENT

Suitable Greenway Segment Types: #6, 9, 11, 13

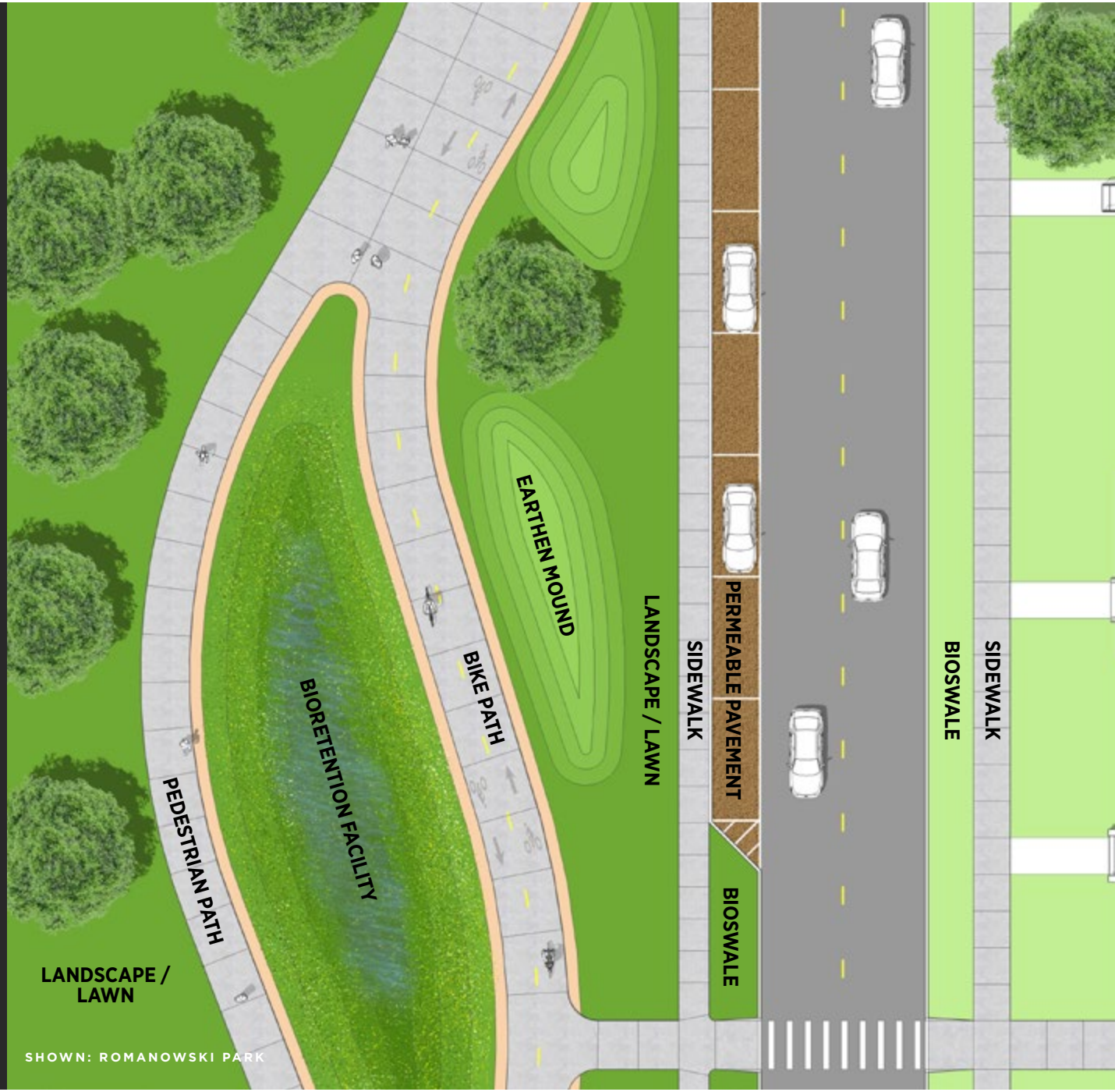


HIGHLIGHTS

Stormwater from the greenway is managed in bioretention facilities between or adjacent to separated bike and pedestrian paths. In wider greenway off-street segments and particularly within parks there may be additional space to increase the size of the stormwater facility to assist in managing adjacent streetscapes.

This approach promotes management of stormwater runoff from the street through a treatment train approach1 that connects facilities in the R.O.W. to facilities in the greenway.

1 A treatment train approach—a combination of lot level, conveyance, and end-of- pipe stormwater management practices—is usually required to meet the multiple objectives of stormwater management, which include maintaining the hydrologic cycle, protecting water quality, and preventing increased erosion and flooding.



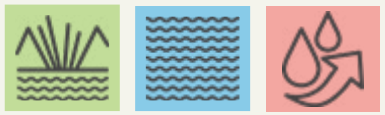
SHOWN: ROMANOWSKI PARK

OFF-STREET

Suitable Greenway Segment Types: #1, 15, 19

In off-street areas with the potential for below-grade leaching of contaminated materials to the groundwater, an impermeable clay or GCL liner restricting infiltration will need to be provided.

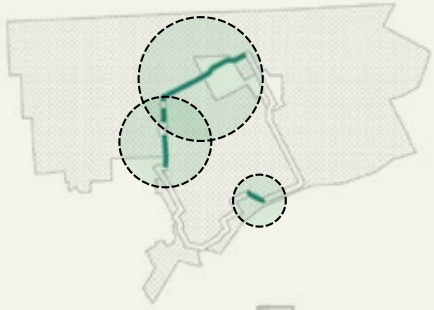
PRACTICE ELEMENTS

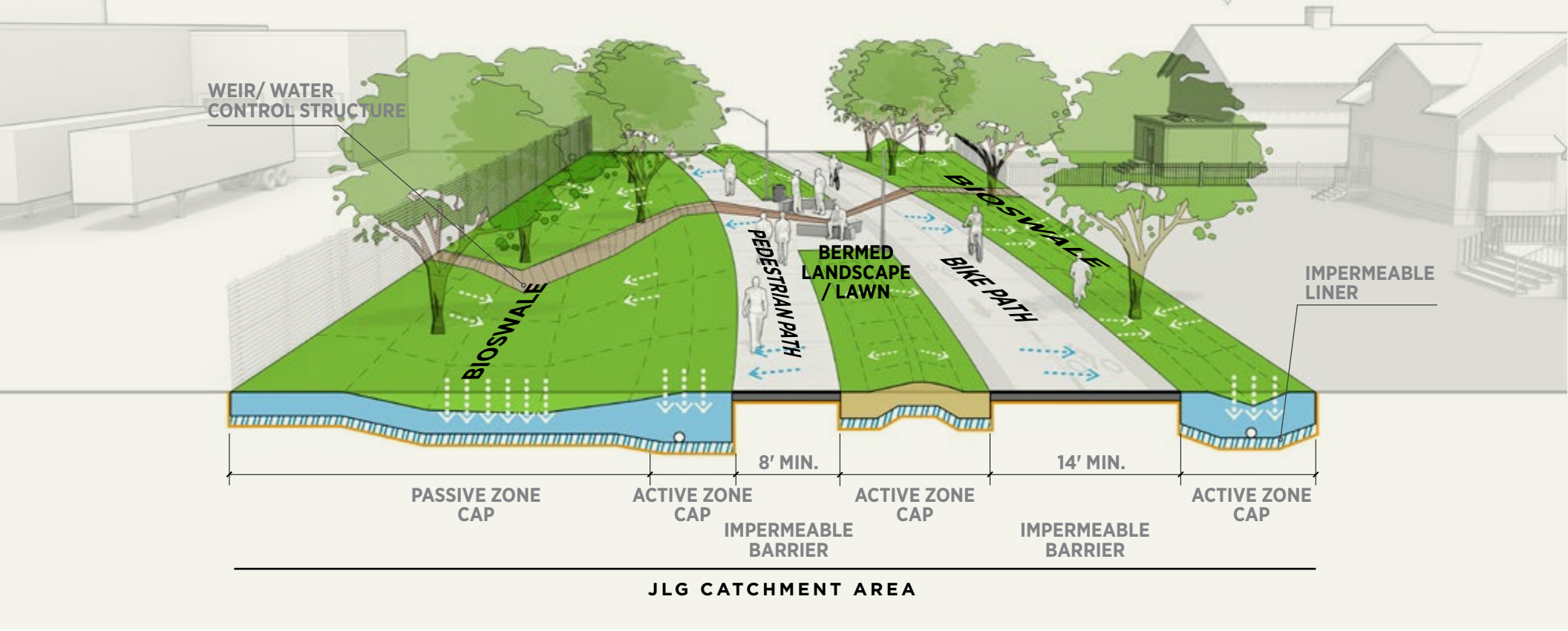


Collection through Bio-inlets

Detention & Infiltration

Impermeable Liner

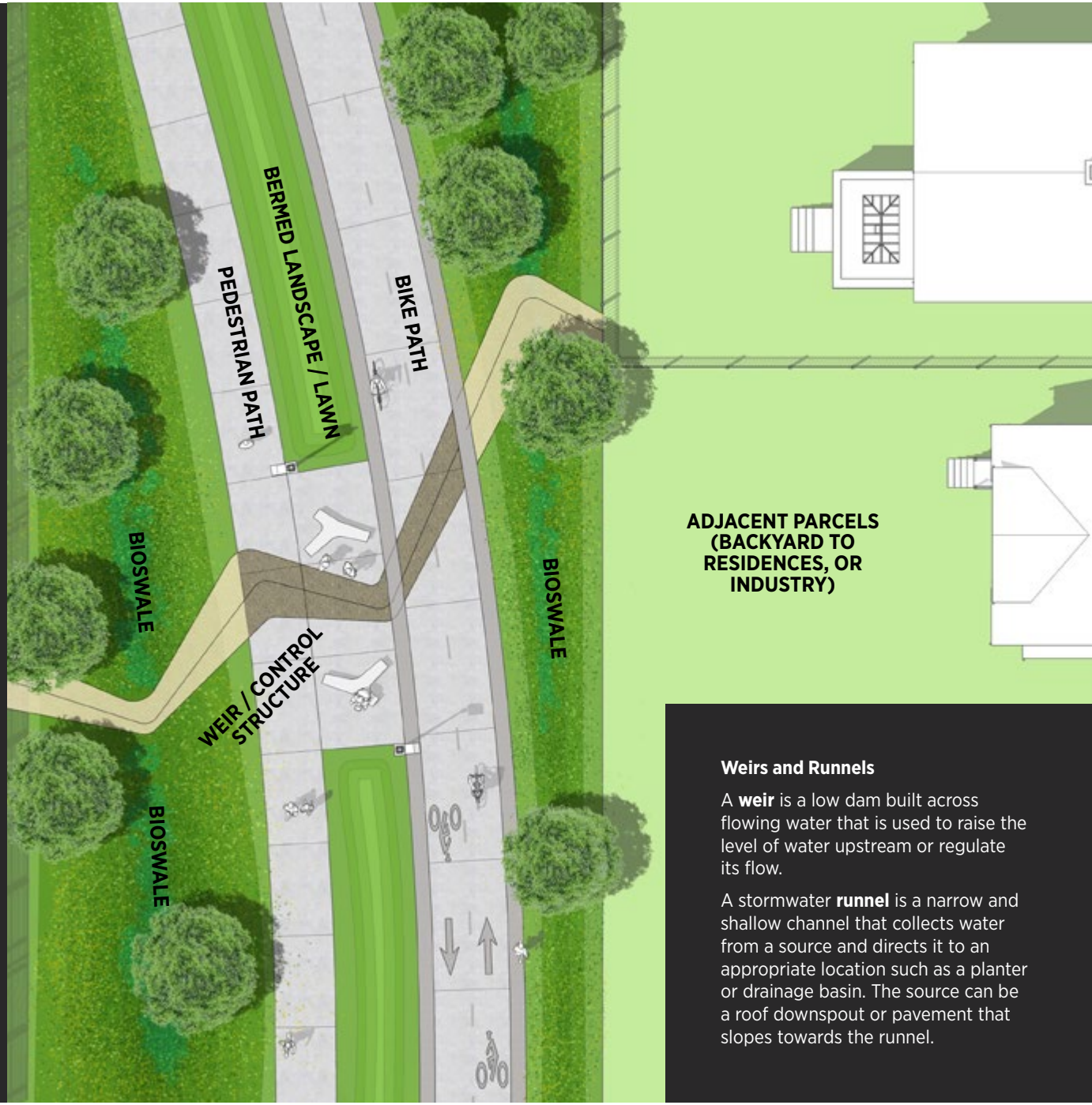




ADJACENT PARCELS (BACKYARD TO RESIDENCES, OR INDUSTRY)

Within off-street portions of the Joe Louis Greenway, stormwater can be managed in biodetention facilities between or on either side of the separated bike and pedestrian paths. In off-street areas with the potential for below grade leaching of contaminated materials to the groundwater, an impermeable clay or GCL liner restricting infiltration will need to be provided.

SHOWN: CONRAIL CORRIDOR (R.O.W. VARIES, 66' WIDE ON AVERAGE)



Weirs and Runnels

A **weir** is a low dam built across flowing water that is used to raise the level of water upstream or regulate its flow.

A stormwater **runnel** is a narrow and shallow channel that collects water from a source and directs it to an appropriate location such as a planter or drainage basin. The source can be a roof downspout or pavement that slopes towards the runnel.

OFF-STREET

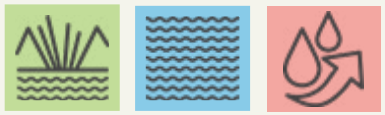
Suitable Greenway Segment Types: #24

Stormwater from the greenway is managed in a biodetention facility adjacent to the shared-use path. If needed, and in areas with restricted space, additional detention can be achieved with below-grade aggregate storage.

In off-street areas with the potential for below grade leaching of contaminated materials to the ground water, an impermeable liner (clay/ GCL liner) restricting infiltration will need to be provided.

The space below the shared-use path could potentially be used for additional detention if funding is available for the additional cost of implementation.

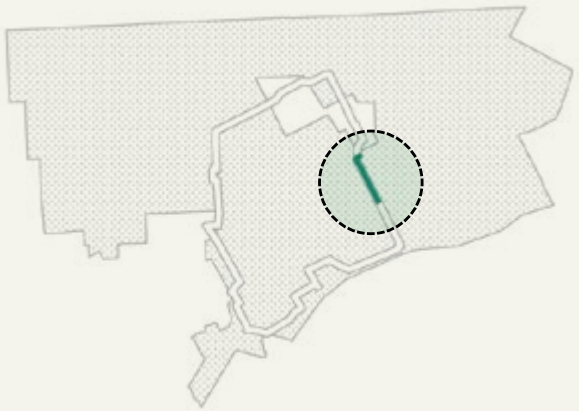
PRACTICE ELEMENTS

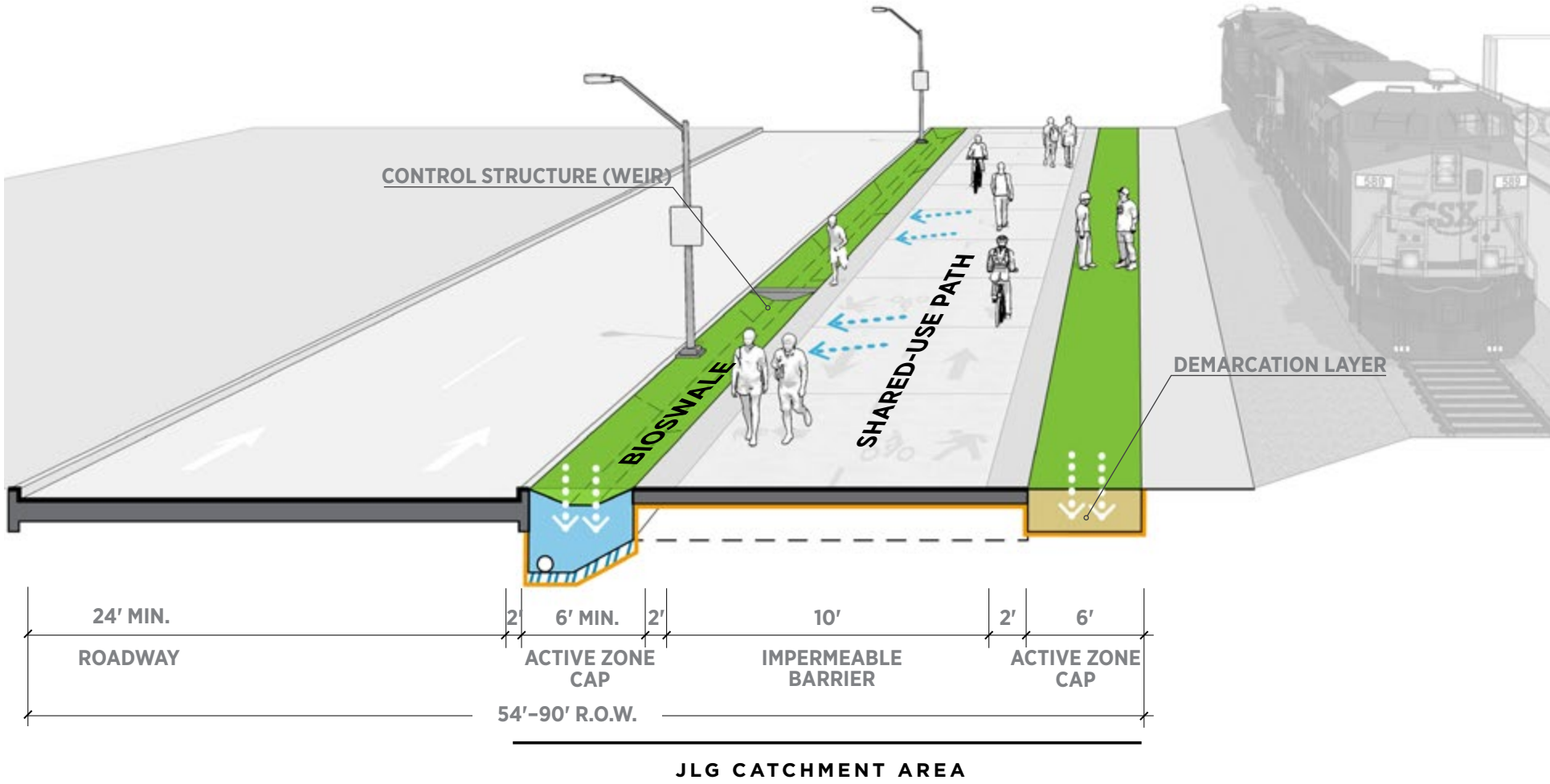


Collection through Bio-inlets

Detention & Infiltration

Impermeable Liner





SHOWN: DEQUINDRE CUT EXTENSION (30′ EASEMENT)

OFF-STREET ADJACENT: NEIGHBORHOOD STREET

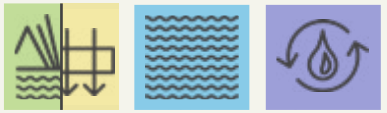
Suitable Greenway Segment Types: #6, 7, 8, 13, 26

Stormwater from the greenway is managed in bioretention facilities adjacent to the shared-use path. Due to its location, this approach creates an opportunity for the treatment area to manage runoff from the greenway and potentially a portion of the adjacent street. The adjacent street will also need to include traditional stormwater management facilities.

Where soil conditions allow, adjacent on-street parking areas may utilize pervious pavement or permeable pavers to facilitate stormwater infiltration and support the stormwater management strategies of the Joe Louis Greenway.

Some off-street adjacent segments of the greenway are restricted in width, which limits the opportunity for the surface management of stormwater. These more restrictive segments will be managed by more traditional stormwater management facilities.

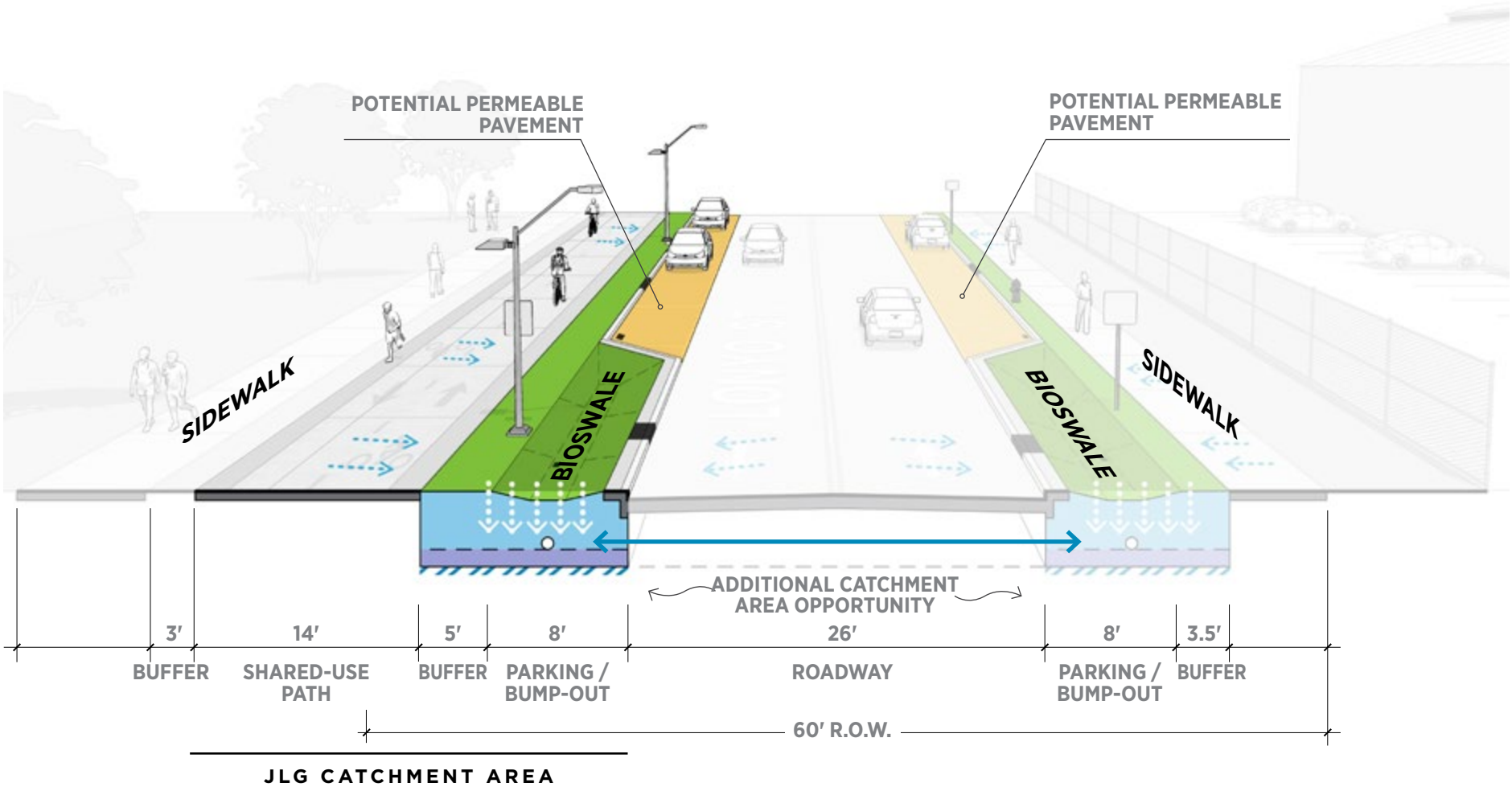
PRACTICE ELEMENTS



Collection through Bio-inlets & Traditional Inlets

Detention & Infiltration

Recharge Groundwater & Restrict Water Entering the Detroit Sewer System



SHOWN: LONYO AVENUE (66′ R.O.W. + 30′ EASEMENT)

ON-STREET: URBAN THOROUGHFARE

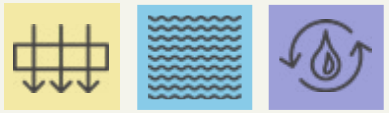
Suitable Greenway Segment Types: #5

This wide, urban right-of-way is characterized by extensive impervious hardscape, which accommodates higher volumes of pedestrian, bicycle and vehicular traffic. Here, stormwater within the right-of-way is managed in catchment areas under the sidewalks, tree planters, bike lanes, buffer zone and parking lanes. The surface over these catchment areas maximizes pervious surfaces in order to facilitate adequate infiltration. This approach promotes management of runoff from the street, as well as the greenway.

On-street parking areas may potentially use permeable pavers or pervious pavement. The bike lanes are assumed to be either asphalt or concrete pavement, per the Joe Louis Greenway Design Standards. However, as applicable and feasible, these surfaces may use pervious pavement in order to achieve higher infiltration rates.

Pervious pavement sidewalks infiltrate to soil cells below to provide a greater volume of planting mix to support optimum tree health and serve as stormwater detention.

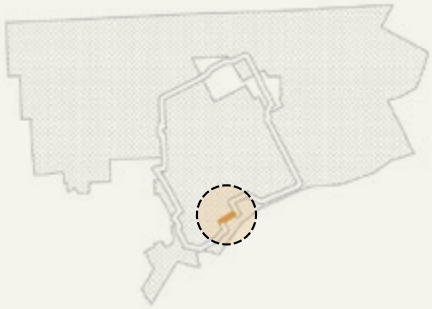
PRACTICE ELEMENTS

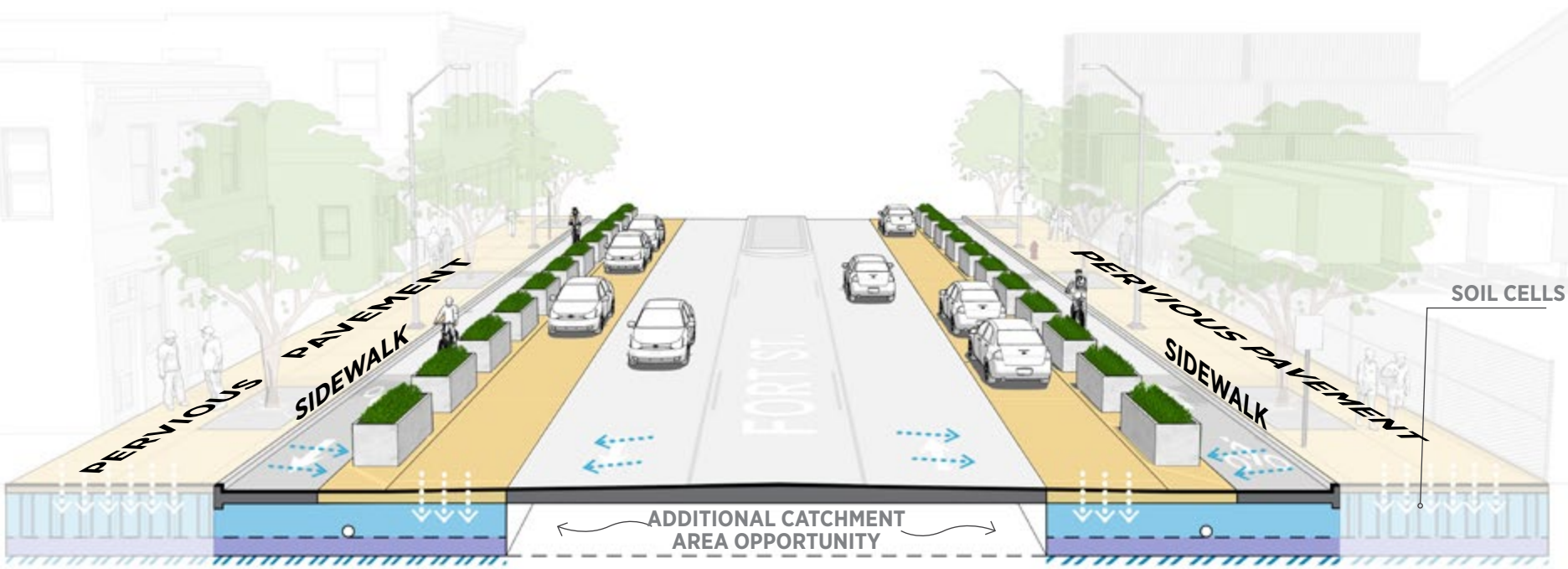


Collection through Traditional Inlets

Detention & Infiltration

Recharge Groundwater & Restrict Water Entering the Detroit Sewer System





SHOWN: FORT STREET (100′ R.O.W.)

ON-STREET: NEIGHBORHOOD STREET

Suitable Greenway Segment Types: #12, 14, 20

These segments incorporate the cycle track within the existing roadway. Stormwater from the greenway is primarily managed through bioretention facilities between the sidewalk and the shared-use path, and a detention zone extends under the shared-use path and its buffer in order to optimize management of stormwater from the street.

