



DAKOTA COUNTY Greenway Design Guidelines

AUGUST 2020

ACKNOWLEDGEMENTS

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Chapter 1

INTRODUCTION

Greenways: More Than Trails

Greenways are linear open space corridors that perform multiple functions and provide multiple community benefits in areas of water quality, habitat, recreation, and transportation. Interpretation of important cultural, historic, natural resources is interwoven throughout the Greenway and supports the importance of the Greenway through context specific design.

Greenways:

- Link places people want to go, such as parks, neighborhoods, schools, commercial centers, and other destinations;
- Provide spaces and corridors for plants and animals to thrive in a functioning ecosystem;

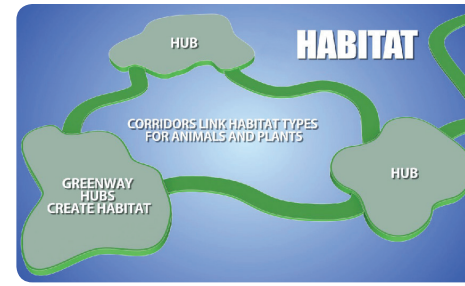
- Include buffer strips, native vegetation, and best management practices that improve water quality and ecosystem health; and
- Offer year-round, universally accessible destination trails with a natural signature that tie together a seamless social, and natural community system.

Dakota County established the greenway network in 2008 as part of the Dakota County Park System Plan. A subsequent Greenway Guidebook was adopted in 2010 that established a framework for greenway governance, stewardship, design, and operation. The Guidebook established a preliminary framework for design consistency, with the caveat that early greenway implementation projects would serve as the foundation for further design refinement.

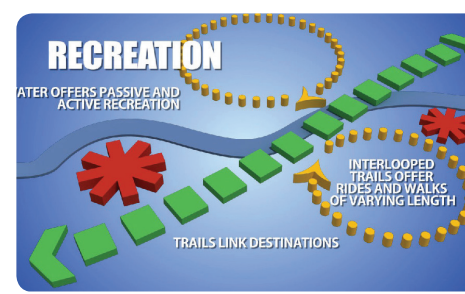
Greenway Experience

Dakota County is committed to providing high-quality visitor experiences throughout its system. These principles should be reflected on all greenways:

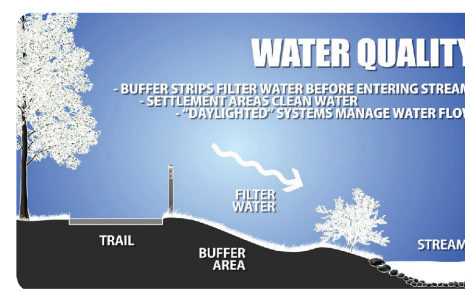
- An intuitive sense of welcoming, safety, and comfort.
- Recognition that