The bike lanes are assumed to be either asphalt or concrete pavement, per the Joe Louis Greenway Design Standards. However, as applicable and feasible, these surfaces may use pervious pavement in order to achieve higher infiltration rates. The buffer zone may be constructed as a pervious surface to intercept runoff from the vehicle travel lane, and amenity zones may also include pervious surfaces.

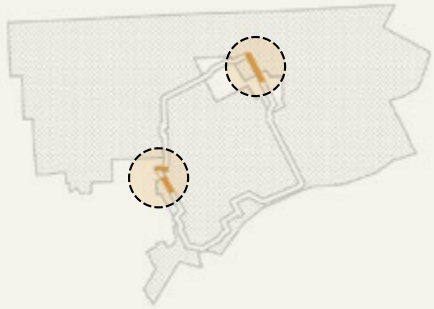
Some on-street segments of the greenway are restricted in width or available right-of-way space. These dimensional limitations, along with other potential site conditions, may reduce the potential for surface management of stormwater. In such cases, these more restrictive segments will be managed by using traditional stormwater management facilities.

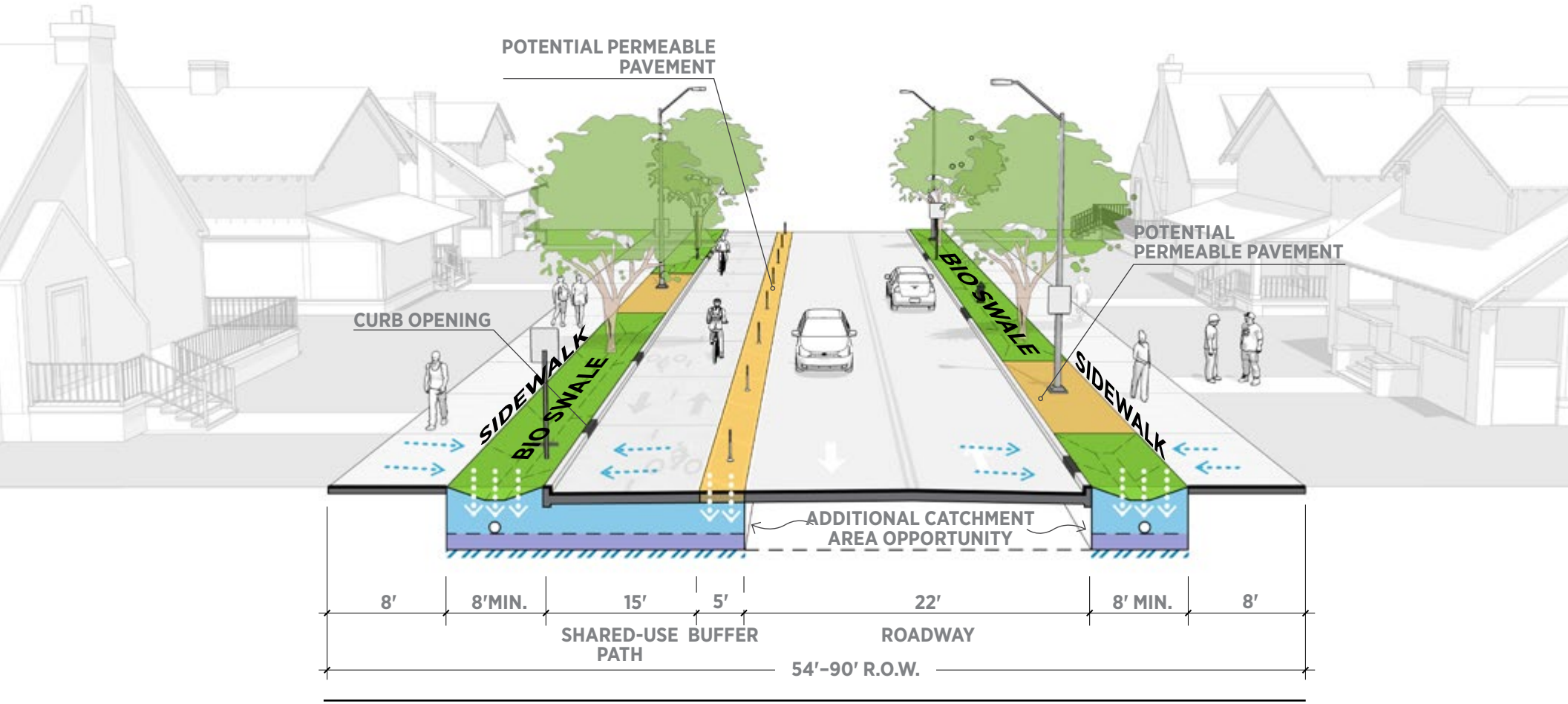
PRACTICE ELEMENTS

Collection through Bio-inlets & Traditional Inlets

Detention & Infiltration

Recharge Groundwater & Restrict Water Entering the Detroit Sewer System





JLG CATCHMENT AREA

SHOWN: LONYO AVENUE (66′ & 76′ R.O.W.)

ALLEY

Suitable Greenway Segment Types: #21

This highly-restricted segment traverses an urban alleyway between single family residential homes and small local businesses. The limited available width, as well as existing infrastructure and programs, provide dimensional and logistical challenges for the management of stormwater in this area.

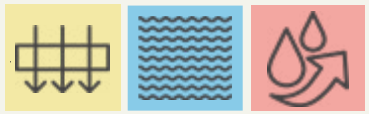
Stormwater from the greenway will be managed with a combination of traditional stormwater facilities and potentially with a below grade detention zone. Potential permeable pavers or pervious pavement will maximize the rate of permeability through the pavement surface to the detention zone below.

Utilities located above and below grade throughout the alley are to be coordinated with the final design. If there is existing infrastructure in the alley, an impermeable liner should be used between the aggregate sublayer and stormsewer. The detention zone will be an aggregate storage facility contained by an impermeable liner, sized to manage at least the first flush event. A contained detention zone will eliminate the interaction of stormwater with below-grade infrastructure (i.e. utilities and foundations), thereby removing the potential for negative impacts.

Large or high intensity storm events are to be managed with traditional catch basins tied into the Detroit storm sewer system, and at-grade or below-grade cisterns could be provided to collect stormwater for gray water reuse for irrigation or other similar purposes.

Interventions present an opportunity for education, celebration and interpretation of stormwater and natural processes through informative and artistic elements.

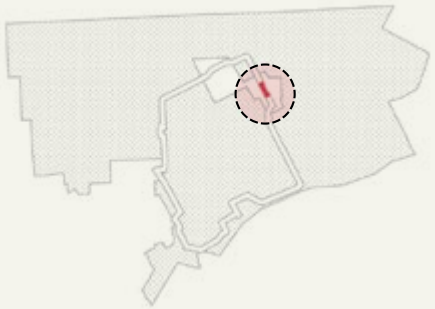
PRACTICE ELEMENTS

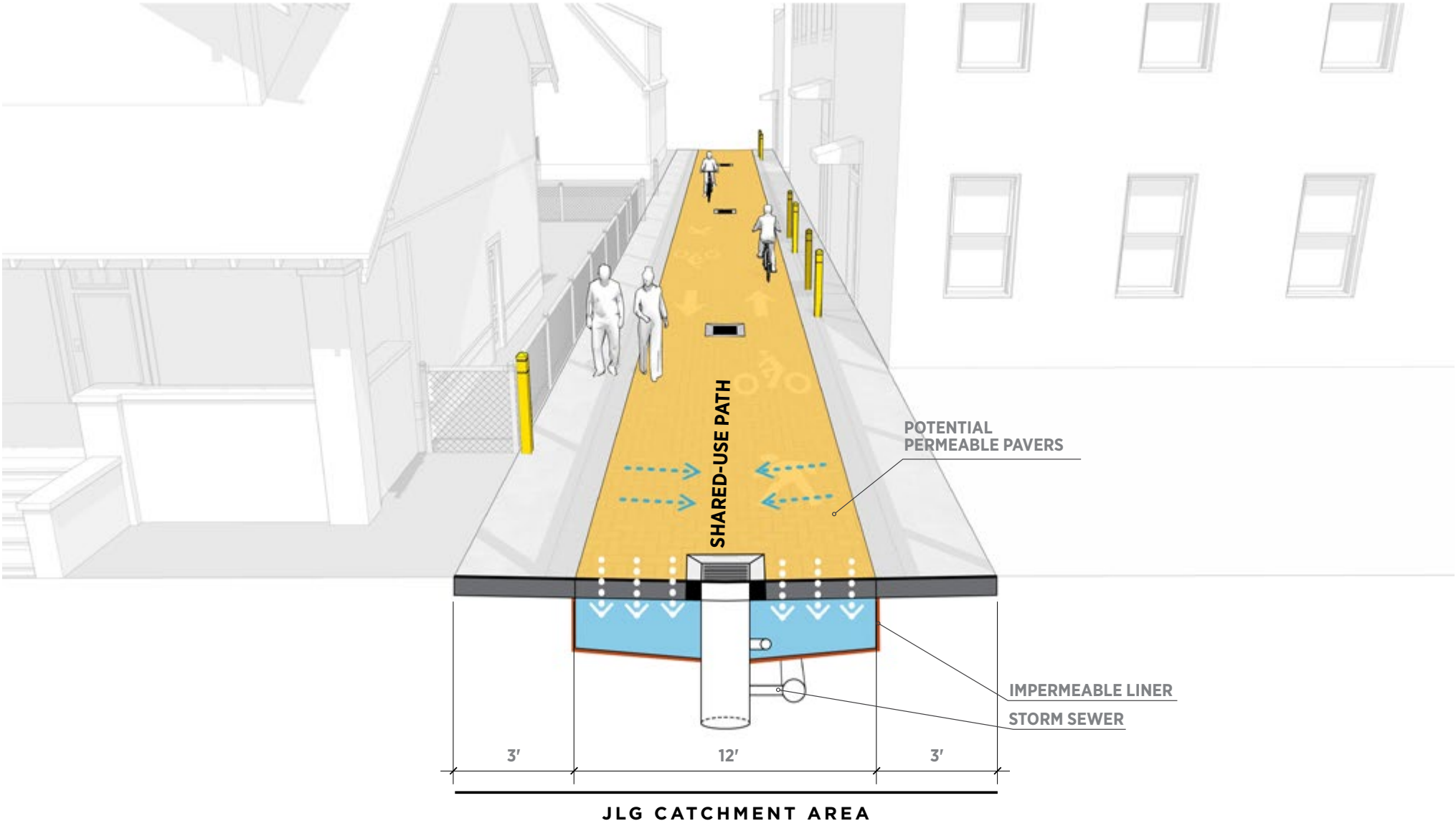


Collection through Traditional inlets

Detention & Infiltration

Impermeable Liner





SHOWN: ALLEY, CANIFF TO HOLBROOK (318′ R.O.W.)

LAND HOLDS

Currently there is an abundance of vacant parcels in the city of Detroit, with a large volume of vacant land in close proximity to the Joe Louis Greenway. As the greenway catalyzes development for Detroit and in an ideal scenario, these parcels will be reprogrammed for redevelopment, community open space, or stormwater management.

The City is working to prioritize which parcels should be designated primarily for stormwater management, greenspace and development — the implementation of the greenway provides the opportunity to define the highest and best uses for these parcels. Using this plan as a foundation, portions of the Detroit Land Bank Authority-owned and City or publicly-owned parcels could be identified as key locations for stormwater management, public open space or habitat restoration. This builds the groundwork to to incorporate these land uses as part of the future redevelopment of the adjacent properties and serve as an key component in improving the quality of life for Detroit residents.

OPPORTUNITIES FOR DISTRICT SCALE MANAGEMENT

The availability of vacant publicly-owned parcels adjacent to the Joe Louis Greenway provide opportunities for the implementation of a more comprehensive stormwater management plan. These publicly owned parcels along with other potential properties shown on the diagram on the next page could be planned to provide a more comprehensive district scale stormwater management system functioning to accommodate large storm events and increasing the resiliency of Detroit.

UPSCALE THE MANAGEMENT OF STORMWATER TO A DISTRICT SCALE

The construction of the Joe Louis Greenway Framework Plan in coordination with adjacent development could be used to develop a district-scale stormwater management plan for the City and surrounding communities. A district-scale GSI plan like the Eastern Market: Neighborhood Framework and Stormwater Management Network Plan shown at right would explore solutions to manage stormwater through an integrated approach that utilizes GSI strategies. This approach to stormwater offers many benefits, including incentivizing the local economy within each district. GSI can reduce the volume and slow the rate of stormwater entering the sewer system and significantly decreases the volume of water treatment through the Detroit sewer system. Stormwater conveyance and storage facilities can be thoughtfully designed features in the landscape, creating habitat and natural areas. Depending upon the stormwater system implemented and specific site conditions, there is a potential for the reduction of the Stormwater Drainage Charge for property owners. Furthermore, opening up buried drains and implementing GSI can reduce basement backups and on-street flooding while eliminating the risk of combined sewer overflows.

District-scale Stormwater Management Plan for Eastern Market.
Source: Eastern Market: Neighborhood Framework and Stormwater Management Network Plan, Eastern Market Corporation

ADJACENT LAND OPPORTUNITIES

LEVEL ONE: PUBLICLY-OWNED LAND

Publicly-owned parcels adjacent to Joe Louis Greenway (City Parks, Detroit Land Bank Authority, or other City-owned Land).

LEVEL TWO: PARTNERSHIP ADJACENCIES

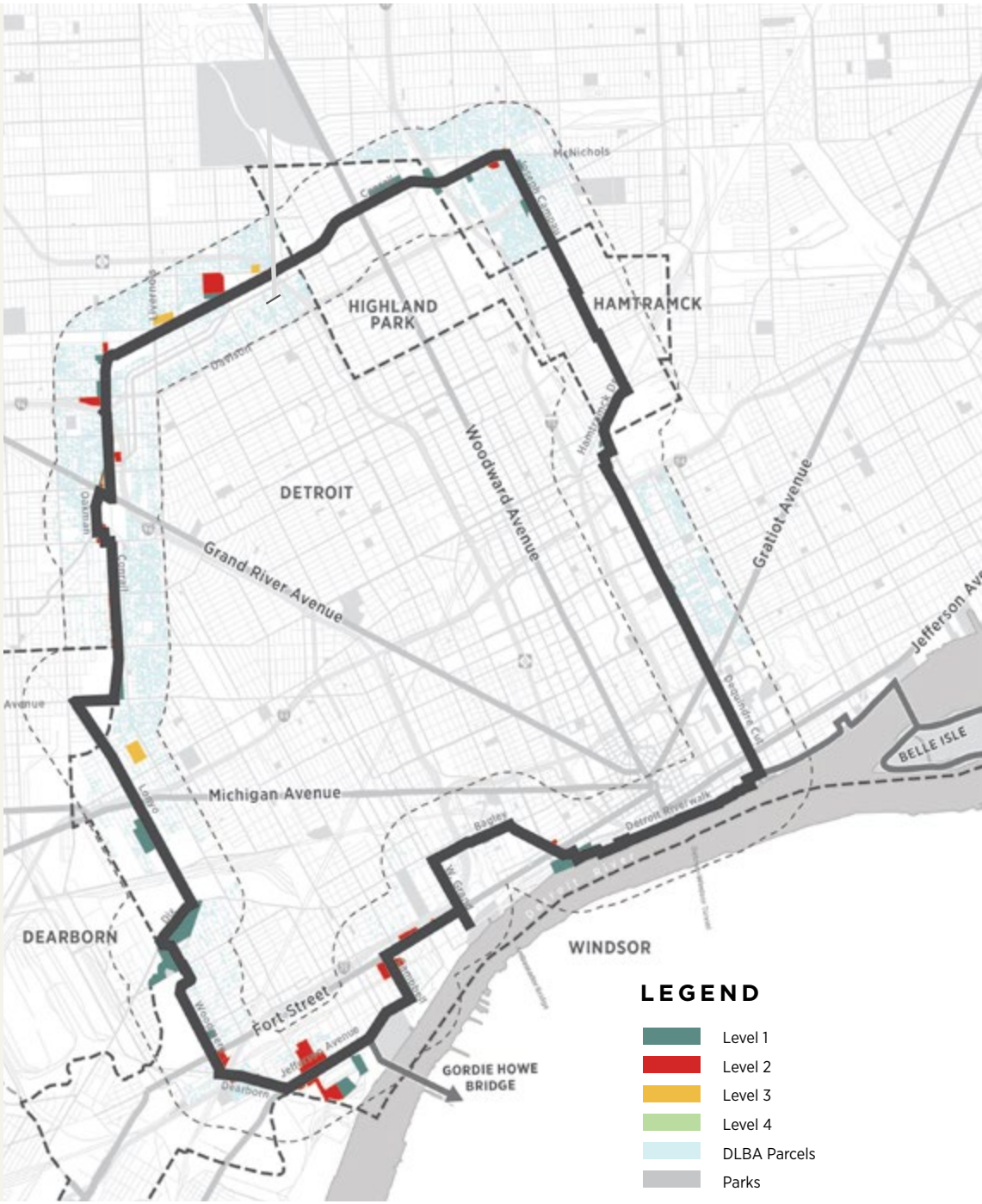
Parcels adjacent to Joe Louis Greenway, either privately-owned or not directly accessible to the public—but contains a large enough space that a partnership could be explored with the landowner.

LEVEL THREE: DISTRICT-SCALE OPPORTUNITIES

These parcels are not directly adjacent to the greenway. This may include large expanses of open space or impervious surface area that offers opportunities for managing stormwater as part of a district-scale approach. These areas may be selected based on land control or flood prone areas.

LEVEL FOUR: LAND REMEDIATION

Existing land with known or perceived contamination that may not be conducive to stormwater infiltration. If funding is secured for remediation, these lands may prove to be valuable assets. Funding opportunities may include: strategies for excavation of contaminated soil and disposal at a designated landfill, integration of phytoremediation strategies, installation of lined planter boxes for stormwater detention, or development of conveyance structures to connect surrounding parcels to a district-scale system.



CELEBRATE ELEMENTS IN THE SYSTEM

The Joe Louis Greenway is the first urban greenway system of its kind in the city of Detroit. It will redefine the future of the city's neighborhoods by providing sustainable strategies that catalyze economic redevelopment, support a resilient social network, and reconnect natural systems. The sustainable and stormwater management components can be celebrated elements of the Greenway Framework Plan creating unique, memorable and defining experiences.

Creating these experiences requires thoughtful design that educates, engages and celebrates unique aspects to the region such as culture, nature and history. The stories developed may require additional upfront investment, but the benefits will be realized in dollars, occupied parcels and a more vibrant region.

INNOVATIVE INTERVENTION IDEAS

The following list provides some initial ideas to explore. The design of each intervention should be designed to meet the overall project goals, represent the Joe Louis Greenway Vision and perform its intended function. Combining multiple functions through one common feature is recommended. Possible interventions include:

Beacon Park Informational Signage, Detroit, MI

Photo Source: SmithGroup

"SHOWCASE HABITATS AND GREEN INFRASTRUCTURE."

—COMMUNITY INPUT

- Water control structures (e.g. check dams, weirs, overflow structures, outfalls)
- Conveyance systems (e.g. runnels, swales)
- Features integrated with or part of other greenway amenities including gateways, trailheads, seating areas, etc.
- Connections to a larger, contiguous habitat feature
- Raingardens and colorfully vegetated detention facilities
- Innovative stormwater features or structures integrated with greenway features like retaining walls, bridges and underpasses with significant grade changes

River Rouge Park, Detroit, MI
Source: City of Detroit

FORGE PARTNERSHIPS

There are a number of non-governmental organizations working to advance the implementation of GSI and habitat corridor projects. Coordination with these organizations could assist with securing funding, land acquisition, easement agreements, implementation of programming and completion of ongoing maintenance. Below is a short list of leading organizations and partners:

- Detroit Water and Sewerage Department
- The Nature Conservancy
- The Erb Family Foundation
- Detroit Future City
- National Wildlife Federation
- Eastside Community Network
- Friends of the Detroit River
- Friends of the Rouge
- Audubon Society
- Detroit Biodiversity Network / Wayne State University
- Eastern Market Development Corporation
- The Greening of Detroit
- The Sierra Club
- Great Lakes Water Authority
- The University of Detroit Mercy and the Detroit Collaborative Design Center (DCDC)

RECOMMENDED NEXT STEPS

Projects undertaken during the phased development of the Joe Louis Greenway will be encouraged to address the following five points. The success of these projects will depend on the cooperation of organizations and City departments, as well as through dedicated funding sources.

1. Coordinate the implementation of the greenway with constructed, currently under construction, and planned GSI projects, especially those being led by the City, near Joe Louis Greenway.

2. Define urban subwatersheds and coordinate stormwater discharge points with the City of Detroit Wastewater Treatment Master Plan.

3. Analyze historic and current drainage patterns, lakes, streams and watersheds—and evaluate opportunities for daylighting buried drains.

4. Develop a comprehensive systems-based approach to restoring natural areas for stormwater management and habitat.

5. Identify lands for managing extreme storm events such as vacant parcels or recreational open space. Develop a district-specific plan to manage storm events of various sizes and intensity through green stormwater infrastructure in each district.

"PLEASE BE SURE TO MAKE SPACE FOR NATURAL HABITAT, PARTICULARLY MEADOWS FOR BIRDS TO BE REPLENISHED!"

—COMMUNITY INPUT

CHAPTER 7

IMPLEMENTATION & OPERATIONS

Source: Sidewalk Detroit

7

IMPLEMENTATION & OPERATIONS

DESIGNING FOR EQUITABLE BENEFITS

Nationwide, greenways and connected open spaces have enhanced residents' quality of life while transforming local and regional economies. The Joe Louis Greenway holds the same promise, and integrating inclusive design, operations and community development initiatives, will help ensure that those benefits are realized equitably.

THE JOE LOUIS GREENWAY WILL:

Create equitable access to recreation and mobility options, providing direct access to one in ten Detroiters who will live within a 10-minute walk of the greenway and strengthening open space connections for over 23,500 residents who do not currently live within a 10-minute walk of a park.[1]

Enhance health outcomes and social resilience, through improved access to recreation, physical activities and social interactions of the kind that COVID-19 has proved so essential, increasing trail utilization nationwide by 200%.[2]

Strengthen 15 neighborhoods with which it intersects by increasing these opportunities for residents.[3]

Improve local air quality and increase stormwater drainage capacity to reduce flooding by reducing vehicle traffic and associated greenhouse gas emissions.

Connect Detroit and the region by linking over 200,000 acres of trails and open space across Southeast Michigan, thereby unifying world-class urban attractions and natural amenities for the benefit of regional residents and visitors.

Create jobs on the greenway during both construction and operations, while adding jobs near the greenway through the growth of businesses that serve greenway users.

Build wealth for homeowners—for example, comparable greenways have seen home values increase 31-37%—without increasing property taxes (which are limited to a 1% annual increase in Michigan).[4]

Spur new development by, based on precedents, generating an additional 1,100 new multifamily units over and beyond baseline growth over the next 20 years.[5]

Expand Detroit's appeal to employers, who cite open space as the #5 driver of site selection based on its appeal for skilled workers.[6]

Increase tourism, with potential to generate a $16M increase in annual local expenditures, based on increasing the current rate of park visitation within Detroit.[7]

Increase fiscal resources for the City to provide services to Detroiters, through additional property, sales, income and business taxes generated by investment in the greenway and resulting development and business growth.

1 Esri Business
2 Rails to Trails Conservancy
3 City of Detroit, Esri Business Analyst
4 Institute for Housing Studies at DePaul University, "Measuring the Impact of the 606," 2016. Indiana University Public Policy Institute, Assessment of the Impact of the Indianapolis Cultural Trail, March 2015.
5 HR&A Analysis
6 Gensler, "Investing in Open Space," 2012.
7 HR&A Analysis

BENEFITS OF THE JOE LOUIS GREENWAY

Investment in the construction and operation of the Joe Louis Greenway will deliver a range of benefits to Detroit residents, transforming the landscape, accessibility and experience of the city. By integrating inclusive design, operations and programming—while providing housing, business and wealth creation initiatives—the greenway will encourage equitable participation. The greenway will enhance Detroiters' quality of life and strengthen the economic and fiscal resources of the City and its residents.

QUALITY OF LIFE BENEFITS

How will the Joe Louis Greenway enhance Detroiters' quality of life? By increasing access to healthy lifestyles and recreation, fueling the social interactions and cohesion invited by open space and regional connectivity, strengthening neighborhoods and enhancing the environment in the city of Detroit.

EQUITABLE ACCESS TO RECREATION & MOBILITY OPTIONS

The greenway will increase Detroiters' trail and park access and expand opportunities for recreation and associated healthy lifestyles, while increasing pedestrian and bicycle connections and options.[1]

- **1 in 10 Detroiters (57,000 residents)** live within a 10-minute walk of the proposed greenway.
- **Over 23,500 residents** who do not currently live within a 10-minute walk of a park will now be better connected to open space.
- **25% of households** within 1 mile of the greenway do not own a car. The greenway will provide safe pedestrian paths and bike routes, in addition to increased mobility options and connections to jobs overall.

IMPROVED HEALTH OUTCOMES AND SOCIAL RESILIENCE

Through improving access to recreation, physical activity and social interactions, the Joe Louis Greenway will improve health outcomes and social resilience.

- **Increased access to outdoor recreation** is associated with lower long-term individual and public health costs through improved social bonds and physical fitness, as regular physical activity decreases risk for heart disease and increases lifespans.[2]
- Urban park systems have been shown

1 Esri Business
2 Outdoor Industry Association, "The Outdoor Recreation Economy," 2017; Center for Disease Control and Prevention, "Benefits of Physical Activity," 2020.

to foster **social resilience**, along with social interactions and enhanced place attachment.[3]

- **COVID-19 spotlighted** the link between greenways and community resilience. Amid citywide shutdowns, residents across the country relied on greenways to access transportation and parks to access social connections and neighborhood services. Nationwide, trail systems saw an increase in utilization of approximately 200% March 16-22, 2020 alone.[4] In Detroit, the Riverwalk saw a 20% increase compared to 2019, and the Dequindre Cut saw a 40-50% increase.[5]

STRONGER NEIGHBORHOODS

An investment in the Joe Louis Greenway is an investment in Detroit's neighborhoods and the quality of life of Detroit's residents.

- The greenway intersects with more than **15 neighborhoods,** and 50% of the parcels surrounding the greenway are residential. [6]
- Investment in the Joe Louis Greenway will complement other neighborhood investments underway by the City. The greenway intersects with four neighborhoods (including Southwest/ Vernor, Russell Woods/Nardin Park, Campau/ Banglatown and Livernois-McNichols) that have been the focus of the **Strategic Neighborhood Fund,** as well as additional opportunity areas identified in Corktown, Eastern Market and at the East Riverfront.

ENVIRONMENTAL BENEFITS

The greenway has the potential to enhance Detroit's environment by reducing vehicle emissions and air pollutants, and by contributing to stormwater management to reduce flooding.

- **Reduced greenhouse gas emissions and improved air quality**—with associated additional health benefits—will result from reduced vehicular use as residents have access to enhanced paths for walking and cycling.
- **New impervious surfaces** will expand opportunities for stormwater detention and retention, mitigating the risk of flooding and associated costs within Detroit, while also improving water quality. Expanded stormwater management capacity will protect neighborhoods within the watershed, increasing Detroit's resilience in the face of climate change.

CONNECTIVITY TO THE REGION

The Joe Louis Greenway will connect Detroit to the regional trail network of over **200,000 acres of trails and parks** across Southeast Michigan's seven counties. The Joe Louis Greenway will also connect regional residents to Detroit's 300 parks.

- **Strengthened regional connectivity** will fuel economic development, increasing the mobility of residents across jurisdictions. The region as a whole will benefit from both Detroit's world-class urban amenities and the seven counties' natural resources. Promoting stronger collaboration will attract talent and jobs overall.

3 International Journal of Environmental Research and Public Health, "The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion," February 4, 2019.
4 Rails to Trails Conservancy
5 Detroit Riverfront Conservancy
6 City of Detroit, Esri Business Analyst

ECONOMIC BENEFITS

The Joe Louis Greenway will generate a range of economic benefits-creating jobs, increasing real estate value and wealth for homeowners, improving talent and employer retention, and attracting and tourism spending—thereby fueling the City's fiscal resources, which support essential services for Detroiters. While a comprehensive economic impact analysis has not been completed, national precedents of impacts from other greenways illustrate the potential impact of the Joe Louis Greenway.

JOB CREATION AND BUSINESS GROWTH

The greenway itself will result in **one-time and permanent jobs,** while fueling additional job creation and opportunities for entrepreneurs in **businesses that serve greenway visitors.**

- Construction of the greenway will create **one-time construction jobs,** as well as permanent jobs from greenway operations (e.g. food vendors, landscapers, security, capital maintenance and other programming).
- Activity on the greenway will also fuel the growth of existing and new businesses that will benefit from greenway visitor spending. The introduction of bicycling trails in the Outer Banks of North Carolina is estimated to have supported over 1,400 jobs.[1]
- On- and off-greenway jobs will generate additional indirect economic activity, as wages recirculate through Detroit's economy.
- Additional opportunities for wealth building exist for business owners along the length of the greenway, who may see increased spending from greenway visitors, as well as new businesses that form to meet this demand and/or serve greenway construction and operations directly. For example, the Chicago Riverwalk doubled the number of vendors and increased profits by 160% and the Yanaguana Garden in San Antonio catalyzed the establishment of at least 4 new businesses in a 3-block span.[2]

WEALTH BUILDING FOR HOMEOWNERS

There are **14,300 homeowners** within a half mile of the Joe Louis Greenway-including 6,300 Black homeowners and another 2,200 homeowners of color-who may expect to see their property values rise as a result of greenway construction, increasing home equity and household wealth.[1] For many households, this equity can provide a new source of financing for home improvements, which can in turn sustain or further increase home value.

- Greenway investments have been proven to create **value for surrounding real estate**, including for nearby homeowners. For example:
  - Along Chicago's 606 Trail, house prices within ½ mile of the trail increased by 31% between 2013 (the trail's groundbreaking) and 2016.[3]
  - Along Indianapolis's Cultural Trail, parcels within 500 feet saw an average 37% premium

1 Benefits of Greenways: http://www.greenways.com/benefits-of-greenways
2 Landscape Architecture Foundation, Landscape Performance Series Case Study Briefs, 2020.
3 Institute for Housing Studies at DePaul University, "Measuring the Impact of the 606," 2016.

on property values relative to surrounding census tracts between 2008 and 2014.[4]

— Other analyses have found that investment and reinvestment in parks increases home values by 5-25% relative to nearby or city-wide increases.[5]

- While homeowners often are concerned that increases in property values will translate to unaffordable increases in property taxes, Michigan Law limits homeowner property tax increases, and the City of Detroit's Homeowner Property Tax Assistance Program provides a property tax exemption for income-qualified homeowners to prevent displacement as values increase. As a result, increased value should not increase annual costs for homeowners.
- Studies have found that stabilizing home value is a highly effective way to **combat inequality,** as home value is the main source of wealth for most middle-class households.[6]
- At the same time, it will be essential to ensure that protections are in place for the 19,400 renters within a half mile of the greenway, through affordable housing preservation and new construction, and homeownership and rehabilitation opportunities.[7]

REAL ESTATE VALUE AND DEVELOPMENT

Increased real estate values have the potential to **unlock development opportunities** and associated local investment along the greenway.

- Nearly 45% of the parcels—over 3,000 acres—surrounding the Joe Louis Greenway are vacant and positioned for new investment.
- Past investments in green space in Detroit illustrate this potential: The multifamily inventory surrounding the Detroit Riverfront and the Dequindre Cut increased by 22% between 2010 and 2020, as compared to a 3% increase across the city as a whole.[8]
- National precedents also illustrate how greenway and open space investments can increase the pace of development in the surrounding area: Dallas's Katy Trail increased the pace of surrounding development by 210%; Dallas's Klyde Warren Park increased the pace of surrounding development eightfold; and Boston's Rose Kennedy Greenway increased the pace of development by 1.4 times.[9]
- Like other greenways and open spaces around the country, new construction spurred by the Joe Louis Greenway will **generate local spending** and contribute to both construction and permanent jobs. For example, the construction of Chicago's Millennium Park created 14,000 jobs, and Viriginia's Richmond Canal Dock prompted 1.8M square feet of new mixed-use space, adding 2,570 jobs.[10]
- Based on precedent impacts, the Joe Louis Greenway may be expected to i**ncrease property values within a half mile of the greenway by $130M** and increase the pace of development over and beyond baseline growth, sufficient to generate an **additional 1,100 new multifamily units over the next 20 years.**[11]

4 Indiana University Public Policy Institute, Assessment of the Impact of the Indianapolis Cultural Trail, March 2015.
5 HR&A analysis
6 Edward N. Wolff, "Deconstructing Household Wealth Trends in the United States, 1983 to 2016," Nov 2017. Chuck Collins et al., "Dreams Deferred: How Enriching the 1% Widens the Racial Wealth Divide," Institute for Policy Studies, Jan 2019.
7 Esri Business Analyst
8 CoStar
9 HR&A Analysis
10 Landscape Architecture Foundation, Landscape Performance Series Case Study Briefs, 2020.
11 HR&A Analysis

TALENT AND EMPLOYER RETENTION AND ATTRACTION

Investing in the Joe Louis Greenway will make Detroit even more attractive **to young talent**, in turn strengthening the city's **appeal to employers**.

- Studies have shown that investing in urban amenities like open space plays a key role in talent attraction and retention. In particular, national trends show that young workers want to live and work in walkable, mixed-use environments with quality open space. Quality of place amenities matter three times more to young people than they do to older age groups.[1]
- By increasing the city's appeal to employees and strengthening its brand value overall, Joe Louis Greenway investment can help attract future employers and jobs. 76% of corporate executives say quality of life factors are "very important" or "important" in site-location decisions, while **open space is the #5 driver of site selection for commercial tenants and investors.**[2]

TOURISM

By increasing Detroit's recreational offerings and strengthening connections between existing open spaces and attractions, the Joe Louis Greenway can **increase tourism and associated spending** within Detroit.

- National trends have proven that investing in open space boosts cities' economies.
- Investing 10% more in parks and recreation is associated with a 2.3% increase in leisure visits and a 1.3% increase in employment in the tourism industry.[3]
- Parks-based tourism in the 100 largest cities in the United States generated $494 million in 2019.[4]
- The Joe Louis Greenway has the potential to generate a **$16M increase in annual local expenditures** based on increasing the current rate of park visitation within the City of Detroit.[5]

1 Journal of Social Science and Medicine, "Happiness and Health Across the Lifespan in Five Major Cities," 2016.
2 Gensler, "Investing in Open Space," 2012.
3 City Lab, "How Urban Beauty Affects Cities' Economic Growth," 2019.
4 National League of Cities, "Five Ways Parks Provide a Return on Investment," 2016.
5 HR&A Analysis

Source: James Brown

FISCAL BENEFITS

Greenway construction, operations and resulting new development and business growth will generate additional **fiscal revenues with which to support City services.**

- Based on the impacts that other greenways have had on surrounding property values and property taxes, the Joe Louis Greenway can be expected to generate approximately **$22-$32M annually in incremental City ($8M), County ($14.8M) and State ($9.6M) property taxes—**before factoring in value generated by new development. Given the restrictions on annual property tax increases for owners of existing properties, this increase is realized when properties change hands and are reassessed.[6]
- Greenway construction and operations, as well as new development and business operations spurred by the greenway, will generate additional sales, income and business taxes to pay for city services for Detroiters citywide.

6 HR&A Analysis. Figures are at full build out in 2040, represented in 2020 dollars.

Source: SmithGroup

EVALUATING PERFORMANCE

This greenway will bring new possibilities of empowerment and equity—driven by Detroit's residents—to the neighborhoods that intersect with and surround it. This project will be a reflection and celebration of our incredible city and its people.

The Joe Louis Greenway is a visionary, 27.5-mile urban loop that will connect Detroit's people, parks and neighborhoods. It promises to create opportunities for everyday recreation, relaxation, commuting, shopping and connection for Detroiters of all ages and abilities. To build support for the greenway, it is important to track and publicize its benefits during development. Equally important, the City must track its performance once it's built to ensure that it continues to be a community asset. By measuring and communicating the greenway's successes, the City can ensure the Joe Louis Greenway has a positive and transformative long-term impact for the City.

Community input has established clear, measurable goals and a vision for the Joe Louis Greenway. The greenway should equitably connect neighborhoods, create economic opportunity, improve health outcomes, be a new livable space and deliver a safe, high quality trail facility that can be used by anyone.

Measuring qualitative and quantitative characteristics of a greenway is an essential way to determine if the facility is functioning as intended and meeting the goals identified in the community planning process. The performance measures are crucial tools for the Joe Louis Greenway to:

- Inform citizens and elected officials about the greenway's value
- Encourage community members to use the greenway
- Give status updates as phases are completed
- Ensure the facilities remain useful, safe and comfortable once built
- Comply with federal, state and metropolitan planning organization (MPO) funding requirements

THE COMMUNITY GOALS IDENTIFIED IN THE COMMUNITY VISIONING EXERCISE PROVIDE THE FOUNDATION FOR THE PROPOSED PERFORMANCE MEASURES.

There are several quantitative and qualitative trail usage factors that could be considered in evaluating the progress of the Joe Louis Greenway. Specific performance measures for the Joe Louis Greenway have been identified and organized into the following categories so that they may be most useful to the City to ensure the Joe Louis Greenway is successfully implemented to the community's standards:

- **Project Completion:**
  Measuring the progress of the implementation of the greenway.
- **Greenway Use & Experience:**
  Measuring the greenway use, access and preferences along with demographics and perception of condition. Confirming that facilities are well connected to people, neighborhoods and jobs and that they can be used by people of all ages and abilities.
- **Safety & Comfort:**
  Evaluating if the trail facility is safe. Documenting crashes between pedestrians, bikes and cars and the associated level of traffic stress. Identifying issues associated with crime and the perception of crime.
- **Economic Development, Job Growth & Equity:**
  Measuring the impact the greenway has on adjacent equitable economic investment and job growth.
- **Housing:**
  Measuring the impact the greenway has on home values and affordable housing.
- **Health & Quality of Life:**
  Evaluating how the greenway provides the opportunity for people of all ages and abilities to participate in healthy events and how it is improving visitor experience and quality of life.
- **Arts & Culture:**
  Measuring the impact of culture and arts on greenway use.
- **Civic Participation:**
  Documenting how the greenway influences engagement and community participation.
- **Environment:**
  Measuring the effect of the greenway on natural resources and environmental factors.

This section provides recommendations for possible measures to be considered in evaluating the performance of the Joe Louis Greenway. It also identifies methodology, data required and responsible parties. The City should review the recommended measures and develop an agreed-upon protocol for implementing the performance measures. Some of these are quantitative in nature, relying on data collection and analysis. Others are qualitative in nature and rely on interaction with greenway users and residents of the adjacent neighborhoods to obtain perceptions and opinions of greenway performance.

Some of the tools that can be used for the data collection include:

Source: James Brown

- **Intercept surveys**—Surveys conducted at the project site with people who are engaging with the greenway
- **Neighborhood surveys**—Surveys conducted with a sample of community members in a specific neighborhood
- **Observation mapping**—Visual assessments of how people engage with the greenway and its amenities
- **Physical survey**—Visual assessments of the physical conditions of civic assets and surrounding neighborhoods
- **Third-party data analysis—**Assessment of data collected by outside organizations (i.e. U.S. Census, SEMCOG)

In addition to the recommended performance measures provided herein, numerous additional references are provided to help in developing the protocol. Some of these include:

FHWA Guidebook for Developing Pedestrian & Bicycle Performance Measures[1]

This guidebook is intended to help communities develop performance measures that can fully integrate pedestrian and bicycle planning in ongoing performance management activities. It highlights a broad range of ways that walking and bicycling investments, activity and impacts can be measured, and documents how these measures relate to goals identified in a community's planning process. It discusses how the measures can be tracked and what data are required, while also identifying examples of communities that are currently using the respective measures in their planning process. This report highlights resources for developing measures to facilitate high quality performance-based planning.

Reimagining the Civic Commons[2]

A three-year national initiative with projects in five U.S. cites, **Reimagining the Civic Commons** works toward four main goals: civic engagement, socioeconomic mixing, environmental sustainability and value creation. Detroit was one of the five cities included in this initiative.

Performance Measures Toolbox[3]

The District of Columbia District Department of Transportation (DDOT) developed the Performance Measures Toolbox to inform DDOT and stakeholders how specific projects perform in comparison to stated project goals.

1 https://www.fhwa.dot.gov/environment/bicycle_pedestrian/
2 Reimagining the Civic Commons: http://civiccommons.us/detroit/ & http://civiccommons.us/about/
3 Performance Measures Toolbox

Other tools have been developed to measure the impact of built environment factors on bicycle environmental quality, activity and safety. The San Francisco Department of Public Health developed the Bicycle Environmental Quality Index (BEQI) through consultation with transportation professionals and travel behavior researchers. They have developed a similar methodology to measure the pedestrian environment. This is a relatively technical analysis that is associated primarily with streets and roads but may have relevance to the City.

While many of the identified performance measures rely on the greenway being in place to evaluate performance (in terms of use and safety), others are based on data that are currently available and can be assembled now to establish a comparative baseline of greenway impacts (e.g. property value and economic development).

The results from evaluating the established measures can be used to facilitate high quality performance-based planning and prioritization as future phases of the greenway come online. In a constrained funding environment, it is critical to be able to identify the projects and investments that will provide the highest level of benefit. What's more, embracing performance measures can increase knowledge, support innovation and elevate the quality of designed landscapes.

Source: Detroit Riverfront Conservancy

COMPLETION OF THE GREENWAY

TARGET PERFORMANCE METRICS

Construction of the Joe Louis Greenway will be the first—and most important—step to demonstrating its success.

"MY BIGGEST HOPE [FOR THE JOE LOUIS GREENWAY] IS THAT IT'S COMPLETED BEFORE I LEAVE HERE."

—A SENIOR DETROIT RESIDENT AT A PUBLIC ENGAGEMENT

COMPLETION OF THE JOE LOUIS GREENWAY

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT
GREENWAY COMPLETION	Total linear distance implemented	Linear feet/miles	Construction documents	GSD
	Percentage of overall greenway completed	Percentage	Construction documents	GSD
	Economic investment for completed greenway	Currency	GSD	DEGC
GREENWAY UNDER CONSTRUCTION	Total linear distance under construction	Linear feet/ miles	Construction documents	GSD
	Percentage of overall greenway under construction	Percentage	Construction documents	GSD
	Economic investment for construction (current)	Currency	GSD	DEGC
GREENWAY ENHANCEMENT	New projects or enhancements undertaken	Number	GSD	GSD
	Economic investment for new projects	Currency	DEGC	DEGC

GREENWAY USE & EXPERIENCE

TARGET PERFORMANCE METRICS

The greenway will increase Detroiters' access to trails and parks-expanding opportunities for recreation and associated healthy lifestyles—while increasing pedestrian and bicycle connections and options.

Source: SmithGroup

GREENWAY USE & EXPERIENCE PERFORMANCE MEASURES

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT	NOTES
GREENWAY USE - MODE	Number of greenway users by mode (bicycle, pedestrian, e-scooter, other)	Number of users	Permanent and mobile counters; coordinate with SEMCOG/MDOT on potential use of Miovision	GSD	Document average daily traffic volumes, peak volumes and activity by time of day, day of week, season and under various weather conditions
GREENWAY ACCESS	Number of greenway users at each access point by mode (bicycle, pedestrian, e-scooter, other)	Number of users	Permanent counters at access points	GSD	This type of information can be used to inform the design of future segments
GREENWAY/URBAN CONNECTIVITY	Metric reach—total length of streets that can be reached from regularly set points (up to a determined distance; usually 0.5 mi.) along greenway corridor	Miles of streets served or 'metric reach score'	SEMCOG, Michigan GIS Open Data	GSD / Dept. of Innovation & Technology GIS Services?	This analysis can help to identify areas not conserved at project outset, areas served as segments come on line and gaps / opportunities for future connectors and linkages
GREENWAY ROUTE PREFERENCES	Greenway route preferences (direction of travel, length/ frequency of activity, segments used most frequently)	N/A	Intercept survey, online survey, on-site drop box	GSD	This type of information can be used to inform the design of future segments
GREENWAY USE - ACTIVITY	What users do, why and where	N/A	Intercept survey, online survey, on-site drop box combined with observation mapping	GSD	This type of information can be used to inform the design of future segments.
DEMOGRAPHICS	Greenway users' demographics (race, age, gender, occupation, education, homeowner/renter)	N/A	Intercept survey, online survey, on-site drop box	GSD	
MAINTENANCE/ CLEANLINESS	Greenway users' perception of maintenance/cleanliness	N/A	Intercept survey, online survey, on-site drop box	GSD	The perception of maintenance/cleanliness can be as important as actual conditions
AESTHETIC VALUE	Greenway users' perception of visual quality/change in visual quality	N/A	Intercept survey, online survey, on-site drop box	GSD	Consider neighborhood surveys in locations where trail aesthetics may have in impact

Source: SmithGroup

ENVIRONMENT & ECOLOGY

Measuring the effect of the greenway on natural resources and environmental factors.

ENVIRONMENTAL AND ECOLOGICAL PERFORMANCE MEASURES

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT
PERVIOUS SURFACE	Acreage of pervious surface added	Acre, square feet	Construction documents	GSD
STORMWATER DIVERSION	Volume of stormwater diverted from the existing storm sewer system	Gallons, cubic feet	Construction documents	GSD
STORMWATER RETENTION	Annual volume and percent of total rainfall retained on-site	Gallons, cubic feet, percentage		
STORMWATER AS AN INCENTIVE	Volume of stormwater management that can be used to incentivize adjacent development	Gallons, cubic feet	Construction documents	GSD
TREES	Number of trees planted	Quantity	Construction documents	GSD
WATER QUALITY	Localized increase in dissolved oxygen, cleanliness			
SPECIES ABUNDANCE ALONG GREENWAY	Diversity and prevalence of non-invasive flora and fauna species	Quantity	Observational	
TEMPERATURE & URBAN HEAT ISLAND[1]	Reduction in surface temperatures (weighted average)	Temperature (degrees Fahrenheit)		
CARBON SEQUESTRATION	Estimated carbon sequestration by newly-planted 02trees and shrubs			
AIR QUALITY	Pollution removal by trees, shrubs and other vegetation			

1 Temperature and Urban Heat Island

ARTS & CULTURE

Measuring the impact of culture and arts on greenway use.

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT	NOTES
INSTALLATION/ EVENTS	Number of installations, programs and cultural events	Number of installations/ programs/events	Based on permitting/ registration for installations, programs and events	GSD	Document number of installations, programs and cultural events
ARTIST PARTICIPATION	Number of artists involved in installations, programs and cultural events	Number of artists	Based on permitting/ registration for installations, programs and events	GSD	Document number of artists involved
COMMUNITY PARTICIPATION	Greenway users' participation in installations, programs and cultural events	Number of users	Based on participant registration if available, otherwise estimate using observation mapping	GSD	Consider neighborhood surveys for greater input and to increase awareness of culture and arts
EDUCATIONAL VALUE	Number of or attendance at educational events. Program availability and participation. Outreach extents and number of people accessing ed materials.	Number of attendees	Based on permitting/ registration for installations, programs and events	GSD	

SAFETY & COMFORT

Measuring the impact of safety and culture on greenway use.

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT	NOTES
GREENWAY ROAD CROSSINGS	Count and severity of non-motorized crashes at greenway road crossings	Each	Michigan Traffic Crash Report (UD-10), Michigan Department of State Police, SEMCOG Crash and Road Data	DPW	Document number and severity of each reported crash
ON-ROAD GREENWAY	Count and severity of non-motorized crashes along on-road segments of the greenway	Each	Michigan Traffic Crash Report (UD-10), Michigan Department of State Police, SEMCOG Crash and Road Data	DPW	Document number and severity of each reported crash
LEVEL OF TRAFFIC STRESS	Documentation of on-road greenway by Level of Traffic Stress	Linear feet/miles	Level of Traffic Stress analysis using DPW data on roads, crossings and bicycle facilities	GSD	Based on methodology described by the Mineta Transportation Institute[1]
VIOLENT CRIMES	Number of violent crimes within 1/4 mile of greenway, by census block	Each	Detroit Police Department crime statistics	GSD	Document number and severity of each reported crime
PERCEPTION OF SAFETY	Greenway users' perception of safety/security on the greenway	N/A	Intercept survey, online survey, on-site drop box	GSD	Perception of crime can have the same impact on use as does actual crime

1 https://transweb.sjsu.edu/

HEALTH

ENHANCED HEALTH OUTCOMES AND SOCIAL RESILIENCE

Through improving access to recreation, physical activity and social interactions, the Joe Louis Greenway will enhance health outcomes and social resilience.

- **Increased access to outdoor recreation** is associated with lower long-term individual and public health costs, through improved social bonds and physical fitness, as regular physical activity decreases risk for heart disease and increases lifespans.[1]
- **Urban park systems** have been shown to foster social resilience, social interactions and enhanced place attachment.[2]
- **Covid-19 spotlighted** the link between greenways and community resilience.
- **Amid citywide shutdowns, residents across the country relied on greenways** to access transportation and parks, social connections and neighborhood services. Nationwide, trail systems saw an increase in utilization of approximately 200% March 16-22, 2000 alone.[3] In Detroit, the Riverwalk saw a 20% increase as compared to 2019, and the Dequindre cut saw a 40-50% increase.[4]

HEALTH & QUALITY OF LIFE

Evaluating how the greenway provides the opportunity for people of all ages and abilities to participate in healthful events, and how it is improving visitor experience and quality of life.

1 Outdoor Industry Association, "The Outdoor Recreation Economy," 2017; Center for Disease Control and Prevention, "Benefits of Physical Activity," 2020.
2 International Journal of Environmental Research and Public Health, "The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion," February 4, 2019.
3 Rails to Trails Conservancy
4 Detroit Riverfront Conservancy

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT	NOTES
HEALTHFUL EVENTS	Number of health-based sponsored/organized walks/bike rides utilizing the greenway	Number of events	Based on permitting/ registration for walks/ bike rides	GSD	Document number of sponsored/organized walks/ bike rides
HEALTHFUL EVENT PARTICIPATION	Number and demographics of greenway users participating in sponsored/organized walks/bike rides	Number of users	Based on participant registration if available, otherwise estimate using observation mapping	GSD	Document number of users and demographics
QUALITY OF LIFE	Greenway users' perceived improvement in quality of life due to greenway	N/A	Intercept survey, online survey, on-site drop box, neighborhood survey	GSD	This relates to an individual's overall quality of life; compare experience before/after greenway implementation
VISITOR EXPERIENCE	Greenway users' evaluation of quality of experience	N/A	Intercept survey, online survey, on-site drop box	GSD	This relates to the quality of the greenway experience itself; consider organizing by population of interest (i.e users with disabilities, ethnicity)
WALKABILITY	Measured distance from points of estimation to walkable amenities (groceries, parks, schools, entertainment, etc.)*	Walkability index	Claritas Data, Census data, American Community Survey	GSD / Dept. of Innovation & Technology GIS Service	Relates to quality of life, health and public safety
PHYSICAL ACTIVITY / ACCESS TO RECREATIONAL PARKS	Distance between sampling points and parks or trails greater than 2 acres in size	Distance converted to 1-100 relative score where shortest distance is 100	City of Detroit GIS data	GSD / Dept. of Innovation & Technology GIS Services	Related to connecting residents to recreation opportunities via healthy access options. Could use metric reach methods, but in lieu of that, if analytic tools are not available, aerial distance could be used.
PROXIMITY TO HEALTH FOODS	Distance between sampling points and grocery stores and supermarkets (not counting convenience stores)	Distance converted to 1-100 relative score where shortest distance is 100	Claritas Data	GSD / Deptartment of Innovation & Technology GIS Services	Provides evidence of positive social outcomes of greenway and the status of greenways as essential public infrastructure

1 Points of estimation refers to a protocol used to create sampling points for calculations involving difficult variables. Points of estimation are created by establishing points at one quarter mile intervals along the entire proposed route, beginning from existing infrastructure, and offsetting discrete sample points from these on both sides of the proposed route at one half mile intervals away.

ECONOMIC DEVELOPMENT

ECONOMIC BENEFITS

The Joe Louis Greenway will generate a range of economic benefits—jobs, real estate value, increased wealth for homeowners, talent and employer retention and attraction and tourism spending—which in turn will fuel the City's fiscal resources with which to deliver essential services to Detroiters.

Source: James Brown

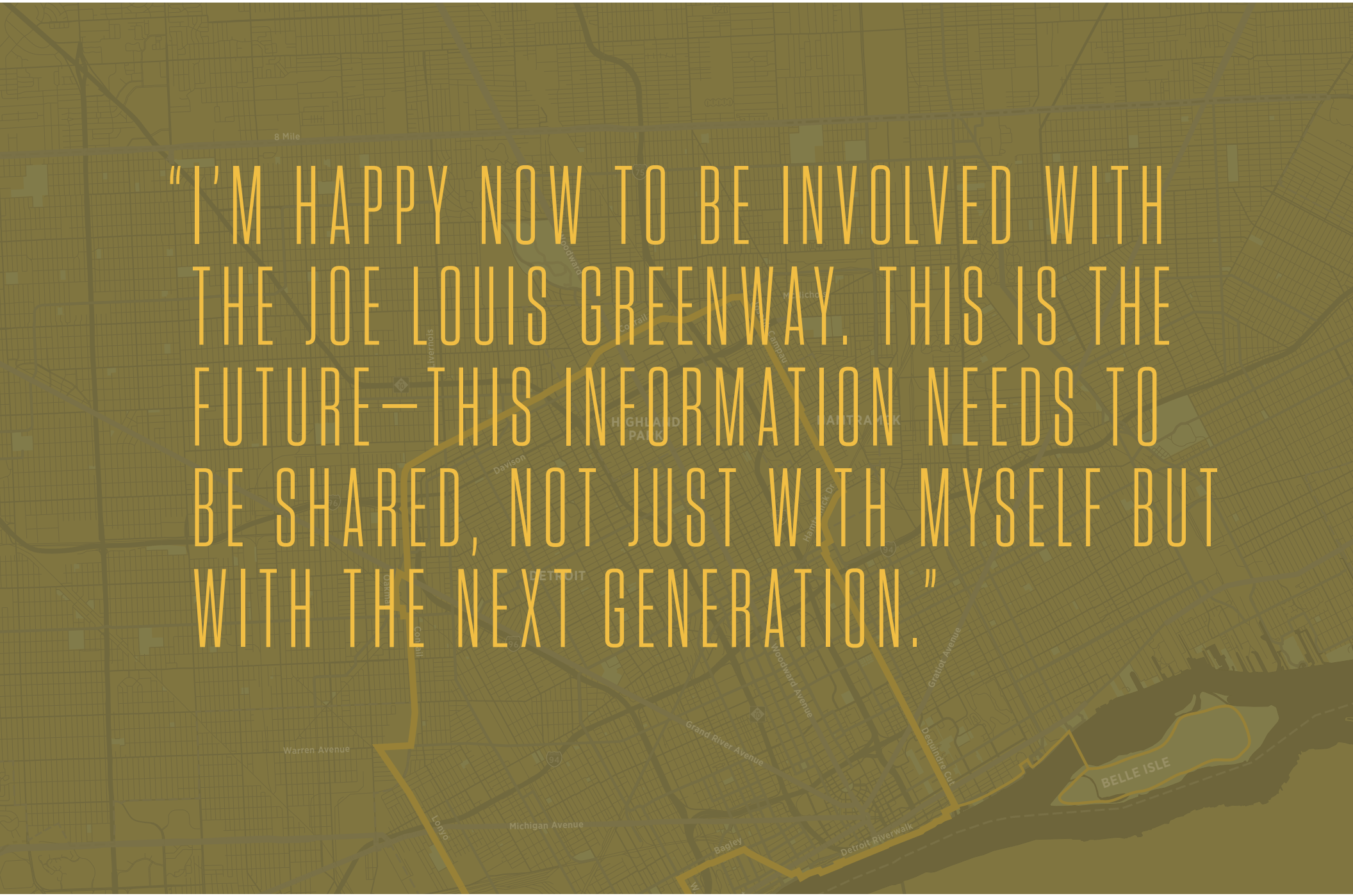
MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT	NOTES
ECONOMIC DEVELOPMENT	Value of economic investment within 1/4 mile of the greenway	Dollars	DEGC	DEGC	Consider including proposed projects separate from actual projects
TAX REVENUE	Sales tax revenue generation within 1/4 mile of the greenway	Dollars	City of Detroit	DEGC	Potential direct link to greenway benefits
RETAIL SALES	Total retail sales within 1/4 mile of the greenway	Dollars	DEGC	DEGC	Consider breakdown by select NAICS code to infer link to greenway
PROPERTY VALUE	Value of properties within 500 feet of the greenway	Dollars	City of Detroit property tax records	DEGC	Document change in property value proximate to greenway
UNEMPLOYMENT	Unemployment rate among residents within 1/4 mile of the greenway	Percent	Census data, American Community Survey	DEG	This is another way to capture the value of economic investment
JOBS	Number of jobs within 1/4 mile of the greenway	Number of jobs	Census data, American Community Survey	DEGC	This is another way to capture the value of economic investment
	Number of jobs created for construction and operation of greenway	Number of jobs	Census data, American Community Survey	DEGC	This is another way to capture the value of economic investment
EMPLOYERS	Number of employers within 1/4 mile of the greenway	Number of employers	Census data, American Community Survey	DEGC	This is another way to capture the value of economic investment
INCOME INDEX	Weighted average of median household income, percent below poverty line and percent below 50% of the poverty line.	Dollars	Census data, American Community Survey	DEGC	Sets baseline for tracking socioeconomic change over time and makes case for policy intervention if needed. Can help identify areas of highest need for more intensive investment related to greenway, i.e. better connections to transit
TOURISM	Number of annual visitors	Number of Tourists	City of Detroit	City of Detroit	
	Annual spending by visitors	Dollars	City of Detroit	City of Detroit	

CIVIC PARTICIPATION

Civic Participation: Documenting how the greenway influences engagement and community participation.

MEASURE	EVALUATION	UNIT	DATA SOURCE	DATA MGMT	NOTES
ENGAGEMENT ACTIVITIES/EVENTS	Number of civic engagement activities and events utilizing the greenway	Number of events	Based on permitting/ registration for activities and events	GSD	Document number of civic engagement activities and events
COMMUNITY PARTICIPATION	Number and demographics of participants in engagement activities (race, age, gender, occupation, education, homeowner/renter)	Number of users	Based on participant registration if available, otherwise estimate using observation mapping	GSD	Document number of users and demographics
VOLUNTEERS	Number and demographics of volunteers	Number of volunteers	Maintain a list of volunteers	GSD	Document number of users and demographics
PERCEPTION OF ACTIVITIES/EVENTS	Greenway users' opinions of civic engagement activities and events	Percent	Intercept survey, online survey, on-site drop box	GSD	This type of information can be used to inform the design of future segments
MEDIA EXPOSURE	Number of social media followers, comments, engaged members	Number	GSD	GSD	Social media can also be used to conduct sentiment analysis on how residents feel about the greenway over time
	Number of media outlets, articles, social media posts	Number	GSD	GSD	
	Economic impact of media exposure[1]	Dollars	GSD	GSD	

1 Economic Impact Study: Detroit Riverfront 2013: Press coverage of riverfront improvements provides an estimated $600,000 in positive exposure for Detroit



"I'M HAPPY NOW TO BE INVOLVED WITH THE JOE LOUIS GREENWAY. THIS IS THE FUTURE—THIS INFORMATION NEEDS TO BE SHARED, NOT JUST WITH MYSELF BUT WITH THE NEXT GENERATION."

DESIGNING A SMART GREENWAY

Since the invention of the wheel, technology has shaped how we move.

Continuous technological improvements have impacted our modern broader transportation systems—from the advent of the first three color traffic signal in 1914 through the revolution of connected and automated vehicle technology today.

In the 1980's, the concept of "Intelligent Transportation Systems," or ITS, emerged as cities and the federal government began to coordinate the use of technology to improve safety and efficiency. Systems such as automated traffic surveillance and control in Los Angeles with vehicle detectors, closed circuit TV and coordinated signal timing, demonstrated the promise of complex technological approaches to ease mobility. Examples of common ITS technology in use today include: Electronic Toll Collection; Red Light Cameras; Traffic Signal Coordination; and Transit Signal Priority.

Examples of ITS systems commonly used for motor vehicles that are also applicable for trails such as the Joe Louis Greenway include: Vehicle Detection and Traffic Counts; Traveler Information Systems (including the use of Dynamic Message Signs); and 911 System Enhancements.

Intelligent Transportation Systems, or ITS, is a term for the coordinated use of information and communication technology to help society move more safely and efficiently. The current federal transportation legislation, the FAST Act, authorizes $100 million per year1 through 2020 in funding to research, deploy and test Intelligent Transportation Systems. The development of the Joe Louis Greenway presents a rich opportunity to leverage ITS funding to install systems such as bicycle and pedestrian counters, traveler information boards and 911 system improvements. These investments will help people access and use the trail more seamlessly and advance established community goals for the trail such as equitable access. Beyond this clear alignment with the core purpose of ITS funding-and established community goals for the trail such as equitable access-the deployment of ITS technology will help the City and other stakeholders to measure and evaluate progress toward broader community goals for the greenway through the facility's development and complimentary efforts.

1 https://www.fhwa.dot.gov/fastact/factsheets/itsprogramfs.cfm

Bike Counters along the Midtown Loop in Detroit.
Source: SmithGroup

NON-MOTORIZED USER COUNTS

Bicycle and pedestrian counts help track trail use over time, establish exposure for safety planning and engineering and celebrate and promote the use of the greenway. Non-motorized user counts can even be used to estimate the economic value generated by the greenway, or track health impacts on community-wide physical activity levels.

Permanent Bicycle and Pedestrian Counters may be installed at strategic locations along the greenway to track active transportation use. These permanent counters record travel patterns over time and allow for seasonal adjustment and conversion to Annual Average Daily Bicycle (or Pedestrian) Traffic (AADBT/AADPT) estimation. Permanent counters can be used in conjunction with displays highlighting counts to motivate trail users, though they are not required.[1]

Automated Short Duration Counters are used to supplement permanent counters and get a better sense of the spatial distribution of bicycle and pedestrian traffic. Research recommends seven continuous days of counts used in conjunction with permanent counters to create AADBT and AADPT estimates.

Counter Recommendations: Assess the current non-motorized traffic counting program in Detroit and Michigan to determine existing counting resources, equipment and systems

- Install permanent bicycle and pedestrian counters along the Joe Louis Greenway.
- Do not install more counters than resources are available to maintain in the long-term.
- Prioritize counting equipment that can distinguish between bicycles and pedestrians to produce volume estimates for each mode (Detection of additional user types, specifically E-scooters, should be incorporated pending budget and technology limitations).
- Purchase and use short-duration counters to determine non-motorized traffic volumes at trail access points without permanent counters, at trail intersections and along facilities that intersect with the trail where active transportation improvements may be needed.

ITS IMPLEMENTATION

Interactive Information Kiosks can provide travelers with sophisticated digital connections and information, including trail information, events and alerts; wayfinding guidance via digital maps; phone calling including 9-1-1 calls to access City services; and even Wi-Fi.

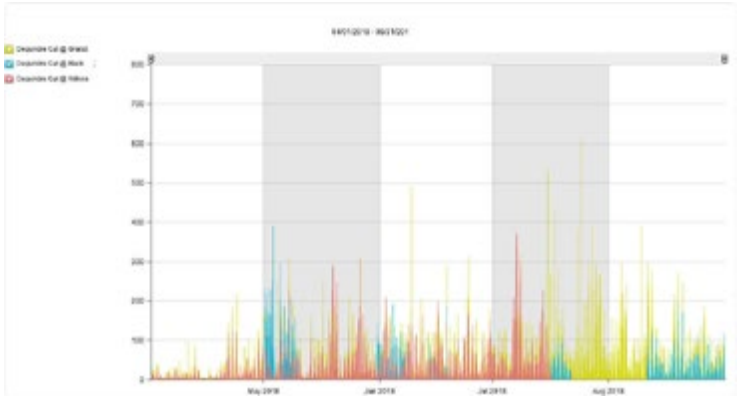
Information kiosks relatively high up-front costs to install, which may be defrayed through grant funding, sponsorship, or advertising.

Examples: Delphi Historic Trail in Westfield, Indiana,[2] where an information kiosk provides weather updates and features 9-1-1 calling capability for enhanced personal safety.

Recommendations: Provide interactive information kiosks funded through grants, sponsorship, or advertising to share trail information including maps and upcoming events.

1 One example is the Eco Counter: https://www.eco-compteur.com/en/produits/real-time-displays/eco-display-classic-2/
2 Other trails with informational kiosks include: LinkNYC, New York, NY, Capital John Smith Chesapeake National Historic Trail, Chesapeake Bay, VA, Delphi Historic Trail, Westfield, Indiana

REAL-TIME BUS ARRIVAL INFORMATION DISPLAY
SOURCE: WIKIMEDIA



Variable Message Boards can provide safety, weather, community event and other information to trail users. They are similar to interactive information kiosks, but their cost is lower to implement because they generally only provide messages via LED text displays.

Recommendations: If interactive information kiosks are not feasible, or to supplement limited numbers of kiosks, provide variable message boards to disseminate trail safety, weather and community event information.

QR Codes for Static Sign Digital Enhancement may provide information to trail users in multiple languages or links to other digital information that supplements static signage. For example, QR codes could take users to a mobile-compatible webpage or application with information about the trail, maps or upcoming events.

Recommendations: Provide QR codes with additional languages on signs. Consider additional complementary digital resources such as a trail website or app, which could be accessed via QR code.

Bus Stop Real-Time Arrival Displays are used to inform bus system users of the arrival time of the next bus. Detroit Department of Transportation already has GPS systems implemented in buses enabling riders to text DDOT to see when the next bus is coming. DDOT's real-time bus tracking is also already available via smart phone applications.

Physical displays may augment these forms of receiving real time arrival information for traveler convenience at stops along the trail.

Recommendations: Coordinate with DDOT to install real-time arrival message boards at high-capacity bus stops intersecting the trail.

Emergency Response System Enhancements are an established ITS strategy. Although the State of Michigan recently received a $4 million grant to upgrade its call centers to Next-Generation 9-1-1 systems, which can provide more precise information to dispatchers based on cell phone GPS Locations, locating 9-1-1 calls on trails can still be a challenge, especially if they are not well-marked.

A system of numbered trail markers and corresponding digital map updates can help first responders locate trail users in the event of an emergency. Unlike call boxes, which are limited in effectiveness due to their stationary location and the expense of maintaining them in sufficient numbers to enhance safety, these modern trail 9-1-1 systems allow anyone with a cell phone to direct first responders to the scene of an emergency quickly.[1]

Recommendations: Provide 9-1-1 mile markers every 1/8 mile, and update emergency responder digital map systems with Joe Louis Greenway mile marker system information.

1 Harbor State Park, Huntington, New York, Violet Crown Trail, Austin, TX, Santa Clarita, CA, Trinity Trails, Fort Worth, TX, Chester Creek Trail, Anchorage, AK

Source: SmithGroup

ENVIRONMENTAL MAINTENANCE

The City of Detroit has demonstrated its commitment to implementing GSI throughout the city. In November 2018, the City approved and adopted the Post-Construction Stormwater Management Ordinance, which established requirements to manage stormwater from developed sites in the City (those meeting minimum thresholds requirements). The Stormwater Management Design Manual (SMDM) was created to assist developers in selecting appropriate stormwater control measures. GSI practices are encouraged to meet the ordinance requirements and achieve a Drainage Charge Credit (reduction in drainage charge applied to water bill). Implementing best stormwater management practices, such as GSI, alleviates the risk of combined sewer overflow events from the city sewer and helps the City meet requirements in their National Pollutant Discharge Elimination System (NPDES) permit. Additionally, the City has invested in the implementation of several projects in the Upper Rouge Tributary,[1] and more projects are in planning and development. Maintenance is essential to ensuring that these systems perform as designed.

1 Harbor State Park, Huntington, New York, Violet Crown Trail, Austin, TX, Santa Clarita, CA, Trinity Trails, Fort Worth, TX, Chester Creek Trail, Anchorage, AK

Source: City of Detroit

The successful maintenance and performance of the GSI facilities will require a shift in mindset away from traditional approaches. A successful GSI maintenance program starts with educating, training and empowering City maintenance staff. Cities across the country such as Portland, Seattle, Philadelphia and Chicago have their own GSI maintenance programs, which may provide lessons for the implementation of such a program in Detroit. Large-scale implementation programs have been found to provide greater benefits, with reduced maintenance costs per acre managed. Furthermore, if a district scale approach to managing stormwater is implemented, property owners who utilize the GSI facility in the corridor should be required to contribute towards the maintenance costs.

Many parks develop a "Friends" group consisting of community members who are invested in the success of the park. These groups organize days dedicated to trash clean-up and landscape maintenance. They also function as a community safety and inspection committee, providing the City with important information about items that need to be addressed to fix damages or improve public safety. In some instances, these groups have grown into a non-profit organization that helps secure funding for future improvements (e.g. the Belle Isle Conservancy). To start this group, the City should engage with vocal and active community members who participated in the engagement meetings during the development of this plan.

VEGETATED GSI PRACTICES

The management of stormwater on site is an important component of the design of the Joe Louis Greenway. Unlike conventional stormwater management infrastructure, vegetated stormwater practice areas can contribute to ecological systems and enhance the aesthetics of the area. When considering vegetated stormwater practice areas, many incorrectly assume that maintenance costs will be significantly higher than conventional practices. While maintenance of these systems is critical to ensuring plant establishment and adequate infrastructure performance, vegetated systems have been proven to be just as cost effective—and in many instances, even more so—than conventional systems.[2]

Maintenance requirements for vegetated stormwater management systems depend on several factors such as species selected, design intent, context and functionality. Native perennials and grasses best suited to Michigan climate and environment should be prioritized in order to support local ecological systems.

2 Study by CH2M https://stormwater.wef.org/2015/12/real-cost-green-infrastructure/

Source: Unsplash

NATIVE LANDSCAPES

Passive landscapes and bioretention facilities (native landscapes) should be designed thoughtfully to address a second common concern for communities: managing the public's expectations of the aesthetic of the landscape. This can be addressed through an education and outreach program, as well as strategically placed signage and interpretive elements in the corridor. The design can reduce maintenance requirements and improve efficiency by incorporating both forbs (flowering perennials) and graminoids (grasses, sedges, etc.). Forbs provide seasonal color display and are favored by a range of pollinators, while graminoids provide important structure to the forbs. Additionally, landscapes should include mass plantings of rhizomatous species. These plants are very low maintenance and have spreading root systems that stabilize the soil.

Plant palettes should use a low number of individual species (10-14) per landscape bed. This reduces demand on maintenance staff needing to identify plants at various stages of growth and distinguish them from invasive or competitive species. Finally, planting beds should use a defined border such as intentional border plantings, trough bed edge or metal edging, low fencing or strategically placed elements such as boulders. A border helps identify planting beds and communicate that landscaped areas are intentional and cared for spaces. Additionally, borders help guide maintenance staff by delineating boundaries between landscape areas and types.

MAINTENANCE GUIDELINES

The following guidelines highlight general landscape maintenance activities, laying a foundation for developing a maintenance program during the establishment period. These guidelines can be referenced after the establishment period, although the development of an adaptive management plan is recommended.

MONITORING & WARRANTY

- Contractor is responsible for weekly site visits to review and perform maintenance activities as required during the establishment period. Submit weekly maintenance reports.

- A 3-year maintenance and warranty period is recommended. While the industry standard is 1-year for site-specific parcels, this is not a typical site: it is a linear corridor that abuts many adjacent parcels. Furthermore, the persistent and frequent visibility of maintenance in the corridor over a longer timeframe can serve as a tool for educating and building stewardship, which supports the development of a "Friends of Joe Louis Greenway" group.
- Require the contractor to secure a 3-year Maintenance Surety with the city prior to the release of the construction Performance Sureties.[1]

UNDESIRABLE PLANTS AND INVASIVE SPECIES

- Weed removal: Hand-pulling is best so as to prevent damage to adjacent flora and to reduce disturbance to the landscape. Where not feasible, due to the size of the area or the presence of perennial weeds, spot treatments of an approved herbicide may be applied.
- Practice Early Detection & Rapid Response (EDRR) for all invasive species. Removal and management of specific species should follow industry best practices.
- Prescribed burning is not recommended in the corridor due to the high risk posed to adjacent properties within close proximity of the greenway. However, this practice could be explored for large park areas.

DEADHEADING AND WINTER MAINTENANCE

- Deadheading perennials is recommended in ornamental and highly manicured landscape settings to extend blooming periods and to reduce the risk of seeds spreading.
- Dead and dormant plant material
  - Recommended to be removed in the fall from only the ornamental and highly manicured landscape settings.
  - In passive, natural landscapes, leave dead and dormant plant material standing through the winter to provide habitat for species that reside in the region through the winter months. Cut and remove early each spring.
- Asphalt Path Snow Removal & Deicers, Adjacent to Landscape:
  - A rotary brush sweeper to clear all paths of snow is recommended.
  - Avoid the use of any deicers the first winter after any concrete placement, since new concrete is more susceptible to the harmful effects of salt. As an alternative, use sand for traction.
  - Apply sand as a first approach to provide traction on compacted snow or ice.
  - Apply restraint when applying chloride-based deicers as they can harm vegetation if over-applied. Avoid the use of rock salt (sodium chloride, NaCl) as it can harm vegetation and pets' paws and can also corrode metal.
  - If a deicer is necessary, magnesium chloride is suggested. It can perform down to temperatures of about 0° F and is the safest product for vegetation, pets and amenities. However, cost may be prohibitive. Calcium chloride performs at lower temperatures and is more cost effective but can cause more harm to vegetation, pets and amenities.
  - Never use products containing ammonium nitrates or ammonium sulphates. The use of these within a winter maintenance program should be strictly prohibited.

1 Refer to the City of Noblesville, Indiana Stormwater Technical Standards Manual as a model

IRRIGATION

- Report precipitation received and irrigation applied, if necessary, on weekly maintenance reports.
- An average of 1 inch of water per week is recommended during the growing season.

CHEMICAL USE

- Herbicides: Minimize the use of herbicides to spot-treatment applications. Foliar spray applications may be used only where large populations of invasive species and species difficult to remove by hand are present. Use only selective herbicide; avoid the use of non-selective herbicide.
- Pesticides: Limit the use of pesticides in the corridor. Apply an Integrated Pest Management (IPM) program to control the spread of unwanted insects and disease. Integrate physical and cultural controls.
- Fertilizers: Apply restraint in applying fertilizers. Prior to applying fertilizer, conduct soil tests in each landscape area to develop an area-specific fertilizer application plan with the help of a soil scientist.

TRASH AND DEBRIS

- Pick up and remove all trash and foreign debris and dispose of it in an approved facility.
- Monitor for any signs of illegal dumping or new hazards and remove any issues immediately.
- Install pet waste bags and disposal facilities. Enforce requirements for pet waste disposal.

LANDSCAPE AREAS

LAWN AREAS

These areas are landscaped with traditional lawn, low-mow or no-mow grass. For all areas, provide a minimum two-foot wide mowed buffer along the greenway path.

PASSIVE AND LOW MAINTENANCE LANDSCAPES

Provide a minimum two-foot wide mowed buffer along the greenway path in order to prevent plants from falling onto trail surface.

During the first two years of plant establishment, mow when plants reach 10-12 inches tall down to height of 6-8 inches (typically 3 times in the first year).

- Ornamental Landscape Beds & Planters
- Street, Shade, & Ornamental Trees
  - — Pruning: Best to perform in winter, when trees and shrubs are dormant
  - — Use a certified arborist
- Bioretention Facilities
  - — Erosion and sedimentation control
  - — Weekly Monitoring
    - Erosion or accumulation of sediment
    - Trash
    - Inlets—ensure they are clear and void of any obstructions
    - Overflow structures, control structures, weirs
    - Cut and remove dead plant material early each spring
    - Removal of pet waste

PERMEABLE PAVEMENT

- Maintenance—vacuum with commercial vacuum sweep trucks (pressure washers and compressed air equipment are not recommended). Vacuuming should be done at least twice per year — and at least once after the last snowfall or by April 30th.

- Sedimentation control—to minimize sedimentation, construction equipment should not be permitted to drive on permeable pavement. Spills of debris or construction materials must be cleaned up immediately.
- Winter maintenance—permeable pavement with a below-grade aggregate bed provides better snow and ice melting characteristics than standard pavement. Avoid applying sand, kitty litter, sawdust or other abrasive materials on or near the permeable pavement. Use snow blade shoes to reduce the risk of excessive wearing on the pavements system. Use non-toxic, organic deicers.

STORMWATER MONITORING

Monitoring typically is conducted to measure performance in the following three areas:

- **Water Volume**—What is the volume of stormwater leaving the site through infiltration during storm events, and how much is entering the city sewer system?
- **Flow Rate**—How much water is leaving the site at measured intervals during storm events?
- **Water Quality—**What loads of nutrients and pollutants enter the city sewer system and how does this compare to gray infrastructure?

MONITORING WATER VOLUME

Perform water balance calculations. This requires measuring the amount of precipitation that falls on the site. Rainfall gauges that are monitored by the National Oceanic and Atmospheric Administration (NOAA) are available within the City of Detroit, but they will provide data that is not localized to the site. Furthermore, many gauges only record daily rainfall depths. Because the source areas being monitored will be small (i.e., 2 acres or less), rainfall data should be recorded at 15-minute intervals or less and on site. It is therefore recommended to install a recording rain gauge through the duration of the monitoring program. The cost of a new tipping bucket rain gauge is approximately $500-$800.

MONITORING FLOW RATE

Flows should be measured at the most downstream point in the system, which would be in the overflow structure, on the downstream side of the weir and orifice. The flow rate can best be measured by using a pressure transducer that is set flush with the bottom elevation of the orifice.

MONITORING WATER QUALITY

In urban settings, pollutant loading typically accumulates on impervious surfaces during dry periods between rain events, later washing off during storm events. The pollutant loading is therefore typically highest during the early stages of the storm (commonly referred to as “first flush”). The loading is then reduced as built-up pollutants are “washed” off the surface. The longer the duration between precipitation events, the greater the quantity of pollutants that accumulate. This means pollutant loading for a storm event that occurs shortly after a preceding event will be lower since there is less time for pollutants to accumulate. Monitoring protocols must reflect this pattern. Monitoring equipment can be purchased and set up inside the overflow structure or downstream manhole. An alternative to purchasing and maintaining this equipment is to conduct wet weather “grab samples.”

According to the EPA, “The term ‘grab sample’ refers to an individual sample collected within a short period of time at a particular location.[1] Grab samples are suitable for virtually all the typical stormwater quality metrics. In fact, wet weather grab samples are the only option for monitoring metrics that transform rapidly (requiring special

1 2009 Urban Stormwater BMP Performance Monitoring, USEPA

preservation) or adhere to containers, such as oil and grease, TPH[1] and bacteria."[2] The following represent a generalization of US EPA guidelines for wet weather monitoring:

- The storm event depth should be greater the 0.1-inches
- The storm event should be preceded by at least 72 hours of dry weather
- Where feasible, rain depth and duration should not vary by more than 50% from average depth and duration
- Sampling should occur within the first 30 minutes of the start of runoff occurring from the source area

A strict protocol for wet weather monitoring must be established to ensure that an assigned sampler can be on site quickly to respond to an approaching storm that has the potential to meet these criteria. Local weather forecasts and radar should be monitored closely. Samplers should maximize the number of samplings of storm events that meet these criteria. The number and availability of volunteers to complete the sampling will be a critical factor in determining the sample size. The recommended monitoring duration would begin upon completion of the bioswales and last at least two years. This may provide information on how bioswale effectiveness changes as the vegetation becomes established and as the exchange of nutrients in the newly installed plant mix stabilizes.

To estimate storm event mean concentrations or pollutant loads, a series of grab samples should be collected at short time intervals throughout the course of a storm event in the bioretention planted areas and at the parking lot outfall points or overflow structures. There is extensive guidance available for proper collection, handling and documentation of grab samples, including YouTube videos prepared by regulatory agencies.[3]

Laboratory analyses should focus on known common pollutants found in stormwater runoff from parking lot surfaces. This includes total suspended sediment and suspended sediment concentration, dissolved metal concentration (cadmium, copper, lead, zinc), nutrient saturation (phosphorus, nitrogen), oil and grease.

Source: Pexels

1 TPH, or Total Petroleum Hydrocarbons, come from crude oil and are a common form of ground soil contamination
2 EPA, "Developing a BMP Monitoring Program," https://www3.epa.gov/npdes/pubs/montch3.pdf
3 One such guidance video is referenced below: http://www.youtube.com/watch?v=oWKdonc9iDw

Source: SmithGroup

A WELCOMING AND SAFE SPACE

The greenway should be a welcoming place that puts people at ease—a place where everyone, regardless of age and ability, feels secure, confident and comfortable.

During community input sessions, residents ranked personal safety as a primary concern—both as potential users of the greenway and for those living and working along its route. While a sense of safety is essential in order for users and residents to feel comfortable on the greenway, a space that is perceived as dangerous or unsafe will have the opposite effect. Additionally, a space that only feels safe for some people and not for others will not truly be the type of shared public space that the Joe Louis Greenway strives to be.

Source: James Brown

Safety is a matter of perception: What makes one person feel safe may make another uncomfortable. Community input has been—and will continue to be—a critical part of the design, operations and programming of the Joe Louis Greenway. The recommendations outlined in this chapter represent strategies and practices that may be employed by the City of Detroit as part of this project. Each requires careful consideration and coordination with local communities in order to ensure that the most appropriate strategies are used and that the greenway achieves its goal of being open, welcoming and safe for all users.

STRATEGIES FOR SAFETY & SECURITY

Integrating safety into the design of urban greenways significantly influences the success of the greenway after it is implemented. The theories of Crime Prevention through Environmental Design (CPTED) implemented by professionals and the public can create a climate of safety through design, operations and maintenance. The primary goal is to prevent crime by creating a physical environment that has a positive influence on human behavior. A public space that is properly designed with safety in mind reduces both the incidence of crime and the public's level of fear, thereby increasing the quality of life for greenway users. What's more, lowering the incidence of crime has a positive impact on local economies—especially for property owners.

Making the Joe Louis Greenway a safe space is a collective responsibility—a mutual commitment among designers, public organizations and partners, the City of Detroit, the community and law enforcement. It's important to consider safety from the start, as security design strategies that are incorporated in the initial design phase of a project can be significantly more successful—and cost effective—than retrofitting measures after construction has been completed. With proper security system design, operational costs and liability can be decreased over time. Education and training in security and safety strategies is important to all aspects of the planning, design and development of the greenway.

Isolating and fencing off communities does not succeed in preventing crime in urban public spaces. The design strategies that make communities more attractive, neighborly and enjoyable are the same design principles that can be used to create safe spaces. In implementing safe urban greenways and public spaces, four important considerations should be incorporated:

- Visibility
- Access
- Greenway Design
- Maintenance

VISIBILITY

For many people, the ability for a person to see what is going on around them and to know that there are others that can see them increases feelings of safety and comfort when compared to spaces which are hidden or obscure.[1] An important quality of safe spaces is the ability for someone to see and hear what is going on around them. Not only does this help with navigation and wayfinding, reducing the chances that someone may become lost—as well as for families keeping track of wandering and playing children—it also makes people feel safer by giving them a sense of their surroundings. While we refer to this quality as the **visibility within a space**, it may also extend to other sensations beyond sight.

1 Leao, Simone & Izadpanahi, Parisa & Hawken, Scott. (2019). How urban design can make cities safer for women?: A statistical analysis of SafetiPin.

There are several conditions that benefit from considerations to visibility:

Reduce conflicts with other traffic types: Ensure cars and people have clear views of each other along streets, at intersections and at pedestrian and bicycle crossings. For those who are visually impaired, ensure adequate use of detectable warning devices at intersections.

Design for sightlines: Spaces with clear and unobstructed viewpoints to and from multiple locations have been shown to make people feel safer when in public settings. They help users understand their location along the greenway and allow them to see who else may be sharing the space with them. Additionally, spaces with high visibility are a natural crime and vandalism deterrent. Design for highly visible spaces and avoid obstructions and blind spots.


Source: Todd Scott

Activate spaces: Activated spaces are safer spaces. Why? The more people gather and interact, the more they look out for one another, keeping a watchful eye over what's going on. By enhancing the site with features that attract visitors—like play areas, exercise zones, gathering spaces and urban plazas—the area will naturally become livelier. And safer.

Provide adequate lighting: The Joe Louis Greenway will be a safe and comfortable space at all times of day, during all times of year. Proper lighting strategies will ensure that early morning commuters, late-night dog walkers and day-time family visitors experience the same levels of comfort, safety and navigability on the greenway. Outdoor lighting serves many functions by increasing visibility, improving wayfinding and illuminating art installations. In order to maintain visibility, proper lighting should be provided according to the following key criteria:

- Follow lighting design standards for different spaces, uses and contextual considerations. This includes fixture types, brightness, orientation, spacing and heights.
- Provide sufficient and appropriate illumination levels to permit users to safely and comfortably use the space at all hours
- Avoid excessive light levels that create blinding glare, disruption to adjacent land uses and deep shadows
- Avoid poor light placements that create blind spots
- Illuminate obstacles and greenway features such as stairs, ramps, entrances and exits
- Provide adequate illumination at high traffic and waiting areas such as parking lots, bus stops, intersections and event spaces
- Use photo sensors and timers to automatically control lighting

Complement natural oversight by the public with automated security systems and cameras.

ACCESS

The Joe Louis Greenway travels through existing neighborhoods, commercial corridors and areas of business. While these existing uses enhance the character of the greenway, adjacent landowners maintain the right to restrict public access to their land or building as necessary. There are three primary types of spaces that will existing along the greenway:

Public Space: These spaces are owned and maintained by the City of Detroit and are open to anyone to use. This includes the Joe Louis Greenway itself and any adjacent parks, roads, public buildings and public land.

Semi-private Space: These spaces are often owned and operated by adjacent organizations or businesses along the greenway. While not officially part of the Joe Louis Greenway, these spaces can add a dynamic element to the greenway with uses such as outdoor dining, plazas and play areas. Similar to sidewalk cafes, land owners may choose to allow access in ways that support their businesses.

Private Space: These spaces include residential yards, industrial areas and other businesses or organizations that choose not to permit access to their property. These uses may provide barriers such as fences and planted buffers to reduce physical and visual access to their home, business, building or land.

For users of the greenway, and for those who occupy land adjacent, it is important to clearly define public, semi-private and private spaces.

- Provide clear border definition between public and private spaces where access restriction may be needed.
- Provide information regarding semi-private spaces, including their intended use and any use restrictions.
- Use roadways, walkways, fences, lighting, signage and landscape to direct pedestrian, bicycle and vehicular flow along the greenway and to key destinations.
- Use physical structures such as fencing, bollards and landscaping to guide people to public spaces and to define and restrict access to private areas.
- Users (especially children) may be tempted to climb fences, trees and other scalable objects. These can create safety and access hazards. Reduce climbing opportunities by restricting access to climbable elements (ladders, private staircases, fences, roof access) and by maintaining adjacent low-hanging tree limbs.
- Use signage and wayfinding to guide users, provide information about current location and nearby amenities and destinations.
- Augment the safety of distant and isolated areas by adding security cameras and emergency telephones.
- Control vehicular access on the greenway and other public spaces in order to ensure the safety of greenway users. Vehicular traffic can be restricted using signage, bollards, fencing and guardrails. Collapsible bollards can also be used to restrict public access while still allowing access for emergency and maintenance vehicles.


Source: DRFC


Source: DRFC

- Avoid negative security and access control elements such as barbed wire or threatening signs. These negative deterrents can make people feel unwelcome and unsafe in public spaces. If a higher level of security is required in a particular area, consider more positive deterrents.

GREENWAY DESIGN

A sense of ownership. The feeling that this is an intrinsic part of the neighborhood. The more residents feel personally invested in the greenway, the more it will enhance the communities it passes through. And the more people who use the space, the less opportunity there will be to misuse the space. As people feel safe and comfortable using the greenway, anyone who isn't there to enjoy the same experience will stand out and look out of place.

Landscape design plays an important role in creating a sense of safety and comfort along the greenway. In order to meet the greenway's safety and security objectives, the following recommendations will guide the design of landscape areas:

- Planted areas should maintain visibility above 3 ft. and below 8 ft. (typical viewshed of a standing adult)
- Except where full or selective screening is desired, plantings should not block views to or from adjacent streets, buildings or walkways
- Plantings should be coordinated with security camera locations to provide clear visibility and facilitate emergency response
- Plantings should be placed to minimize obstruction of natural views to and from the greenway, as well as those within the

Source: DRFC

spaces that are part of the greenway

- Landscape areas can help guide access and differentiate public from private space
- Maintenance of landscaped areas should occur regularly in order to provide cues to care

MAINTENANCE AND CUES TO CARE

The landscapes of the Joe Louis Greenway will vary greatly along its 27.5 mile route, each segment and neighborhood with its own character and style. From flowering planters on a sidewalk to the recreation fields at Patton Park, from new greenway performance areas to stormwater management and habitat restoration zones, each of these landscapes has a unique function and context. The maintenance strategies for these spaces will focus on providing "cues to care" — site-specific indicators that a space is valued and cared for.[1]

These cues are built into the design and maintenance of a space, and they may include elements such as:

- A mown edge along a naturalized habitat
- Mural installations on a vacant building or plantings along its edge
- Flowering plants as part of a stormwater management installation

1 https://www.ncrs.fs.fed.us/pubs/jrnl/1995/nc_1995_nassauer_001.pdf

Source: DRFC

Each of these design elements is intentional and demonstrates investment in a space, whether made by the community, a local organization or public government. These cues tell users that someone cares about this space, encouraging respect and fostering a sense of belonging, safety and comfort.

Strategies for creating an effective maintenance strategy include:

- Develop and implement a formal maintenance plan
- Practice proactive and continuous maintenance
- Regularly inspect greenway features and schedule maintenance activities
- Evaluate and adapt maintenance plan for changing landscapes, land uses and conditions
- Identify upgrades, modifications and improvements for implementation

SECURITY

In addition to the greenway design and physical improvements included within, a comprehensive security system and crime prevention plan should be implemented.

A number of technological improvements can enhance the safety and security of the greenway system.

EMERGENCY RESPONSE

The ability to quickly identify and navigate to a caller's location is necessary for effective emergency response. The City of Detroit Police Department recently upgraded its call center to the Next Generation 9-1-1 system, which can provide more precise location information to dispatchers based on improved address location and cell phone GPS data. Despite these upgrades, there remain logistical challenges to the identification and communication of a caller's location along a greenway, especially on off-street portions of the path.

A system of numbered trail markers and corresponding digital map updates can help first responders locate trail users in the event of an emergency. Unlike call boxes, which are limited in effectiveness due to their stationary location, these modern greenway 9-1-1 systems allow anyone with a cell phone to direct first responders to the scene of an emergency quickly.

PROJECT GREEN LIGHT:

In 2016, the Detroit Police Department began a partnership program with local businesses called “Project Green Light Detroit.” With this program, businesses with safety and security concerns may connect their security cameras into the DPD network. By joining this network, businesses experience improved DPD partnerships and dispatch coordination. The broad geography and distribution of Project Green Light partners may present an opportunity for the Joe Louis Greenway to tie into an existing network.

GREENWAY SECURITY CAMERAS:

Security cameras can be placed along the greenway to assist in monitoring. The addition of cameras requires the connection to or the development of a command center to monitor and respond to emergencies.

EMERGENCY CALL STATIONS:

The Emergency Call Stations have several key features which help enhance safety along the greenway. Request for emergency services is available via two-way communication with security and emergency professionals. These call boxes are already in use at the Detroit Riverfront and along the Dequindre Cut.

Developing a dedicated security staff will do more than enhance the safety of the greenway. It will enhance the entire greenway experience.

SECURITY STAFF

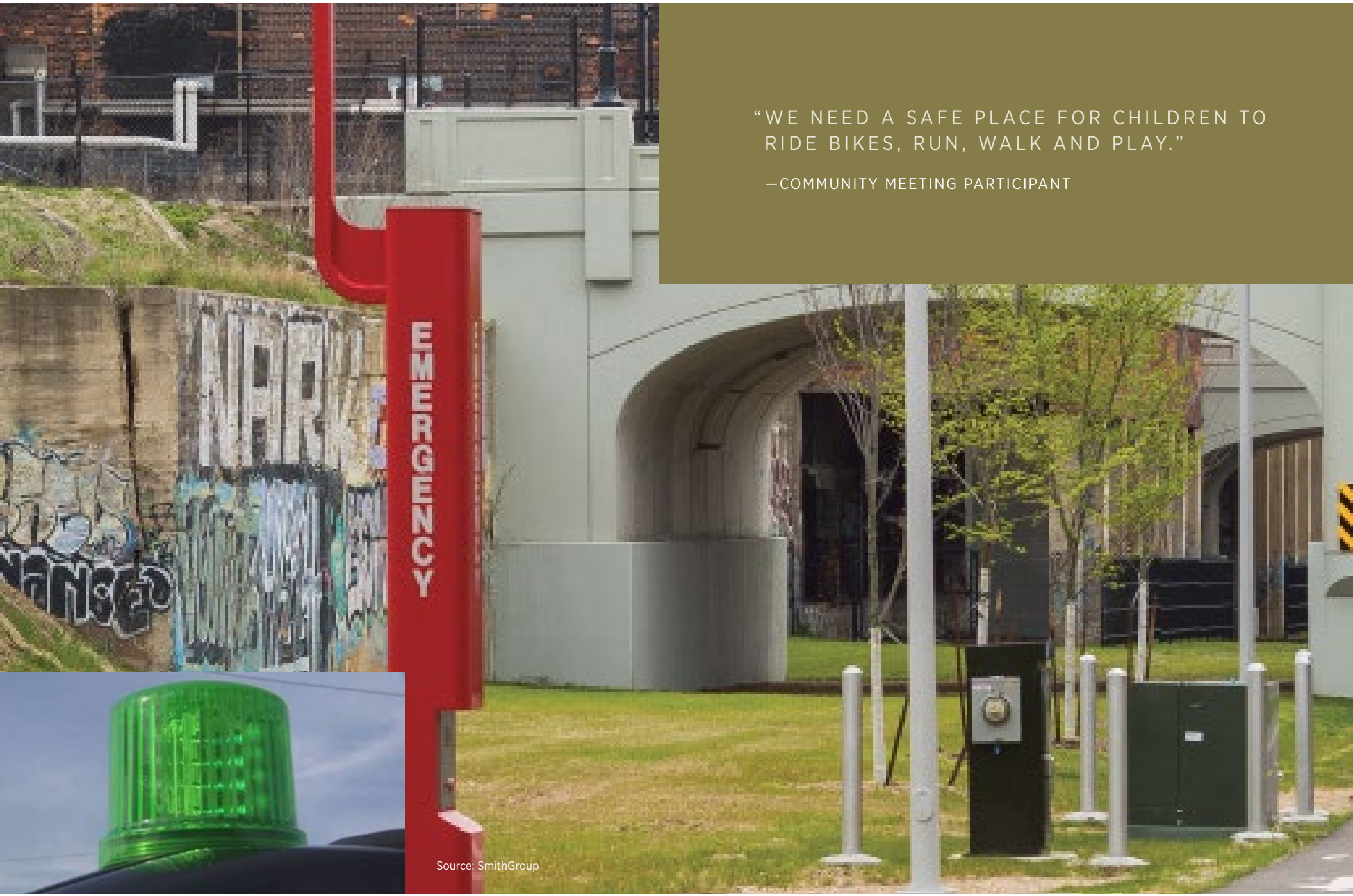
The members of the security staff aren't simply Security Officers. They're greenway ambassadors who provide a positive first impression—sharing the story behind the project, helping with directions and relating activities on and around the greenway. They can also provide first aid and help individuals who are in need.

Supported by a combination of technologies, the security staff can lead, manage and perform security operations for the greenway.

They can monitor the greenway in a number of ways—including by vehicle patrol, bike patrol and walking patrol.

The security staff could partner with existing emergency response departments around the city including:

- Detroit Police Department
- Detroit Fire Department
- Border Patrol / Homeland Security
- US Coast Guard
- State Police
- Selfridge Air Base
- Wayne State Police
- Emergency Medical Technicians
- Private Security Organizations



"WE NEED A SAFE PLACE FOR CHILDREN TO RIDE BIKES, RUN, WALK AND PLAY."

—COMMUNITY MEETING PARTICIPANT

Source: SmithGroup

OPERATIONS & PROGRAMMING

What kind of events and programming will greenway users find? Pretty much whatever they're looking for—whether they're interested in family activities, get-togethers with friends or community group outings.

Outdoor music, fairs and markets in the warm months. Bike rides and races, yoga practice and fitness classes—with spaces for children to let loose and play. Places where people can come together to celebrate, advocate and learn. And opportunities to pitch in, from fundraising to cleanup activities along the pathway. To make it all come together, the City will develop an event operations plan to coordinate permitting, staffing, volunteers, safety and sales.

Photo: James Brown

ARTS & CULTURE

ORGANIZATIONAL RECOMMENDATIONS:

Art and culture are the lifeblood of the greenway. To succeed, The Joe Louis Greenway must develop an organization system and workflow to manage its public art program. The following are recommendations for structure and governance of the program, with examples of processes utilized by public art programs across the nation.

ART & CULTURE PROGRAM MANAGEMENT TEAM

A full-time arts and culture management team should be included within the larger Joe Louis Greenway administration. This team will primarily consist of an overall Public Art Curator and a Programs Manager.

PUBLIC ART CURATOR

The Public Art Curator is responsible for developing RFQs and RFPs for the greenway's public art collection. The curator is responsible for ensuring commissions are rooted in the Joe Louis Greenway's public art values and curatorial themes. The curator is also responsible for establishing and maintaining project-specific budgets, maintenance and program advancement.

PERFORMANCE AND COMMUNITY PROGRAMS MANAGER

The Performance and Community Programs Manager focuses on time-based public art (theater, dance, music, etc.) and community-focused art programs. They are responsible for guiding collaborative processes and neighborhood-specific implementation of public art and culture programming.

NEIGHBORHOOD ADVISORY COMMITTEE

The neighborhood advisory committee works closely with the Community Programs Manager to ensure that neighborhood identity and culture are represented in public art along the greenway. Committee membership may expand or contract based upon project locations and duration.

EVALUATION PANEL

Evaluation panels select projects and artists for specific commissions and are composed of experts in applicable fields.

Volunteers at the Detroit Riverfront
Credit: Detroit Riverfront Conservancy

VOLUNTEERING

A volunteer program offers opportunities for corporations, churches, block clubs, groups and individuals to have ownership over the condition of the Joe Louis Greenway. Volunteers may have roles in teaching and knowledge sharing, maintenance and clean-up, working at events and playground or installation construction.

Existing networks like the Detroit Riverfront Conservancy[1] and the Outdoor Adventure Center[2] have successful volunteer programs that may be referenced in establishing a similar program along the Joe Louis Greenway.

1 DRFC: https://detroitriverfront.org/volunteers
2 Detroit Outdoor Adventure Center: https://www.michigan.gov/oac/0,5736,7-329-68733_93078--,00.html

OPERATING COSTS & FINANCING

OPERATING & MAINTENANCE COSTS INTRODUCTION

For the Joe Louis Greenway to become a bold and memorable destination, the greenway will require funding over and above existing open spaces in Detroit. Operating expenses tend to fall into three categories:

1. Routine maintenance
2. Park programming
3. Administration

Currently, operating expenses in Detroit are limited to routine maintenance and administration, with limited funding reserved for programming.[1] Detroit has been historically underfunded and spends $79 per capita on parks, compared to other cities such as Pittsburgh ($91), Cleveland ($124) or Cincinnati ($177).[2] Funding for the Joe Louis Greenway will be dependent on the level of projected activation and programming, which HR&A has assumed to be on the higher end and in line with national precedents from peer cities.[3] As planning for the Joe Louis Greenway advances, operating costs should be refined to ensure alignment with proposed programming levels.

GREENWAY TYPOLOGIES

The Joe Louis Greenway has been segmented into three typologies to estimate net new operating expenses.

1. OFF-STREET (11.04 MILES, EXCLUSIVE OF DEQUINDRE CUT, SOUTHWEST GREENWAY AND THE RIVERFRONT)

Off-street greenway segments will be located within former rail corridors, which are completely separate from the existing roadway network and will provide safe and accessible non-motorized pathways for Detroiters of all ages and abilities. O&M expenses for this segment are based on greenway costs from national precedents and exclude existing off-street portions.

1 City of Detroit Four-Year Financial Plan, FY 2020-2023
2 The Trust for Public Land, 2019 City Park Facts
3 Program costs associated with community development initiatives—such as affordable housing subsidies and workforce development programs—will also ultimately be required. Implementation of the Joe Louis Greenway will partner with City agencies and existing nonprofits, leveraging the range of public, private and philanthropic resources available to fund such programs citywide, as well as the potential new resources described within the “Funding Sources” section.

2.OFF-STREET ADJACENT (5.34 MILES)

Off-street adjacent segments accommodate multi-modal transportation including vehicles and non-motorized means, either with clearly separated lanes or along sidewalks. Costs for this segment are based on roadway maintenance costs from regional cities.

3. ON-STREET (6.44 MILES)

On-street greenway segments will be located within existing public roadways as well as shared streets and alleys where streetscape upgrades will integrate safe and accessible non-motorized pathways for Detroiters of all ages and abilities. Costs for this segment are also based on roadway maintenance costs from regional cities.

O&M COSTS[4]

The Joe Louis Greenway's three typologies have different anticipated expenses due to different levels of operations, maintenance and programming. The off-street portion has the highest anticipated operating expenses as a result of its landscaping, programming, operations and maintenance, while the on-street and off-street adjacent portions require funding to cover only routine maintenance and administration, more akin to street and sidewalk maintenance.

- Off-Street (11.04 miles): $2.7 million
- Off-Street Adjacent (5.34 miles): $2.3 million
- On Street (6.44 miles): $1.6 million

4 These estimates were developed by JLL in July 2021. Actual operations and maintenance costs may vary. Please be advised that May Creek Greenway, the Dequindre Cut and the Riverwalk have been excluded from this budget as they are funded, managed and operated by the Detroit Riverfront Conservancy.

OVERALL, NET NEW OPERATING COSTS FOR THE JOE LOUIS GREENWAY (EXCLUSIVE OF THE EXISTING PORTIONS) ARE ESTIMATED TO BE BETWEEN $100,000—$130,000 PER LINEAR MILE, OR APPROXIMATELY $2.6–$3.5 MILLION AT FULL BUILD-OUT. PHASE 1 COSTS, CONSISTING OF A PORTION OF THE CONRAIL, ARE ESTIMATED TO BE $490K-$660K.

PHASING

Operating costs will phase in over time, along with greenway implementation. Based on the costs associated with the greenway's segments and the anticipated build-out schedule, annual costs for operations will start at approximately $370,000, and will grow to $1.1M by 2024, $2.2M by 2030 and $3M by 2038.[1]

FUNDING SOURCES

Greenways and open spaces in Detroit and across the country rely on a variety of funding sources to sustain operations. These include:

- Grants and contributions from corporate and philanthropic partners, often in the form of an endowment
- Public funding from city, state, county and/or the federal government
- Earned revenue from programming and concessions
- Value capture from adjacent real estate

Following a detailed review of various earned income, public funding and value capture options, as well as conversations with potential corporate and philanthropic partners, a combination of the following sources hold promise for sustaining future Joe Louis Greenway operations:

Philanthropic: Philanthropy (from corporate and/or foundation sources) will play an essential role in greenway operations, both in the near term as additional longer-term funding sources are secured and in the longer run. Sufficient contributions to generate an endowment would help provide a stable source of funding over time: Building up to an endowment of $60M could provide sufficient resources to sustain the greenway in perpetuity, without seeking additional outside funding. Annual contributions are also an essential source of support, though cannot be relied upon to sufficiently allow for long-term planning.

Public: Greenway operations are not expected to rely on the City's general fund or existing parks and open space budget, which are already heavily committed. However new sources of public funding may be explored, such as:

- A local or regional sales tax, to supplement the existing state sales tax, leveraging expenditures by increased visitation to Detroit that the Joe Louis Greenway helps drive
- A parking tax on fees and transactions in citywide parking facilities, recognizing the mitigation value the greenway holds for the environmental impact of automobiles
- Regional revenue sharing, in partnership with the Huron-Clinton Metroparks Authority

Each of these sources would require public approvals, ranging from local referendums to amendments of the state constitution. Depending on the rates set, they also have the potential to generate resources to support other citywide open spaces and additional public priorities. Where possible, regional partnerships will facilitate creation of these tools.

1 These figures exclude costs for operating the May Greek Greenway, Dequindre Cut and Riverwalk, which will fall under the purview of the Detroit Riverfront Conservancy. I-96 Pedestrian Bridge and Bagley Shared Street are also excluded from the operating expense estimates.

Earned Revenue: Earned income opportunities along the greenway offer lower total funding potential than the other resources described here but are an important consideration in thinking about programming and stakeholder engagement. Corporate sponsorship and naming rights may hold the greatest value potential along certain portions of the greenway — if implemented with consideration to the public branding and community ownership — given its length and visibility as people move through the City of Detroit.

Value Capture: Open spaces and greenways nationwide capture the value created for adjacent properties in a variety of ways, including land value from sale of public land, park impact fees, special assessment districts, direct participation in new development, or other mechanisms. While some of these alternatives merit additional consideration in the long term as Detroit's real estate market continues to strengthen, in today's market, where subsidy is generally required to support any kind of new development, many of these mechanisms would increase public subsidies required for new development, pass additional costs on to renters, and/or lessen the economic development value that the greenway offers. However, a Tax Increment Financing ("TIF") District that captures the increase in taxable value that is generated when properties within ¼ mile of the greenway in either direction are sold and thus reassessed could generate significant value—$22-$32M annually[2] at full build-out in 2040.[3] A portion of these resources could go to support Joe Louis Greenway operating costs, programmatic costs associated with Joe Louis Greenway community development initiatives, or both.

2 These figures exclude costs for operating the May Greek Greenway, Dequindre Cut and Riverwalk, which will fall under the purview of the Detroit Riverfront Conservancy. I-96 Pedestrian Bridge and Bagley Shared Street are also excluded from the operating expense estimates.

3 Range driven by whether TIF captures City property taxes only (as feasible through a CIA), or City and State property taxes (as feasible through multiple TRAs)

Source: SmithGroup

FINANCING PUBLIC ART

Art is an essential form of expression and an integral part of the diverse cultures of Detroiters. But despite the life and spirit that these works bring to a city, coordinating funding resources is not always easy. Fortunately, there is ample precedent from which to draw.

The State of Michigan's Faxon-McNamee Art in Public Places Act, Act 105, encourages "integration of art and public spaces" by establishing "a state art in public places fund" and a "committee on art in public places."[1] Some Michigan cities like Ann Arbor and Ypsilanti have used this legislation as a starting point for the development of their own City Arts Commissions and public art financing policies.

The following section draws from the Project for Public Spaces,[2] as well as various city webpages. It begins to identify some of the creative and innovative public art financing strategies being employed around the nation.

1 https://www.legislature.mi.gov/(S(fzdahbx41ntrdvv3krgxzrm3))/documents/mcl/pdf/mcl-Act-105-of-1980.pdf
2 https://www.pps.org/article/artfunding

PERCENT FOR ART POLICY

Percent for art is one of the most common forms of funding a robust public art program, with precedent examples seen across the United States and abroad. Although these examples are often city- or state-wide, these policies may be implemented on a per-project basis. The Joe Louis Greenway may institute a percent for art for development projects adjacent to the Joe Louis Greenway.

NEW YORK CITY, NEW YORK

The NYC Percent for Art program is operated by the City of New York Department of Cultural Affairs. This program began in 1983 under Mayor Edward Koch and is backed by the Percent for Art law.

This program requires that one percent of the budget for eligible City-funded construction projects must be spent on artwork for City facilities. Since the program began, more than $41 million in art work has been commissioned for around 300 projects throughout the five boroughs.[3]

SEATTLE, WASHINGTON

Seattle adopted their percent for art ordinance in 1973, making it one of the first cities to do so. The program collaborates with the City's Race and Social Justice Initiative to "eliminate institutional racism in [their] programs, public art, policies and practices."[4]

The percent for art ordinance requires that 1% of eligible city capital improvement project funds be set aside for the commission, purchase and installation of artworks throughout city parks, libraries, community centers, roads, bridges and other public venues. To date, around 3,000 portable works and 400 permanent works have been commissioned in Seattle through this program.

CHICAGO, ILLINOIS

The Chicago Percent-for-Art Ordinance was approved in 1978. This ordinance stipulates that 1.33% of the cost of constructing or renovating city buildings and public spaces be allocated to the commission of original artwork on the premises. It also requires that more than 50% of art commissions be granted to Chicago artists in order to support local talent.

3 NYC Percent For Art
4 Seattle Public Arts Webpage: https://www.seattle.gov/civilrights/what-we-do/race-and-social-justice-initiative

OTHER FINANCING SOLUTIONS

While percent for art programs can be successful, there are a variety of alternative funding mechanisms that may be employed. The applicability of these to the City of Detroit may depend on scale of program, State of Michigan legislation, public preference, as well as other factors. This list is derived from the Project for Public Spaces' website, which is continuously updated with current information and resources.[5]

Houston, TX: The Cultural Arts Council of Houston receives a percentage on the hotel/motel tax for art. In addition, the Council contracts with a variety of city agencies, as well as with Harris County.

New Orleans, LA: The Arts Council of New Orleans funds public art projects through a joint partnership between public/private sectors in order to create more stable funding basis. The City of New Orleans, local and state governmental agencies, as well as other non-profit arts organizations, are funding sources for the public-art program.

Phoenix, AZ: Phoenix's public art program is funded through the city's general purpose funds, public-art funds, state lottery revenue and regional and federal grants.

San Antonio, TX: The San Antonio Design Enhancement Program (DEP) is operated through the city's Public Works Department's City Architects' Office. The DEP program is maintained by art allowances and budgets that are identified and developed by each project-design team.

San Diego, CA: The public art program in San Diego is a department of the San Diego Commission for Arts and Culture. Administrative costs are covered by a portion of the city's Transient Occupancy or Hotel/Motel Room Tax, which helps to fund the operating and personnel expenses of nearly 90 arts and cultural organizations.

SOLICITING PARTICIPATION BY DEVELOPERS

If a city does not have a percent-for-art ordinance in place, it may still be possible to get funding from capital projects for public art by collaborating directly with the private sector. Many private developers are realizing the positive impacts of integrating commissioned art into their projects, such as increased employee attraction and satisfaction, unique or destinational identity, increased rent revenues and demonstration of commitment to local culture.

There are a number of ways of encouraging the development community in funding public art projects. Art commission requirements may be integrated into developer incentive packages, or variance or exception fees for zoning policies may be redirected by the city to pay for public art.

According to the Project for Public Spaces, "The "plaza bonuses," or floor-area ratio bonuses, given to developers who set aside a certain amount of ground floor as public space, can also be awarded for including public art. In Portland, OR, development projects where one percent of total construction costs are committed to public art receive a floor-area ratio bonus of 1:1. All or at least 25% of these funds are deposited in the Public Art Trust Fund for use on projects in other sites around the city. The City of Tampa, FL, encourages "any private developer/owner who applies to the city for building permits to construct or reconstruct a commercial or municipal structure to commit one percent of construction costs up to $200,000 to the provision of fine art in conjunction with such commercial structure" or to elect instead to

5 https://www.pps.org/article/artfunding

donate to the city an amount equivalent to the one percent. In addition, every building or construction permit pulled for the construction or reconstruction of a commercial or municipal structure is reported to the public art committee."[1]

Maintenance and care is an important consideration when funding public art; art financed through private development should be maintained by the private developer. Developers may wish to employ the services of advisors or consultants, and a public art review panel should be convened for private projects to ensure compliance with the overall goals of the public art policy and vision for the Joe Louis Greenway.

ALTERNATE SOURCES OF FUNDING

Across the nation, funding for public art has come from a variety of sources. Each of these has the potential to be successful in the City of Detroit:

- **National Foundations:** Seek grants from organizations such as National Endowment for the Arts (NEA) and National Endowment for the Humanities (NEH).
- **Government Coordination:** Coordinate with local, regional, state and federal government to identify funding resources.
- **Historical Societies:** Collaborate with historical societies to celebrate local resources, events and culturally-significant sites and structures.
- **Local Businesses:** Work with local businesses to create a space that is more vibrant and active for all.
- **Development Ordinances:** Integrate public art into new development.
- **Arts Councils:** Work with arts councils to connect with artists, identify art opportunities and coordinate funding.
- **Museums & Galleries:** Collaborate with museums and galleries to fund, create, install, program and maintain public art.
- **Crowdfund:** Where funding may be lacking, encourage crowdfunding strategies as a method for gaining public momentum, meeting artist grant match requirements or fully funding artist commissions.
- **Endowments:** Identify foundation endowments for the selection, commission and maintenance of public art.
- **Event Tax:** Tax large-scale events and festivals to pay for art. For example, a motel and hotel tax can be dedicated to public art during events, with funding put toward art projects occurring before and after the event.
- **Philanthropic Funding:** Seek funds from local donors for the selection, commission and maintenance of public art.

1 https://www.pps.org/article/artfunding

Matthew Massey
Source: Sidewalk Detroit

GOVERNANCE OF THE JOE LOUIS GREENWAY

The Joe Louis Greenway will be a public space, owned by the City of Detroit.

In addition, a variety of roles will be required to implement, sustain and fulfill the promise of the Joe Louis Greenway, including stewardship, construction and development, capital maintenance, routine operations and maintenance, security, management, earned income program management, fundraising, programming and implementation and coordination of community development initiatives.

JOE LOUIS GREENWAY GOVERNANCE ROLES

Vision & Implementation Stewardship
Construction & Development
Capital Maintenance
Routine Operations & Maintenance
Security
Management
Earned Income Program
Fundraising
Programming
Community Development Investments

There are a number of longtime and essential future partners who are well positioned to contribute to these roles. The way in which these roles are brought together must be consistent with the vision of the Joe Louis Greenway that will provide connected, equitable and engaging spaces throughout Detroit, where people and neighborhoods will find opportunities for empowerment, unification and healing. A successful governance and operating structure will need to function under a clear set of goals and mission consistent with the Joe Louis Greenway vision; to have access to people with the right skillset, bandwidth and capacity to execute required responsibilities; to operate under strong, stable transparent leadership that engenders community and funding partners' trust; and to have access to stable, long-term funding.

The September 2019 Equity Planning Workshop discussed the considerations surrounding greenway governance and pointed to a public/private partnership as presenting the structure with the greatest potential, recognizing the relative advantages of both public and private/nonprofit models. A public/private model also aligns with the potential funding streams identified for operations.

A new non-profit Joe Louis Greenway Conservancy to develop and sustain the Joe Louis Greenway has the potential to meet the criteria for greenway governance success. Relative to other public/private models that might be considered—such as public management with a "Friends" group for additional fundraising and programming, adaptation of an existing entity, or creation of a Special Purpose Entity with statutory powers—a new dedicated entity offers the greatest potential for alignment with the overall vision of the Joe Louis Greenway, strong and continuous leadership, accountability to the public, access to public and private funding with strong fundraising capacity and a unique ability to implement the Joe Louis Greenway's specific vision for inclusive economic development. It also has the ability to leverage existing capacities in Detroit by partnering or contracting with the City and/or existing entities to fulfill certain functions and to provide effective programming by partnering with and resourcing existing community-based nonprofits. Should a new Conservancy advance, a number of details essential to defining such a structure would be the subject of future conversations. These details include but not are limited to the appropriate leadership; Board structure, composition and appointment authority; staffing structure; and more detailed business planning around required resourcing as Joe Louis Greenway construction and operations ramp up over time.

JOE LOUIS GREENWAY EQUITY PLANNING WORKSHOP THEMES

Public Governance Advantages	Private/Non-Profit Governance Advantages
Ensures greenway is accountable to public interests	Ensures greenway will have strong, focused leadership and continuity across administrations
Provides access to public funds	Increases ability to secure contributed income through philanthropy and sponsorship
Leverages existing Parks capacities	Community-based nonprofits can bring direct neighborhood representation into programming

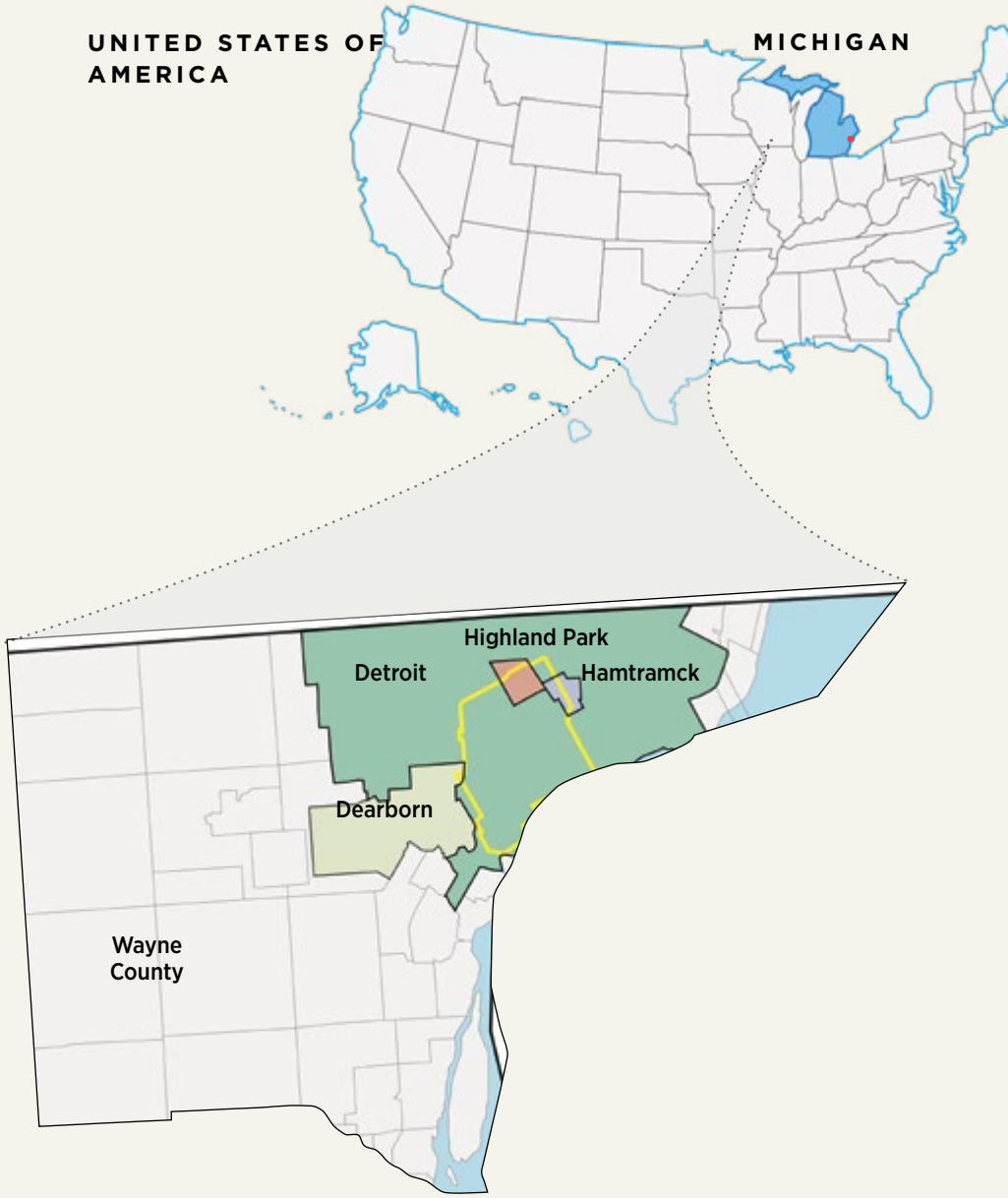
Source: James Brown

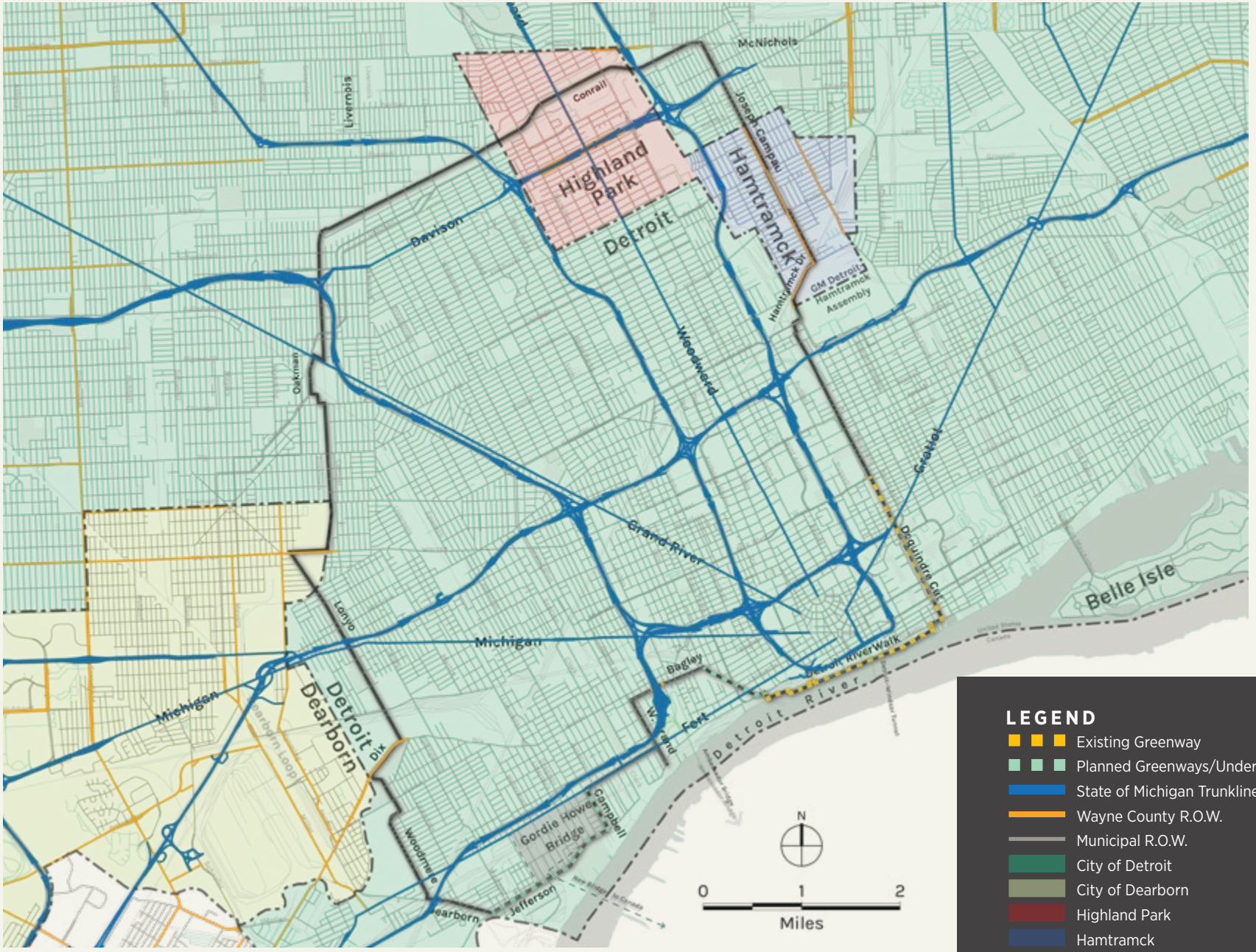
APPROVAL & PERMITTING

Project approvals and permitting requirements can be a significant driver in the planning for implementation, scheduling and ultimately the success of the greenway.

The 27.5-mile Joe Louis Greenway extends through four municipal boundaries, as well as Wayne county and MDOT rights-of-way. Construction of the greenway will require coordinating many approvals and permits for project implementation. The following section identifies many of the jurisdictional approvals and permits required, as well as their anticipated timing, fees and relevant notes. The information is organized starting with approvals at the federal level, then steps down to the state level, county, municipal and finally approvals through non-governmental agencies.

The corridor traverses through an urban environment, including segments that are on-street, on-street adjacent, or otherwise cross into or over the public right-of-way (ROW). While the ROW may fall within the limits of a city, it may actually fall into either the state or county's jurisdiction. The map to the right identifies the ROWs within the study area. In the following pages, maps were created for each jurisdictional department and include the ROWs shown here.





LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- State of Michigan Trunkline R.O.W.
- Wayne County R.O.W.
- Municipal R.O.W.
- City of Detroit
- City of Dearborn
- Highland Park
- Hamtramck

U.S. FEDERAL PERMITS & APPROVALS

LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- Federal—FHWA (Proposed non-motorized greenway bridges over Interstate 96)

U.S. FEDERAL JURISDICTIONAL AREAS

FEDERAL HIGHWAY ADMINISTRATION (FHWA) APPROVALS

The following Federal departments and reviews will be necessary as part of the Joe Louis Greenway planning and design process:

- Office of Infrastructure
- Office of Planning, Environment and Realty (HEP)
- Environmental Review per National Environmental Policy Act (NEPA), potential impacts are currently unknown

FEDERAL PERMITS AND APPROVALS

FEDERAL HIGHWAY ADMINISTRATION (FHWA)
U.S. DEPARTMENT OF TRANSPORTATION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	COSTS	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES
Office of Infrastructure New Joe Louis Greenway Pedestrian and Bike Bridge crossing I-96 Close coordination with MDOT is also required. MDOT will facilitate coordination with FHWA regarding review and approval for new greenway crossing over I-96.	Varies	Varies		Bridge design and layout must be in accordance with AASHTO LRFD Bridge Design Specifications. MDOT assigns staff from Bridge Design to assist in reviews.
Office of Planning, Environment and Realty (HEP) Environmental protection and enhancement, comprehensive intermodal and multi-modal transportation planning and for fair and prudent acquisition and management of real property.	Varies	Varies		
Environmental Review per National Envrionmental Policy Act (NEPA) Triggered on projects using Federal funding and can include coordination with multiple State and Federal agencies.	Varies	Varies	When plans are sufficiently complete to conduct impact evaluation	Level of documentation and time required to complete NEPA studies depends on potential level of impact. MDOT and FHWA are responsible for determination.

STATE OF MICHIGAN PERMITS & APPROVALS

LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- State - MDOT
- State - EGLE
- State - Office of Rail

STATE OF MICHIGAN JURISDICTIONAL AREAS

STATE OF MICHIGAN PERMITS & APPROVALS

MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT)		ENVIRONMENT, GREAT LAKES AND ENERGY (EGLE)
Right-of-Way Construction Permits	**Office of Rail Approval**	**Remediation & Redevelopment Division Approval**
Infrastructure Permits Vegetation & Drainage Control Permits Government Permit	Notification of Proposed Project Involving a Public Railroad Crossing	Due Care Plan

VEGETATION & DRAINAGE CONTROL PERMITS

RIGHT-OF-WAY CONSTRUCTION PERMITS

MICHIGAN DEPARTMENT OF TRANSPORTATION
DEVELOPMENT SERVICES DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Adopt-a-Landscape (Planting, Mowing and Aesthetic Enhancements)	Metro Region, Detroit TSC (Transportation Service Center) Twyla Chinn-Lee: 313.967.5214	No fees for municipalities and no requirements for for bonds or insurance in most cases (City of Detroit has a resolution in place with MDOT each year) In all instances, a Maintenance Agreement is required	4-6 weeks	Submit Framework Plan to Stacie and Greg and request a Project Introduction/ Pre-App meeting ASAP (they prefer using MS Teams). They will provide guidance and discuss options available. Submit Final Construction Documents with permit application	Typically one permit per trunkline (R.O.W.) impact, however, because this is a large project the Lansing office may allow for one permit for the entire greenway, TBD.	Act 200 of 1969 (Driveway, Banner and Parade Act), Administrative Rules regulating Driveways, Banners and Parades, Act 368 of 1925 (Encroachment Act) and Act 106 of 1972 (Highway Advertising Act)
Drainage Design	Metro Region, Detroit TSC (Transportation Service Center) Stacie Percell: 313.643.0852, percells@michigan.gov Greg Perkowski: 313.967.5434, perkowskig@michigan.gov					
Grading in State Highway Right-of-Way - Earthen Berms - Cuts & Fills, Slope Stabilization and Turf Establishment						
Vegetation Trimming & Removal						
Use of Pesticides/Herbicides						

INFRASTRUCTURE PERMITS
RIGHT-OF-WAY CONSTRUCTION PERMITS

MICHIGAN DEPARTMENT OF TRANSPORTATION
DEVELOPMENT SERVICES DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Structures, Tunnels and Bridges Note: There is not a current process and policy for the design, review and approval process for new bridges that are *not* owned and constructed by MDOT. Close coordination with MDOT is required. Review and approval by FHWA is required for crossing over I-96, and the process is to be confirmed by MDOT.	MDOT Structures, Tunnels and Bridges Contacts: • Olukayode Adefeso • Steve Minton • Christal Larkins • Andrea Wilcox • Rita Screws • Greg Perkowski	No fees for municipalities and no requirements for bonds or insurance in most cases (City of Detroit has a resolution in place with MDOT each year) In all instances, a Maintenance Agreement is required	4-6 weeks, including FHWA review when required	Integrated with Design Process	**New I-96 Pedestrian & Bike Bridge** Bridge design and layout must be in accordance with AASHTO LRFD Bridge Design Specifications. MDOT assigns staff from Bridge Design to assist with reviews. Bridge will be owned MDOT - responsible for structural maintenance and compliance with the NBIS. Not considered a "trunkline bridge," will be classified in bridge inventory as an "over structure," meaning a structure over interstate. Decorative features are the responsibility of the City	Act 200 of 1969 (Driveway, Banner and Parade Act), Administrative Rules regulating Driveways, Banners and Parades, Act 368 of 1925 (Encroachment Act) and Act 106 of 1972 (Highway Advertising Act)
Structures: on-premise signs, non-motorized paths, bus shelters, landscape, wind turbine, solar panels, electrical charging stations				Integrated with Design Process	Must meet Gateway Design Guidelines	
Disposal of Earth Excavation Material or Contractor's Plant Sites • To dispose of earth excavation materials or place a plant site within the state highway right-of-way. • A contractor's disposal or storage site outside the project limits requires a permit.	Metro Region, Detroit TSC (Transportation Service Center) Stacie Percell: 313.643.0852, percells@michigan.gov Greg Perkowski: 313.967.5434, perkowskig@michigan.gov			Submit Framework Plan to Stacie and Greg and request a Project Introduction/ Pre-App meeting ASAP. They will provide guidance and discuss options available. Submit Final Construction Documents with permit application	Typically one permit per trunkline (R.O.W.) impact, however, because this is a large project the Lansing office may allow for one permit for the entire greenway, TBD.	
Facility Crossing at Local Road Intersection For a private utility facility crossing a state highway ROW at an intersection with a roadway under the jurisdiction of a local governmental agency						
Street Lights: decorative and industrial						
Utilities: municipal, public or private utility						

GOVERNMENT PERMITS
RIGHT-OF-WAY CONSTRUCTION PERMITS

MICHIGAN DEPARTMENT OF TRANSPORTATION
DEVELOPMENT SERVICES DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Local Government Agency Projects Traffic Control Signs, Road and Bridge Reconstruction	Metro Region, Detroit TSC (Transportation Service Center) Stacie Percell: 313.643.0852, percells@michigan.gov Greg Perkowski: 313.967.5434, perkowskig@michigan.gov	No fees for municipalities and no requirements for for bonds or insurance in most cases (City of Detroit has a resolution in place with MDOT each year) In all instances, a Maintenance Agreement is required	4-6 weeks	Submit Framework Plan to Stacie and Greg and request a Project Introduction/ Pre-App meeting ASAP. They will provide guidance and discuss options available. Submit Final Construction Documents with permit application.	Typically one permit per trunkline (R.O.W.) impact. However, due to scale of project, the Lansing office may allow for one permit for the entire greenway.	Act 200 of 1969 (Driveway, Banner and Parade Act), Administrative Rules regulating Driveways, Banners and Parades, Act 368 of 1925 (Encroachment Act) and Act 106 of 1972 (Highway Advertising Act)
Government Signing - Placement of permanent non-traffic regulating signs						
Environmental Permits: - Environmental Clean-up - Monitor Well Installations - Soil Boring and Soil Testing - Remediation Clean-ups						

RAILROAD CROSSING & BRIDGE APPROVALS

MICHIGAN DEPARTMENT OF TRANSPORTATION
OFFICE OF RAIL

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Public Railroad Crossing Notification: New public rail crossings and public rail crossing improvements	Submitted to the MDOT Office of Rail	No Fee Required	3-6 months to schedule review; +/- 3 months for final documentation.	As soon as concept is developed and it is clear the proposed crossing is going into design/ implementation.	Following application for review, MDOT will schedule a Diagnostic Safety Team Review (DSTR) with the Office of Rail and the associated rail company. MDOT will document agreed upon improvements and issue as a formal order.	Notification of Proposed Project Involving a Public Railroad Crossing (Form 1425)
Railroad bridges over MDOT Right-of-Ways	Michigan Railroad Association	TBD	TBD	Integrated with Design Process	Lodge (M-10) Railroad Bridge and Woodward (M-1) Railroad Bridge • Bridge ownership, inspections, & maintenance are the responsibility of the City of Detroit • Coordinate with MDOT for all railroad bridges over MDOT R.O.W.	

SITE REMEDIATION APPROVALS

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Response Activity Plan (ResAP) & Due Care Plan Owners and operators of contaminated property are required to take action to ensure site contamination does not cause unacceptable exposure and impact is not exacerbated or worsened. Approval from the state to: • Mitigate problems and show no exacerbation (don't cause contaminants to leave the site) • Demonstrate means around infiltration • Show risks and safety measures for any receptors (workers, visitors)	Remediation & Redevelopment + Due Care Specialist (Warren, MI) Jeanne Schlaufman 586.753.3823 schlaufmanj1@michigan.gov SE Michigan Remediation & Redevelopment Division Brandon Alger 586.623.2839 algerb@michigan.gov	TBD	6-12 months	Integrated with Design Process	Environmental Response Actions for Conrail Right-of-Way, required per the MDNR grant	Part 201 of Michigan's Natural Resources and Environmental Protection Act (Part 201)
	Due Care Specialist (Warren, MI): Jeanne Schlaufman, 586.753.3823, SchlaufmanJ1@michigan.gov	TBD	Only required if requested by EGLE	Integrated with Design Process	To be completed for private parcels that are **not** Conrail R.O.W., per MDNR grant requirements	Part 201 of Michigan's Natural Resources and Environmental Protection Act (Part 201)

Source: Unsplash

WAYNE COUNTY PERMITS & APPROVALS

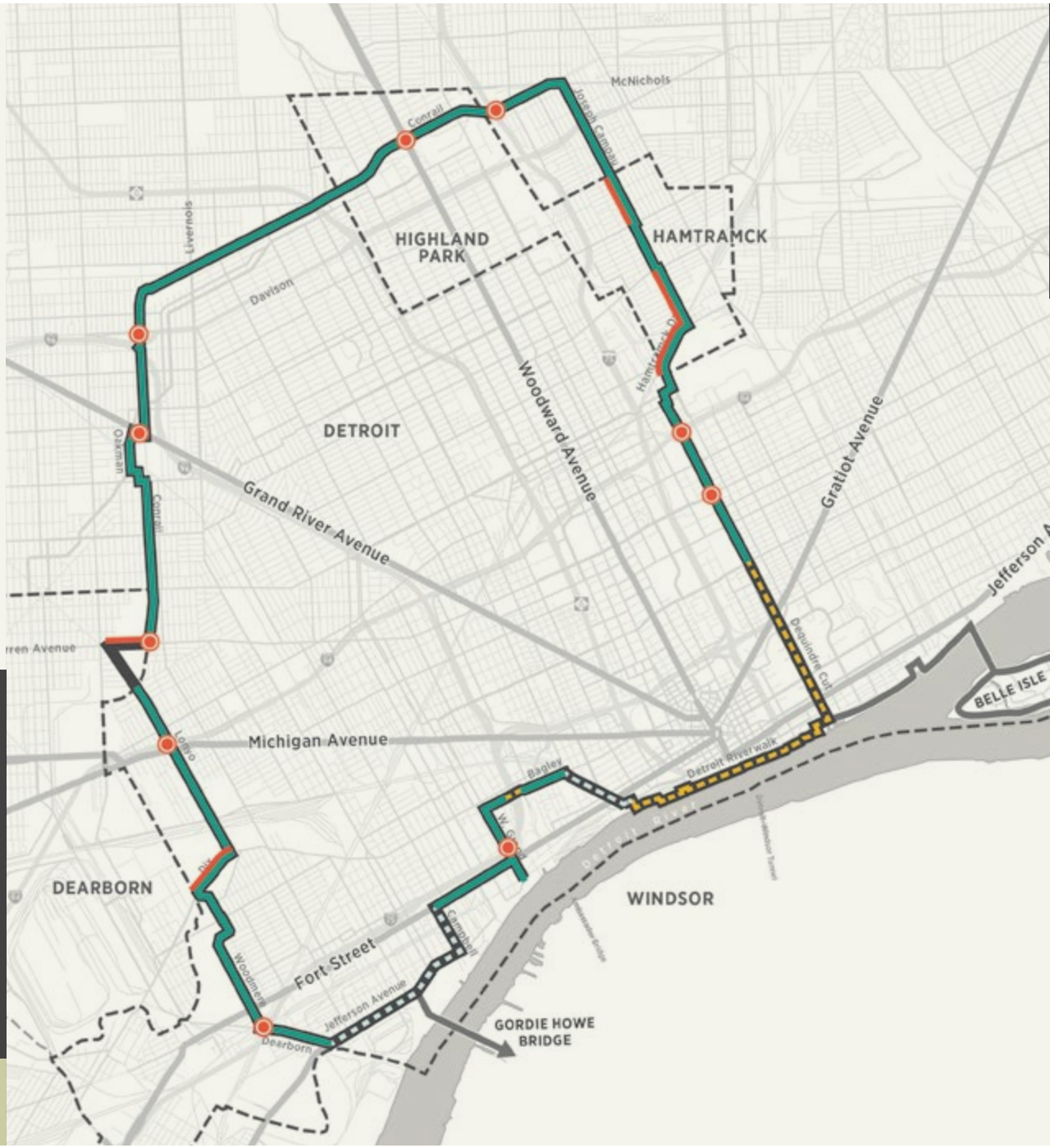
LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- Public Services Group ROW
- Environmental Services Group (SESC permit required)

NOTE

Stormwater plans in or adjacent to County R.O.W. are to be submitted to the County for review and coordination.

WAYNE COUNTY JURISDICTIONAL AREAS



WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES

Public Services Group (PSG)
Wayne County Construction Permits
Environmental Services Group (ESG)

- Soil Erosion and Sedimentation Control Permit (through Land Resource Management Division)
- Wayne County Construction Permit—Review for compliance with County Storm Water Management Standards (through Engineering Services Unit and coordinated with PSG)

WAYNE COUNTY CONSTRUCTION PERMIT
CONSTRUCTION PERMIT OFFICE

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
PUBLIC SERVICES GROUP, ENGINEERING DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Driveway or private road approach Construct, reconstruct, relocate, replace, widen, surface, or resurface	Wayne County Department of Public Services (DPS), Public Services Group (PSG), Engineering Division, Construction Permit Office	**Plan Review Costs**—refer to the Departments "Permit Plan Review Cost Schedule." Any remaining uncharged amount will be applied to permit fee and inspection deposit. **Permit Fee**—a non refundable fee; $125 for plan review of 8 hours or less; $175 for plan review greater than 8 hours. **Inspection Deposit—**cash deposit; calculated based on the size and scope of the project. The deposit is refundable less any inspection costs incurred by Wayne County. **Bond**—cash deposit to guarantee performance under conditions of the permit. Calculated based on the size and scope of the project. Refundable less any expenses or damages incurred by Wayne County due to the permitted construction work.	45-60 days from submission; large or complex projects may require more time	Final Construction Documents	Improvements within Wayne County Road Right-of-Way (McNichols & Hamtramck Drive)	2008 Wayne Co Rules, Specifications, & Procedures for Construction Permits (Permit Manual); Admin Rule Res No. 2008-596
Right-of-Way (ROW) Operate, use, or maintain a driveway or road connecting to public road or ROW						
Road Construct, reconstruct, relocate, replace, widen, surface, or resurface						
Utilities Install, maintain or connect any surface-level, underground or overhead public or private utility, pipeline, wire, conduit, sewer, or associated appurtenance						
Amenities Erect/suspend a banner, decoration or similar object						
Event Road Closure Close a section of a County road to normal traffic for the purpose of staging a parade, marathon, festival, demonstration or similar activity						
Pathways and Trails Install, repair or maintain a non-motorized pathway						

WAYNE COUNTY CONSTRUCTION PERMIT
CONSTRUCTION PERMIT OFFICE

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
PUBLIC SERVICES GROUP, ENGINEERING DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Landscape Maintenance Conduct grading, snow removal, tree trimming or tree removal	Wayne County Department of Public Services (DPS), Public Services Group (PSG), Engineering Division, Construction Permit Office	**Plan Review Costs**—refer to the Departments "Permit Plan Review Cost Schedule." Any remaining uncharged amount will be applied to permit fee and inspection deposit. **Permit Fee**—a non refundable fee; $125 for plan review of 8 hours or less; $175 for plan review greater than 8 hours. **Inspection Deposit**—cash deposit; calculated based on the size and scope of the project. The deposit is refundable less any inspection costs incurred by Wayne County. **Bond—**cash deposit to guarantee performance under conditions of the permit. Calculated based on the size and scope of the project. Refundable less any expenses or damages incurred by Wayne County due to the permitted construction work.	45-60 days from submission; large or complex projects may require more time	Final Construction Documents	Improvements within Wayne County Road Right-of-Way (McNichols & Hamtramck Drive)	2008 Wayne Co Rules, Specifications, & Procedures for Construction Permits (Permit Manual); Admin Rule Res No. 2008-596
Landscape Installation Install or maintain landscaping including berms, plantings, lights, signs, entrance markers or other decorative facilities						
Earthwork Any other activity which requires excavation within the County right-of-way or County drain easement, working from the right-of-way to reach abutting property or disruption of normal traffic operations or patterns						
Adjacent Land Use Change Change the manner of use of a property abutting a County-owned right-of-way (e.g., change from residential to commercial use or in commercial use density), or property improvements that impact the road geometries, traffic volumes or driveways.						
Drainage / Stormwater Applies to County R.O.W only. Construction activity that impacts storm water runoff into or around new or existing road rights-of-way, in or around County drains, or property owned by the County. Refer to the Wayne County Storm Water Management Program for information concerning the County's Storm Water Management Regulations.	Coordinated review with Wayne County Environmental Services Group, Engineering Services Unit	Submit a check for $1,000 with 4 hardcopy sets of plans, and an application. The applicant and name/company on the check must match.		90% Construction Documents	Wayne County Storm Water Management Ordinance is applicable in/ under all conditions except the discharge point is a combined sanitary and storm water sewer. The county requested to see all plans to make a final determination since the greenway encompasses so many different areas.	

County worker repave a road in Detroit
Source: Wayne County

STORMWATER MANAGEMENT
ENGINEERING SERVICES UNIT

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENVIRONMENTAL SERVICES GROUP

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Projects requiring permits or approvals from other County programs Work within County ROW or impacting County road drainage facility, drain or properties such as parks	Coordinated review with PSG, Engineering Unit; must comply with the Wayne County Storm Water Management Standards	In addition to construction permit application costs, there may be additional inspection fees, depending on the complexity of the project.	45-60 days from submission; large or complex projects may require more time	Included as part of Wayne Co. Construction Permit; Final Construction Documents	Projects requiring a Storm Water Management System must include: 1. Long Term Maintenance Plan 2. Maintenance Permit (See Chapter 9 and Appendix C)	Storm Water Management Ordinance No. 2006-1114A; Administrative Rule Resolution No. 2006-1114B
Subdivisions, multi-unit residential developments, manufactured and mobile home parks Storm water management for platted subdivisions, multi-unit developments, manufactured and mobile home parks						
Land that may impact water in County certificate of coverage Construction within the County's certificate of coverage						
Projects requiring SESC permit Any earth disturbance over one acre in size and/or within 500 feet of State water, (lake, stream, wetland, drain) within Wayne County. Permit must be issued before earthwork can begin.						

WAYNE COUNTY SESC PERMIT

CONSTRUCTION PERMIT OFFICE

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES

ENVIRONMENTAL SERVICES GROUP, SOIL EROSION & SEDIMENTATION CONTROL

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Soil Erosion and Sediment Control (SESC) Permit: Any earth change/disturbance over one (1) acre AND/OR within 500 feet of a water of the state, (lake, stream, wetland, drain) County. All land in Wayne County, except municipalities with their own SESC ordinances and programs approved by EGLE. As of June 2015, Dearborn is on of these municipalities.	Wayne County Department of Public Services (DPS), Environmental Services Group (ESG), Land Resource Management, Soil Erosion & Sedimentation Control	**Total Fee:** $1,935 (minimum) **Plan Review Fee**: $75 per acre, $40 per acre over 10 acres, $30 per acre over 40 acres **Permit & Inspection Fee**: $360 per acre, $150 per acre over 10 acres, $100 per acre over 40 acres **Performance Deposit / Bond**: $1500 per acre	Application and materials must be submitted at least 30 days prior to construction start-up	Following Construction Bidding	1. Soil Erosion Control Plans will be part of the Construction Documents. 2. Contractor responsible to obtain permit. 3. Permit is valid for 2 years, renewal application and fee is available if required. 4. County drains and wetlands regulated under Parts 301 and 303 of NREPA are considered waters of the state. 5. SESC permit must be issued before any earthwork can begin	SESC Program enforces P.A. 451, Part 91 SESC of the NREPA & Wayne County SESC Ordinance No. 2001-759

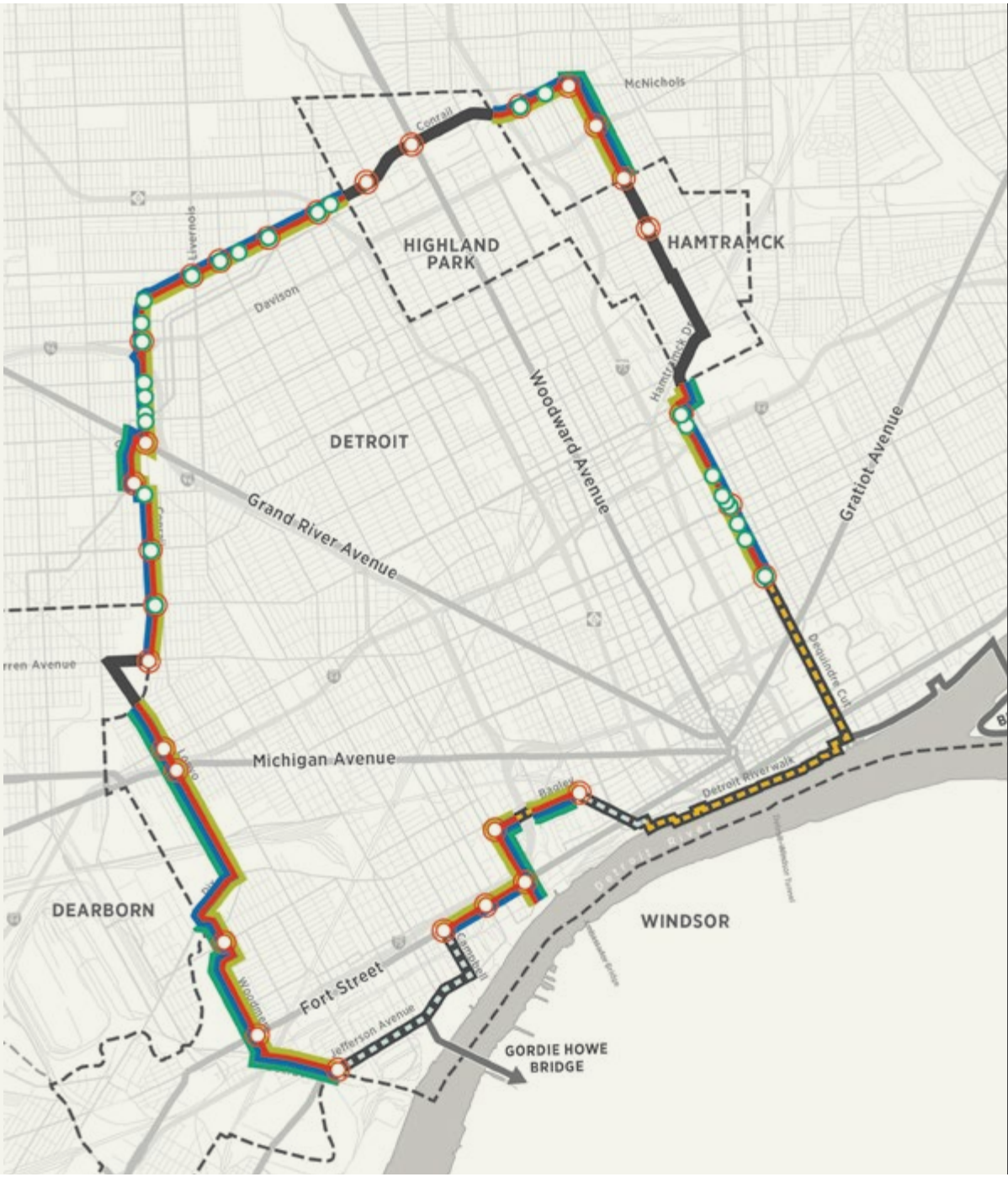
Source: Wayne County

CITY OF DETROIT PERMITS & APPROVALS

LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- Site Plant Review (PDD, BSEED, Fire Dept.)
- Buildings, Safety Engineering and Environmental Department (BSEED)
- Department of Public Works (DPW)
- Detroit Water and Sewerage Department (DWSD)
- Detroit Department of Transportation (bus stops)

CITY OF DETROIT JURISDICTIONAL AREAS



CITY OF DETROIT PERMITS & APPROVALS

Planning & Development Department (PDD) and Buildings, Safety Engineering, & Environmental (BSEED)—site plan & design review

- Site Plan Approval
- BSEED Plan review approval
- Construction Permits
- Right of Entry (ROE) and Right of Way (ROE ROW) Permits

Department of Public Works (DPW) Permit

- Right of Way Construction Permit

Detroit Water and Sewerage Department (DWSD)

- Individual Department Approval (Department review and approvals are primarily coordinated through Site Plan and Plan Review)

Detroit Department of Transportation (DDOT)

- Individual Department Review and Approval

Detroit Fire Department (DFD)

- Individual Department Approval (Department review and approvals are primarily coordinated through Site Plan and Plan Review)

BUILDINGS, SAFETY, ENGINEERING & ENVIRONMENTAL DEPARTMENT (BSEED) & PLANNING & DEVELOPMENT DEPARTMENT (PDD)

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Site Plan Approval: Includes Preliminary Plan Review (PPR) and CPR. Required for all site improvements, process to verify compliance with codes and ordinances.	Coordinated through Buildings, Safety Engineering and Environmental Department (BSEED) and Planning and Development Department (PDD) and may include: - Office of Zoning Innovation - Traffic Engineering - City Engineering - Planning & Development (+Historic) - Stormwater Management Group - City Planning Commission - Mayor's Office - Environmental Affairs - Health Dept. - Housing & Revitalization - Assessor's Office - DEGC - DLBA - Detroit People Mover - DTE - Other entities relevant to your project	$160	30-60 days	Final Construction Documents	Improvements within Wayne County Road Right-of-Way (McNichols & Hamtramck Drive)	Verification of compliance to City of Detroit Zoning Ordinance, Michigan Building Code, Michigan Residential Code, Michigan Rehabilitation Code, Michigan Electrical Code, Michigan Mechanical Code, Michigan Plumbing Code, International Fuel Gas Code, City Elevator Code and Boiler Code
Preliminary Plan Review (PPR): This optional meeting is available to discuss an idea for a project and to clarify next steps & information specific to the project, including: Ordinance interpretation/zoning requirements; processes Site Plan Review, Special Land Use hearings, Board of Zoning Appeals, Plan Review; and create connections to other departments you may need to work with. The City will provide meeting notes, comments and the contact information for a Project Manager to assist in the process		No cost	Meeting, no review required	Completion of the Framework Plan (Conceptual Design)	The first review meeting is held in conjunction with the Buildings & Safety Engineering department as part of the preliminary plan review.	
Concept Plan Review / Design Review (CPR) This review is required for projects which involve acquisition of City-owned land and/or public funds. The PPR meeting will serve as your first CPR. Follow up meetings, if needed, will be scheduled with PDD. PDD approval is required prior to permit issuance.		No cost	Meeting, no review required	Completion of the Framework Plan (Conceptual Design)	The first review meeting is held in conjunction with the Buildings & Safety Engineering department as part of the preliminary plan review.	Chapter 50 - Zoning, Section 50-3-201 Concept Plan Review Sec. 61-3-171.

BSEED

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Building Permit		**Permit Fee**—based on project cost (design and construction cost) estimated using the square foot cost table, attached to Fee Schedule	"The permit process can take up to 20 calendar days. The biggest determinants of processing time are the quality and completeness of the application by the time it reaches the Cycle 1 review (initial review)." - from BSEED FAQs	Final Construction Documents		
Demolition Permit		**Refer to Fee Schedule** - Section E: Wrecking or Demolition costs for each building or structure				
Historic District Commission Project Review Projects located within local historic districts require review and approval for many changes, Joe Louis Greenway elements include: Fence, Paving, Walls, Landscaping Installation/Removal (included as part of Building Permit Application) Demolition Sign Installation / Replacement	Historic District Commission	No cost			The Plan Review Application can be completed online	Ordinance 161-H Per Resolution 98:02, Adopted 3-11-98, Effective 6-1-98, Amended 11-14-01
Electrical Permit Construction of new or modification to existing electrical supply, including area lights, site lighting, illuminated signs	BSEED	**Processing Fee** - $50 **Plan Review Fee** - 4% of Bldg Permit Fee; Min. $35, Max $5,000 **Permit Fee—**varies, refer to application for specific rates **Inspections** - varies, refer to application for specific rates				

BSEED

CITY OF DETROIT
PLAN REVIEW DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES
Plumbing Permit All connections within property limits (outside of public R.O.W.) 1. Plumbing (buildings, water distribution, irrigation) 2. Sewer (water service, sanitary, storm, combined) 3. Sewer Taps (taps, pavement restoration)	Plumbing Department	**Processing Fee**—$50 **Plan Review Fee**—4% of Bldg Permit Fee; Min. $35, Max $3,000 **Permit Fee**—varies, refer to application for specific rates **Inspections**—varies, refer to application for specific rates	"The permit process can take up to 20 calendar days. The biggest determinants of processing time are the quality and completeness of the application by the time it reaches the Cycle 1 review (initial review)." - from BSEED FAQs	Final Construction Documents	Required for the proposed Pavilion Building at the Warren Major Access Point and other pavilions (buildings); to be confirmed for Grand River and Woodward Avenues
Right of Entry (ROE) Either City owned parcel, or City Right of Way (ROE/ROW). These permits are required to access city-owned parcels and the ROW to perform site activities (notably for any environmental or geotechnical activities). These documents are for the consultant who will be conducting the on-site work.	Environmental Affairs	**Processing Fee:** $200 **Draft/Final Report Retainer**: $150, refundable after completing the report and submitting a refund request application **Inspections**: $75 There is a flat fee for the first 10 parcels per ROE for parcels within the Project Boundaries	1–2 weeks	Prior to needing access to City owned land, including data collection activities	An ROE for the ROW is different than the ROW permit required by City Engineering (which is to perform work, not just access and data collection) Right of Entry Review Checklist Permit Engineering Request
Sign Permit Installation of any permanent sign, including installation on the ground, on a pole, on a building or other.	N/A	TBD	Up to 20 calendar days	Final Construction Documents	

DEPARTMENT OF PUBLIC WORKS

CITY OF DETROIT
CITY ENGINEERING DIVISION

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Right of Way (ROW) Permit **(a.k.a. "open-cut" permit)** Construction activities within a street, alley, sidewalk, R.O.W., berm or green area, including: Concrete Flat Work Soil Boring and Monitoring Wells Curb cuts and drive approaches Oversize and Overweight Load Move - Traffic Control	In coordination with: - Public Lighting Department (PLD) - Traffic Engineering Division (TED) - Detroit Water and Sewerage Department (DWSD) - BSEED, including soil boring and monitoring wells	Contractor: $400/day Monday–Friday; Saturday: 1.5x; Sunday: 2x Plan Review: $500/day	3–4 weeks	Depends on activity (i.e. soil borings occur in Pre-Design phase; concrete flatwork occurs at Final Construction Documents)	Permit is obtained by the contractor. The contractor must have a $2,500.00 Surety Bond from their insurance company or a bonding company	Code Section 50, Article 3

DETROIT WATER AND SEWERAGE DEPARTMENT

CITY OF DETROIT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES
Detroit Water & Sewerage Department (DWSD) Stormwater Management & Drainage Charge / Sewer Permit / Fire Hydrants - Sewer or water taps, or other plumbing connections in the R.O.W.	Detroit Water & Sewerage Department (DWSD), Stormwater Management Group	$660/ sewer tap (stormwater, sanitary, or combined), If sewers are greater than 15' deep it doubles to $1320. $660/ water supply tap of 1" pipe, fee increases with larger tap.	TBD: email plans to engineering department, an engineer will be assigned	Final Construction Documents	DWSD approval through the BSEED review process for a building permit is required prior to applying for a DWSD Permit

DEPARTMENT OF TRANSPORTATION

CITY OF DETROIT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Detroit Department of Transportation Detroit Bus System Coordinate Bus Route and Bus Stop modifications	N/A	TBD	TBD	Integrated with Design Process	The Plan Review Application can be completed online	Ordinance 161-H Per Resolution 98:02, Adopted 3-11-98, Effective 6-1-98, Amended 11-14-01

DETROIT FIRE DEPARTMENT

CITY OF DETROIT
PLANS AND EXAMS

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	NOTES	REGULATIONS
Detroit Fire Department Review for compliance with all national, state and city codes/standards. Services pertaining to this project include: • Civil/Site plan layout for new development • Pre-plan and pre-construction consultation • Code variance requests • Municipal water tap approvals	The section works closely with the Building Safety Engineering and Environmental Department (BSEED), Planning and Development Department (PDD), Detroit Water and Sewage (DWSD), Health Department	TBD	TBD	Coordinated through the Site Plan Review process and Building Permit Application		A permit that is required by Section 1-16.16 of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 1) Fire Prevention Code shall be obtained from the Fire

CITY OF DEARBORN PERMITS & APPROVALS

This short portion of the Joe Louis Greenway lies within the City of Dearborn jurisdiction. It runs adjacent to the right-of-way, utilizing City of Dearborn-owned land and providing essential enhancements to the comfort and safety of the Lonyo segment.

ECONOMIC & COMMUNITY DEVELOPMENT APPROVAL

- Site Plan Approval

PERMIT & PLAN REVIEW OFFICE APPROVAL

- Construction Permits
- Engineering Permits—Utilities, Right of Way Entry & Restoration

SITE PLAN APPROVAL

CITY OF DEARBORN ECONOMIC AND COMMUNITY DEVELOPMENT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING
Site Plan Approval Site improvements, verification of compliance with codes and ordinances	Submit to Assistant Department Head. They will distribute to all necessary departments	**Processing Fee:** $42 **Commercial Plan Review** (for construction costs >$500.1k): $650 + 0.0003% of construction value over $500k **Commercial Construction Minimum Permit Fee** (for construction costs $2,001 – $1M): $10 per $1k construction cost + admin fee of $42 **Commercial Revised Permit:** $40 + $10 per $1k of increased construction cost	10–15 days for initial review; an in-person meeting will be scheduled if deemed necessary to advance the project	Final Construction Documents

PERMIT & PLAN REVIEW

CITY OF DEARBORN PERMIT AND PLAN REVIEW OFFICE

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Concrete Flatwork Construction of new or modification to existing sidewalk	N/A	**Total Fee:** $115 minimum **Processing Fee:** $40 **Plan Review Costs:** $50 for commercial **Permit Fee:** $0.30 per lineal feet, $25 minimum	5 days	Final Construction Documents	Code 101, Code 140, Accessibility per ICC/ANSI A117.1
Electrical Permit Construction of new or modification to existing electrical supply, including area lights, site lighting, illuminated signs	N/A	**Total Fee:** $120 minimum **Processing Fee:** $40 **Permit Fee:** varies, refer to application for specific rates. $80 minimum.	TBD		P.A. 230 of 1972, as amended
Fence Permit Construction of a fence	N/A	**Total Fee:** $125 minimum **Processing Fee:** $35 **Plan Review Fee:** $40 **Permit Fee:** $50	TBD		Ordinance
Permanent Sign Permit Installation of any permanent sign, including installation on the ground, on a pole, on a building or other.	N/A	**Total Fee:** $115 minimum **Processing Fee:** $40 **Plan Review Fee:** $50 **Permit Fee:** based on type of sign(s) and quantity, $25 min.	TBD		Ordinance, Chapter 5, Article XII
Plumbing Permit 1. Plumbing (buildings, water distribution, irrigation) 2. Sewer (water service, sanitary, storm, combined) 3. Sewer Taps (taps, pavement restoration)	1. Plumbing Division 2. Plumbing Division 3. Engineering Division	**Total Fee:** $120 minimum **Processing Fee:** $40 **Permit Fee:** based on project, $80 min.	TBD		P.A. 230 OF 1972, AS AMENDED
Soil Erosion and Sedimentation Control Earthwork, soil borings	N/A	**Total Fee:** $140 minimum **Processing Fee:** $25 **Plan Review Fee:** based on acreage, $30 for first acre, $10 each additional acre **Permit Fee:** based on acreage, $85 for first acre, $40 each additional acre	TBD		Part 91 of NREPA, 1994 PA 451, as amended, and City ordinances
Temporary Obstruction of Public Property Permit	N/A	Nothing stated on application or Permit Fee Schedule	TBD		
Tree Removal Permit Removal or relocation of any tree 16-inch DBH or greater	N/A	no fees for permit	5 days		
Engineering Permits: Utilities, Right of Way Entry & Restoration Permit Utility work (not telecommunications) including maintenance, installation, alteration or removal of equipment, materials and related items	Department of Public Works, Engineering Division	TBD - formula applied	TBD		

Source: Unsplash

CITY OF HIGHLAND PARK PERMITS & APPROVALS

CITY OF HIGHLAND PARK JURISDICTIONAL AREAS

COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT / PLANNING COMMISSION

(IN CONJUNCTION WITH ENGINEERING DEPARTMENT)

+ Site Plan Approval

BUILDING DEPARTMENT PERMITS

+ Construction Permits

WATER & SEWER DEPARTMENT

+ Water and Sewer Permits

+ Stormwater Credit or Billing Adjustment Application

ENGINEERING DEPARTMENT

+ Right of Way Permit

SITE PLAN APPROVAL

HIGHLAND PARK COMMUNITY AND ECONOMIC DEVELOPMENT DEPARTMENT & PLANNING COMMISSION & ENGINEERING DEPARTMENT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Site Plan Approval Required for site improvements	Theresa Johnson, Community Economical Development Director tjohnson@highlandparkmi.gov	**Administrative Review Fee:** $500 **Site Plan Application Fee:** $500 per application + $500 per meeting + non-residential fee of $1,200 + $50 per acre **Detailed Engineering Review Fees**: $500 meeting + non-residential fee $2,400 (plus $50 per acre) **Inspection Fee**: $600 per day (M-F), $900 per day (Sat)	TBD	Integrated with Design Process	Ordinance 1214.06 Section 2

RIGHT-OF-WAY PERMIT

HIGHLAND PARK ENGINEERING DEPARTMENT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Right-of-way Permit Required for work to be performed in the city's ROW, including: survey, utilities, traffic control, drive approaches, sidewalks, utility poles, soil borings, monitoring wells, tree impacts	Andrew Richmond, MCA, City Engineer arichmond@metroca.net	**$1,500 min.** **Administrative Fee:** $750 **ROW permit Fee:** varies by activity, $150 minimum per application **Inspection costs: M-F:** $600 per day; Sat: $900 per day **Performance bond:** 125% of traffic control and 100% of restoration costs ($1,000 minimum)	within 30 days of original submission	Final Construction Documents	Part Ten - Streets, Utilities and Public Services Code

WATER & SEWERAGE PERMITS & CREDITS

HIGHLAND PARK WATER AND SEWER DEPARTMENT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Water & Sewer Permit Water and sewer work, including taps and hydrant use	Andrew Richmond, MCA, City Engineer arichmond@metroca.net	**Permit Application Fee (Water tap, sewer tap, hydrant use):** $100 per application **Water tap fee:** $2,500 per 1" connection (cost increases with greater diameter) **Sewer tap fee:** $4,000 per 1" connection (cost increases with greater diameter) **Demo Disconnection:** $1,000 per disconnection **Hydrant daily rental fee:** $25 per day **Inspection costs:** M–F: $600 per day; Sat: $900 per day	within 30 days of original submission	Final Construction Documents	Part Ten - Streets, Utilities and Public Services Code
Stormwater Credit or Billing Adjustment Application Request an adjustment to the Stormwater Charge based on the implementation of GSI		**Current Sewer Rate Charge:** $398.10 per equivalent acre **Adjustment Application:** No Charge		Post-Construction	

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Concrete Flatwork Construction of new or modification to existing sidewalk	Andrew Richmond, MCA, City Engineer arichmond@metroca.net	**Total Fee:** $140 (minimum) **Administrative/Processing Fee:** $50 **Flatwork Form Inspection:** $75 per inspection **Right-of-Way Form Inspection:** $75 per inspection **Right-of-Way Restoration Inspection:** $75 per inspection **Contractor Registration Fee:** $15	TBD	Final Construction Documents	Part Ten - Streets, Utilities and Public Services Code, Title Two, Chap. 1022
Building Demolition Use Building Permit (Frank Haywood uses this for his review)	Frank Haywood, Building Official Role: reviews all building related permits and trades C: 248.918.7556	**Administrative Fee:** $50 **Non-residential Fee:** $100 **Demolition Fee:** $.07 per square foot	TBD		Part Twelve - Planning and Zoning Code, Title Eight
Electrical Permit Construction of new or modification to existing electrical supply, including area lights, site lighting, illuminated signs		**Total Fee:** $290 (minimum) **Administrative/Processing Fee:** $50 **Temporary or Permanent Service:** $75 **Inspections:** $75 each, two min. (underground, rough and final) **Contractor Registration Fee:** $15	TBD		Part Fourteen - Building and Housing Code, Title Two, Chap. 1428
Fence Permit Construction of a fence		**Total Fee:** $150 (minimum) **Administrative/Processing Fee:** $50 **Industrial/Commercial:** $50 first 100 feet, $100 each additional 100 feet **Contractor Registration Fee:** $50	TBD		Part Fourteen - Building and Housing Code, Title Six, Chap. 1460
Plumbing Permit Water or sewer leads (storm or sanitary), gate wells or structures		**Total Fee:** $250 (minimum) **Administrative/Processing Fee:** $50 **Water or Sewer Leads (storm or sanitary), Gate wells or structures:** $75 each **Inspections:** $75 each, two min. (underground, rough and final) **Contractor Registration Fee:** $15	TBD		Part Ten - Streets, Utilities and Public Services Code; Part Fourteen - Building and Housing Code, Title Two
Permanent Sign Permit Installation of any permanent sign, including installation on the ground, on a pole, on a building or other.		**Total Fee:** $200 (minimum) **Administrative/Processing Fee:** $50 **Permit Fee:** $100 minimum (based on sign type and quantity) **Contractor Registration Fee:** $50	TBD		
Planting Permit	Planting of any vegetation except grass in Public ROW or property requires a permit (submit written request) from the Superintendent of Parks and Boulevards				Part Ten - Streets, Utilities and Public Services Code, Title Two, Chap. 1026
Tree Trimming or Removal	All trimming and spraying to be done by Superintendent of Parks & Boulevards; tree removal requires Council approval and supervision of the Superintendent				

CITY OF HAMTRAMCK PERMITS & APPROVALS

LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- Community & Economic Development Department / Planning Commission
- Building Department
- Water & Sewer Department
- Engineering Review

CITY OF HAMTRAMCK JURISDICTIONAL AREAS

COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT

+ Site Plan Approval

ENGINEERING REVIEW

+ Engineering Permits - Utilities, Right of Way Entry & Restoration

BUILDING DEPARTMENT PERMITS

+ Construction Permits

+ Water and Sewer Permits

Source: Unsplash

PLAN REVIEW & APPROVALS

HAMTRAMCK COMMUNITY AND ECONOMIC DEVELOPMENT (CED) DEPARTMENT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Conceptual Review Meeting Optional meeting to discuss an idea for a project and to clarify next steps & information specific to the project, including: Ordinance interpretation/zoning requirements; processes	Building Department	No cost	Meeting, no review required	Completion of the Framework Plan (Conceptual Design)	Part Ten - Streets, Utilities and Public Services Code
Site Plan Approval Site improvements	Building Department	**CED Administrative Review Fee, Preliminary & Final Approval:** $300 each **CED Combined Site Plan Approval:** $400 **CED Planning Consultant Fees (if required):** $ 100% billed to applicant **Building Department Plan Review:** 0.005 x construction cost, minimum $250, max $5,000		Integrated with Design Process	

ENGINEERING REVIEW

HAMTRAMCK COMMUNITY AND ECONOMIC DEVELOPMENT (CED) DEPARTMENT

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT or REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING
Temporary Obstruction of Public Property Permit Anticipated for work to be performed in the city's R.O.W.	Troy Nuccio, P.E. Hennessey Engineers tjnuccio@hengineers.com 734.341.3137	Based on the submitted plans and estimated project costs.	2 weeks	Final Construction Documents
Tree Removal Permit: Required to remove or relocate trees in ROW				
Engineering Permits: Utilities, Right of Way Entry & Restoration Permit				
ROW & Restoration Permit				

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	SUBMITTAL TIMING	REGULATIONS
Concrete Permit Construction of new or modification to existing sidewalk	Building Department	**Total Fee:** $140 (minimum) **Administrative/Processing Fee:** $50 **Flatwork Form Inspection:** $75 per inspection **Right-of-Way Form Inspection:** $75 per inspection **Right-of-Way Restoration Inspection:** $75 per inspection **Contractor Registration Fee:** $15	Final Construction Documents	
Building Demolition Use Building Permit	Building Department	**Administrative Fee:** $50 **Non-residential Fee:** $100 non-residential fee **Area Fee:** $0.07 per square foot	Final Construction Documents	
Electrical Permit Construction of new or modification to existing electrical supply, including area lights, site lighting, illuminated signs	Building Department	**Total Fee:** $290 (minimum) **Administrative/Processing Fee:** $50 **Temporary or Permanent Service:** $75 **Inspections:** $75 each, two min. (underground, rough and final) **Contractor Registration Fee:** $15	Final Construction Documents	
Fence Permit Construction of a fence	Building Department	**Total Fee:** $115 (minimum) **Administrative/Processing Fee:** $50 **Industrial/Commercial:** $50 first 100 feet, $100 each additional 100 feet **Contractor Registration Fee:** $15	Final Construction Documents	
Plumbing Permit Water or sewer leads (storm or sanitary), gate wells or structures	Building Department	**Total Fee:**$250 (minimum) **Administrative/Processing Fee:** $50 **Water or Sewer Leads (storm or sanitary), Gate Wells or Structures:** $75 each **Inspections:** $75 each, two minimum (underground, rough and final) **Contractor Registration Fee:** $15	Final Construction Documents	
Permanent Sign Permit Installation of any permanent sign, including installation on the ground, on a pole, building or other structure.	Building Department	**Total Fee:** $200 (minimum) **Administrative/Processing Fee:** $50 **Permit Fee:** based on type of sign(s) and quantity, $100 min. **Contractor Registration Fee:** $50	Final Construction Documents	Ordinance Number 2018-002
Water & Sewer Permit Water and sewer work, including taps and hydrant use	Building Department	**Permit Application Fee:** $50 per application (water tap, sewer tap, hydrant use) **Storm or Sanitary Sewer Lead:** $75 **Water Services:** $75 **Structures:** $75 each **Inspections:** $75 each, two minimum (underground, rough and final)	Final Construction Documents	Part Ten - Streets, Utilities and Public Services Code, Title Four

RAILROAD COMPANY APPROVALS

LEGEND

- Existing Greenway
- Planned Greenways/Under Construction
- Off-Street Crossing
- On-Street Crossing
- On-Street Crossing to be coordinated by Gordie Howe International Bridge

RAILROAD COMPANY JURISDICTIONAL AREAS

RAILROAD COMPANY COORDINATION & APPROVAL IMPACTS IN A RAILROAD RIGHT OF WAY

RAILROAD COMPANY APPROVAL

RAILROAD COMPANIES

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	NOTES
Railroad Company Approval Impacts in a railroad right-of-way, coordinate with individual Railroad Company	Railroad consultants	Varies, typically based on project scope and cost	3 months to 1 year	Rail companies typically have their own consultant handle permitting and construction within their ROW. They can provide contact information depending on the action proposed. They may also have specific insurance requirements. MDOT reviews final plans for compliance with the safety improvements proposed and can provide examples of specifications.

NOTE: Refer to the MDOT Permit and Approvals section regarding the Railroad DSTR

MISCELLANEOUS APPROVALS

LEGEND

- Existing Greenway
- Planned Greenways/Under Construction

NOTE

Coordination with additional organizations, utility companies, and other projects will be required. The list to the right identifies a few organizations that are known in the area that will most likely require coordination and approvals.

MISCELLANEOUS JURISDICTIONAL AREAS

GORDIE HOWE INTERNATIONAL BRIDGE

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Coordination on proposed Joe Louis Greenway improvements along Campbell and Jefferson	N/A	N/A	N/A	The Gordie Howe International Bridge has been engaged during the development of the Framework Plan; they will be engaged through construction	Campbell and Jefferson Segments of the greenway to be independently constructed by GHIB. Approvals and Permitting for this work to be secured by GHIB.

DTE ENERGY

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Electric Utility Service and/or Natural Gas Service	Requires coordination with Municipal Approvals and any ROW approvals for crossings	N/A	8 step process, refer to link for a process Roadmap	Contact and Schedule meeting once electrical loads are determined and a conceptual design is complete	Requires coordinating power source(s) locations and associated improvements for off-street greenway lighting and improvements

GREAT LAKES WATER AUTHORITY (GLWA)

JURISDICTIONAL AREA & ACTIVITIES REQUIRING A PERMIT	CONTACT OR REVIEWER SUB-DEPARTMENT	COSTS (Refer to Fee Schedule)	ANTICIPATED REVIEW TIME	SUBMITTAL TIMING	REGULATIONS
Impacts to GLWA Sewer and Water System (they own or lease from cities, including Detroit, the entire sewer and water system for 7 counties)	Todd King, Todd.king@glwater.org; Sherri Gee, Sherri.gee@glwater.org; Justin Wood, JustinWood@glwater.org	TBD	TBD	GLWA has been engaged during the development of the Framework Plan; they will be engaged through construction	Potential approvals for work related to GLWA sewer and water lines that may be within the greenway project limits. View GLWA DWSD Infographic for more information.

COST ESTIMATES

OPINION OF PROBABLE CONSTRUCTION COSTS

The proposed alignment for the Joe Louis Greenway extends through a broad range of properties from single-family residential to heavy industrial areas that present a complex history of physical conditions. In order to determine an opinion of probable construction costs that can be referenced for future implementation planning, a comprehensive understanding of Detroit's urban context and the associated physical conditions needs to be taken into account, along with the anticipated costs for the proposed greenway site features and amenities.

NOTES & ASSUMPTIONS

In addition to the physical site conditions and the proposed greenway design features, several other factors and assumptions—including such items as unknown environmental conditions, mobilization, maintenance of traffic and other similar elements—can significantly drive the project costs. A series of clarification notes and assumptions has been provided to identify how these factors were incorporated.

COST ESCALATION

The greenway is anticipated to be implemented over a relatively long period of time and the design and construction will likely be refined and modified as the project progresses. The enclosed estimates have not been escalated for future phases. Planning for subsequent construction phases should evaluate the need to adjust construction costs to compensate for these factors that could include:

- Greater understanding of particular site conditions and unknown conditions that may become apparent
- Municipal and agency review, approval and permitting standards and requirements
- Design modifications & construction methods
- Changes over time in construction industry market conditions
- Community needs and preferences

COST ESTIMATE NOTES AND ASSUMPTIONS

ASSUMPTION TYPE	#	ASSUMPTION
COST ASSUMPTIONS	1	Costs are based on 2020 dollars without escalation to future years.
	2	Construction mobilization (10% of construction cost) has been factored into individual unit costs.
	3	Maintenance of Traffic (0.5% of construction cost for off-street & 2% of construction cost for on-street) has been factored into individual unit costs.
	4	A Construction Contingency (7.5% of construction cost) has been factored into individual unit costs.
	5	Except where indicated, costs do not reflect Intelligent Transportation Systems technology due to frequent changes in technology. The City should consider pursuing funding specific to ITS.
ADDITIONAL SOFT COSTS	6	Construction, Engineering and Inspection services (15% of construction cost) has been factored into the Grand Total for Project Construction
UTILITIES	7	The costs for utility improvements are included for greenway specific improvements. Off-site utility extensions, utility upgrades and maintenance have not been included.
PROPERTY	8	The cost for land acquisition is included for the Dequindre Cut Extension greenway segment. The cost associated with other additional land acquisitions, easements, lease procurement and other land rights that may become necessary are unknown at this time and have not been included.
UNKNOWNS	9	Environmental assessments are in progress for portions of the initial phases of construction. The environmental conditions of all proposed greenway route segments are unknown. Allowances for environmental conditions and remediation activities have been included as approximated values that will require confirmation.
	10	The removal of unknown contaminated/hazardous soils and materials, underground obstructions and other unknown site conditions are not included.
	11	The city-owned properties and recently acquired railroad right-of-way includes a number of encroachments onto the property. These encroachments that include such items as billboards, parking lots, small out-buildings and structures, construction materials, etc. will require relocations and removals. The costs associated with these encroachments is not included. This is planned to e addressed by the private property owners responsible for the encroachments.

CONSTRUCTION COSTS BY TYPOLOGY

The opinion of probable construction costs that defines the approximate level of funding required to implement the Joe Louis Greenway has been provided based upon similar construction components and projects.

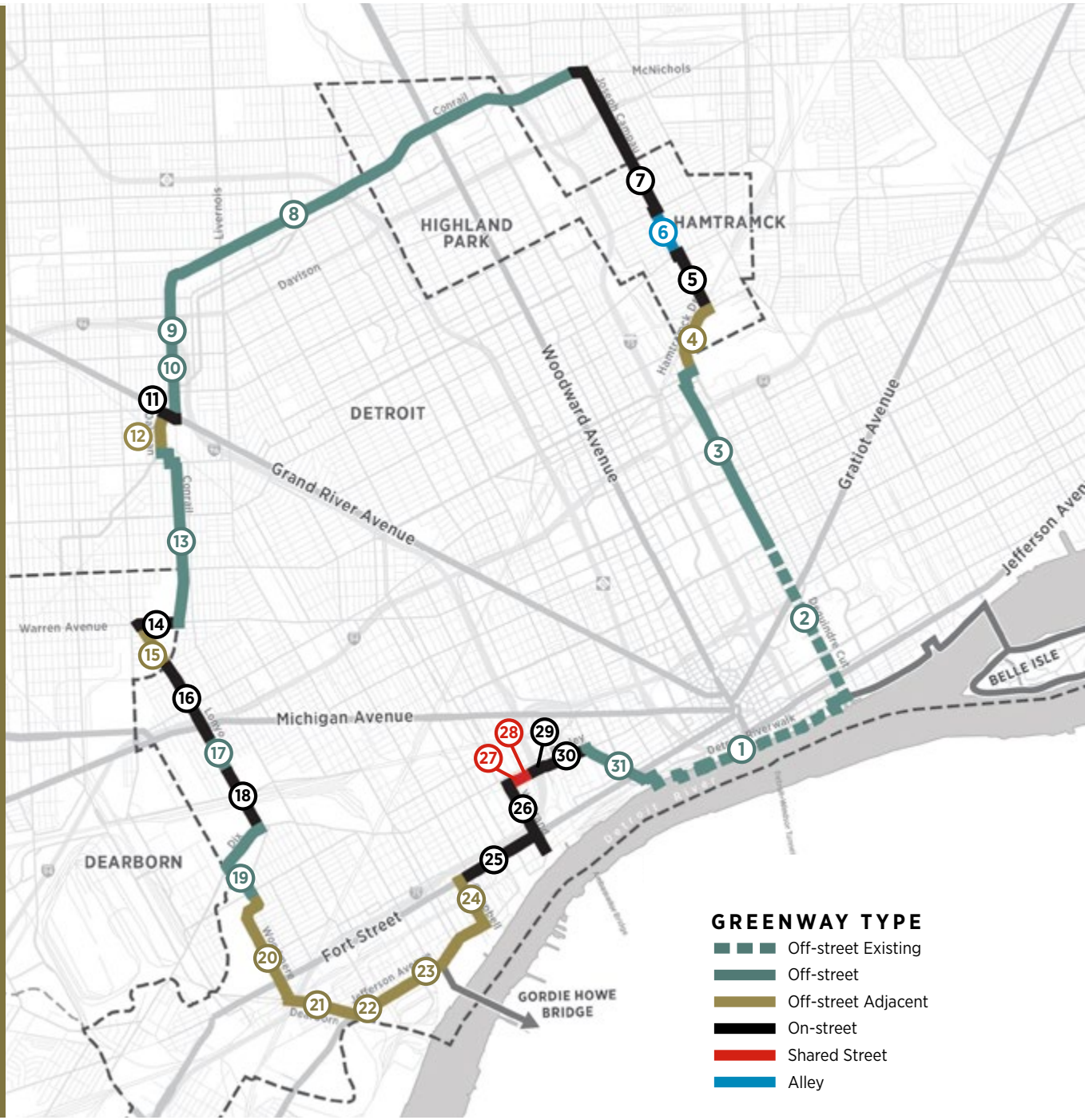
The project costs will reflect a general range of potential costs based on current construction trends. An extensive series of comparable project implementation costs, bid tabulations, local project data and resources specific to greenways and street improvement projects have been referenced to generate budget estimates that are as reliable as possible.

The construction costs were based upon the design characteristics and standards for each Greenway Typology that was defined in the Framework Plan. These estimates are provided as a basis for future project planning, phasing and fundraising. The estimates should not be relied upon as the true and final costs for the implementation of the greenway.

#	SEGMENT NAME	TYPOLOGY	LINEAR FEET	MILES	STATUS
1	Detroit RiverWalk	Off-Street	12,040	2.28	Existing
2	Dequindre Cut	Off-Street	8,600	1.63	Existing
3	Dequindre Cut Extension	Off-Street	9,820	1.86	
4	Hamtramck Drive	Off-Street Adjacent	3,550	0.67	
5	Joseph Campau (Holbrook to Hamtramck Dr.)	On-street	3,100	0.59	Under Construction
6	Hamtramck Alley	Alley	2,600	0.49	
7	Joseph Campau (McNichols to Caniff)	On-Street	8,450	1.60	Under Construction
8	Conrail (Davison to McNichols)	Off-Street	24,869	4.71	
9	Conrail (Fullerton to Davison) - I-96 Bridges	Off-Street (Bridge)	2,060	0.39	
10	Conrail (W. Grand River to Fullerton Ave.)	Off-Street	2,847	0.54	
11	Grand River	Off-Street Adjacent	521	0.10	
12	Oakman Boulevard	Off-Street Adjacent	1,752	0.33	
13	Conrail (Warren to Oakman)	Off-Street	9,315	1.76	
14	Warren	Off-Street Adjacent	2,375	0.45	
15	Lonyo 1 (Radcliffe to Warren)	On-Street	2,480	0.47	
16	Lonyo 2 (Romanowski Park to Radcliffe)	On-Street	4,350	0.82	
17	Romanowski Park	Off-Street	1,650	0.31	
18	Lonyo 3 (Dix to Romanowski Park)	On-Street	3,425	0.65	
19	Patton Park	Off-Street	4,350	0.82	
20	Woodmere	Off-Street Adjacent	6,250	1.18	
21	Dearborn Street	Off-Street Adjacent	4,692	0.89	
22	Jefferson Avenue (West End to Dearborn)				
23	GHIB (Jefferson Avenue)				
24	GHIB (Campbell)	Off-street adjacent	9,100	1.72	Construction by Others Pending
25	Fort Street	On-Street	4,525	0.86	
26	W. Grand Boulevard	On-Street	4,000	0.76	
27	Bagley 2 (Between 24th and W. Grand Blvd.)	Shared Street	810	0.15	
28	Bagley I-96 to 24th Street	Shared Street	560	0.11	Existing
29	I-96 Pedestrian Bridge	Off-Street (Bridge)	860	0.16	Existing
30	Bagley 1	On-Street	2,290	0.43	
31	Southwest Greenway	Off-Street	3,168	0.60	Construction by Others Pending
	Grand Total		**144,409**	**27.35**	

TYPOLOGY SEGMENT LENGTHS

The Joe Louis Greenway is composed of six primary typologies that define the proposed Framework design. The implementation of these typologies into the specific site conditions—including the variations related to the previous land uses, neighborhood characteristics, environmental conditions and other physical attributes—results in different costs for the same typology type depending upon the actual segment location. Accounting for these differences in location by making adjustments and refinements in the construction costs of the typologies is critical to anticipating the cost of construction.



TYPOLOGY GROUPS FOR ESTIMATES

In order to reflect the construction costs as accurately as possible, the typology types were grouped into segments that combined both the same type of design typology along with similar site conditions. These groups represent segments that are assumed to be more similar. For example, Patton and Romanowski Parks and the Conrail Right-of-Way are all part of the Off-Street Typology class. However, the cost of greenway construction in parks will differ from that of the cost for construction within the Conrail Right-of-Way.

CONSTRUCTION COSTS BY TYPOLOGY

TYPOLOGY	BASE CONSTRUCTION COST	SOFT CONSTRUCTION COST	TOTAL COST
Off-street	$114,383,555	$31,556,789	$145,940,344
Off-street Adjacent	$20,370,713	$5,742,542	$26,113,255
On-street	$25,573,875	$7,416,424	$32,990,299
Shared Street	$486,000	$140,940	$626,940
Alley	$3,939,000	$1,142,310	$5,081,310
Grand Total	**$164,753,143**	**$45,999,005**	**$210,752,148**

OVERALL AVERAGE COST

Per Linear Foot: $1,459

Per Mile: $7,705,692

OPINION OF CONSTRUCTION COST BY TYPOLOGY

TYPOLOGY	AVERAGE COST / LF	AVERAGE COST / MILE	ESTIMATE BASED ON
Off-Street	$2,564	$13,537,920	Southwest Greenway (2019), Dequindre Cut Greenway Phase II (2012), Joseph Campau Greenway (2019)
Off-Street Adjacent	$1,364	$7,201,920	Dequindre Cut Greenway Phase II (2012), Southwest Greenway (2019), Joseph Campau Greenway (2019)
On-Street	$1,633	$8,622,240	Joseph Campau Streetscape (2019), Rosa Parks Streetscape (2019), Kercheval Streetscape (2019), Riopelle Streetscape (2019), Livernois Streetscape (2019)
Shared Street / Neighborhood Greenway	$744	$4,086,720	Bagley Streetscape, City of Detroit (2019) & Ann Arbor Downtown Streetscape Design & Engineering (2019)
Alley	$1,954	$10,317,120	HopCat Alley Improvements (2019), Midtown Detroit Green Alleys (2016-2018)

INFRASTRUCTURE, AMENITIES & SAFETY FEATURES

Costs for major improvements associated with greenway construction have been integrated into the estimated cost of construction for proposed greenway segments and typologies.

The tables here describe some of the major improvements and site features that will be part of the future greenway. The costs for these greenway improvements and features have been integrated into the typologies and segments as applicable.

These tables have been provided for reference and are intended to offer a general understanding of the relative costs of key site features and amenities.

Source: Unsplash

TRAIL ENTRY POINTS

Trail Entry Point Type	Comments	Unit	Unit Price	Qty	Cost
Minor Trail Entry Point	Includes light to moderate intensity of amenities	EA	$575,000	25	$14,375,000
Major Trail Entry Point (No Pavilion)	Includes moderate to high intensity of amenities	EA	$3,000,000	15	$45,000,000
Major Trail Entry Point (Incl. Pavilion)	Warren, Woodward, Grand River	EA	$5,000,000	3	$15,000,000
Pavilion (Incl. Restroom)		LS	$2,000,000	-	-
Restroom	Restroom only	LS	$250,000	-	-
				Grand Total	**$74,375,000**

MIDBLOCK CROSSINGS

Crossing Type	Comments	Unit	Unit Price	Qty	Cost
Minor Crossing: Two-way street with one travel lane in each direction, with or without on-street parking; Alley crossings	Includes speed table	EA	$125,000	13	$1,625,000
Major Crossing: Two-way street with more than one travel lane in each direction, with or without on-street parking, and with pedestrian refuge island.	Does not include speed table	EA	$275,000	15	$4,125,000
Concrete Speed Table		LS	$45,000	-	-
				Grand Total	**$5,750,000**

STREET INTERSECTIONS

Intersection Type	Comments	Unit	Unit Price	Qty	Cost
Minor Intersection	Typically two-way streets with one travel lane in each direction, may have on-street parking. Does not include costs of new traffic signals	EA	$22,000	125	$2,750,000
Major Intersection	Two-way street with more than one travel lane in each direction, with or without on-street parking, and with pedestrian refuge island or center turn lane. Does not include costs of new traffic signals	EA	$36,500	19	$693,500
				Grand Total	**$3,443,500**

BRIDGES

Bridge Location	Comments	Unit	Unit Price	Qty	Cost
I-96 Main Span and Davison Connector Bridge(s)	Includes branding features to create memorable gateway	EA	$19,266,150	1	$19,266,150
Conrail at Lodge Freeway		EA	$650,000	1	$650,000
Conrail at Woodward		EA	$825,500	1	$825,000
				Grand Total	**$20,741,150**

UNDERPASSES

Underpass Type	Comments	Unit	Unit Price	Qty	Cost
Rail Viaduct		EA	$137,000	5	$685,000
Freeway Underpass		EA	$181,000	4	$724,000
				Grand Total	**$1,409,000**

RAIL CROSSINGS

Rail Crossing Type	Comments	Unit	Unit Price	Qty	Cost
New I-75 Rail Crossing -Culvert		EA	$3,000,000	1	$3,000,000
I-75 New Rail Crossing - At Grade	Assume new crossing will be culvert type to provide maximum buffer in cost of estimate	EA	$1,500,000	1	$1,500,000
Standard Rail Crossing		EA	$150,000	11	$1,650,000
Side Rail Crossing		EA	$52,500	8	$420,000
				Grand Total (I-75 Culvert)	**$5,070,000**
				Grand Total (I-75 At Grade)	**$3,570,000**

TRANSIT STOPS

Stop Type	Comments	Unit	Unit Price	Qty	Cost
Typical Bus Stop	Signage, lighting, accessibility	EA	$15,000	21	$315,000
Enhanced Bus Stop	Signage, seating, bike parking, bus shelter, waste receptacles, lighting, leaning or guard rails	EA	$37,500	13	$487,500
Floating Bus Island	For on-street segments where applicable	EA	$26,500	-	-
				Grand Total	**$802,000**

SECURITY SYSTEM INTEGRATION

Security System	Comments	Unit	Unit Price	Qty	Cost
System Integration	Include one per construction phase or sub-phase	EA	$200,000	7	$1,400,000
Safety Operations Center	Does not include costs for architecture or building	EA	$500,000	1	$500,000
				Grand Total	**$1,900,000**

OTHER IMPROVEMENTS

Improvement Type	Comments	Unit	Unit Price
Traffic Signal		EA	$200,000
Speed Cushion, HDPE Plastic	To address vehicular speeds along Woodmere at Avis and Chamberlain Streets. Requires 2 sets of 3 per street for a total of 12 @ $650 each	EA	$7,800
Restroom Building		EA	$350,000
Free-Standing Planter	Ellis 20" x 48" planter	EA	$2,200
Pre-Cast Concrete Curb Planter	3' x 8' with 8" curb width and 16" planting depth	EA	$4,800
MoGo / Bikeshare Station (Small, 15 Bikes)	Basic Kiosk - no credit card reader or touch screen	EA	$30,000
MoGo / Bikeshare Station (Medium, 19 Bikes)	Enhanced Kiosk - touch screen credit card reader & printer	EA	$41,000
MoGo / Bikeshare Station (Large, 23 Bikes)	E-Station, hardwired to electric grid. Can recharge e-bikes.	EA	$54,000
MoGo Bike - Standard Pedal Bike		EA	$1,000
MoGo Bike - Electric Bike		EA	$2,500
Bus Shelter		EA	$15,000
Concrete Speed Table		EA	$45,000
Power Pedestal	Le Grand, outdoor power & charging station	EA	$2,666

CONCLUSION

A COLLECTIVE JOURNEY TOWARD A BETTER TOMORROW

Source: James Brown

CONCLUSION

A COLLECTIVE JOURNEY TOWARD A BETTER TOMORROW

Articulating a vision for the Joe Louis Greenway has been an intense, wonderful, collaborative experience. Words cannot express how grateful we are to everyone, from all corners of Detroit, who helped envision the greenway as a celebration of the strength and determination of the city's diverse communities.

But we've only just begun. As we secure funding and move into the next phase of work—translating a vision into a physical reality—the community's input and participation will be just as essential.

We understand that the greenway isn't simply a physical path. It represents a liberating journey that connects past and present, people and neighborhoods, vibrant spaces and enfranchising resources. It's a journey where we come together to promote healing, empowerment and unity throughout the city of Detroit and the region—a collective journey toward a better tomorrow.

The Joe Louis Greenway Framework Plan was borne from a tireless commitment by the City of Detroit and the people it serves. This significant effort would not have been possible without the contribution from residents, business owners, stakeholders and organizations from partnering cities. Thousands of local residents donated their time to share their thoughts, questions, stories and vision through community sessions, block club meetings, front porch discussions, neighborhood walks and bike rides. These valuable insights are reflected and established in the legacy of the Joe Louis Greenway.

Photo: Sidewalk Detroit

ACKNOWLEDGMENTS

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Christina Peltier, Joe Louis Greenway Project Manager

Jeff Klein, Deputy Chief of Landscape Architecture

William J. McCarley III, Joe Louis Greenway Landscape Architecture Project Manager

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Housing and Revitalization Department

Detroit Public Works

Office of Development and Grants

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Detroit Greenway Coalition

Greenway Heritage Conservancy

Friends of the Inner Circle Greenway

Friends of the Joe Louis Greenway

Detroit Riverfront Conservancy

Eastern Market Corporation

Detroit Economic Growth Corporation

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Ashia Phillips, District 5
Ru Shann Long, District 6
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Korey Batey, District 7 (former)
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City Advocates, Past and Present:

Jose Abraham, Former Detroit Public Works Deputy Director

Housing & Economic Development Panelists:

Dwayne C. Vaughn,
VP of Housing Policy & Development for Atlanta BeltLine, Inc.

Anika Goss,
Executive Director, Detroit Future City

Amin Irving,
CEO, Ginosko Development Company

Arthur Jemison,
Principal Deputy Assistant Secretary, Office of Community Planning & Development, U.S. Department of Housing and Urban Development

The Design Team:

SmithGroup,
Project Lead

Studio Incognita,
Brand Development & Design

Sidewalk Detroit,
Public Engagement

HR&A Advisors,
Housing & Economic Development

Toole Design Group,
Greenway Design

FOR MORE INFORMATION

SEE THE ACCOMPANYING VOLUMES OF THE JOE LOUIS GREENWAY FRAMEWORK PLAN.

VOL. 1
THE VISION

- ONE UNIFIED DETROIT
- ROUTING & ALIGNMENT
- INCLUSIVE ECONOMIC OPPORTUNITY
- CULTURE & THE ARTS
- GREENWAY DESIGN
- BUILDING THE GREENWAY

APPENDICES

- BENCHMARKING
- THE LAY OF THE LAND
- PUBLIC ENGAGEMENT SESSIONS
- ADVOCACY & OUTREACH
- GREENWAY HERITAGE
- PUBLIC ART THEMES
- CULTURAL HERITAGE & THE JOE LOUIS STORY

Photo: James Brown


DETROIT
DEARBORN
WINDSOR
Oakman
Conrail
Warren Avenue
Grand River Avenue
Woodward Avenue
Gratiot Avenue
Dequindre Cut
Michigan Avenue
Lonyo
Dix
Bagley
Detroit Riverwalk
W. Grand
Fort
Campbell
Woodmere
Jefferson Avenue
Dearborn
GORDIE HOWE BRIDGE

SMITHGROUP studio incognita SIDEWALK DETROIT TOOLE DESIGN HR&A

THE JOE LOUIS GREENWAY IS A PROJECT MANAGED BY THE CITY OF DETROIT'S GENERAL SERVICES DEPARTMENT.
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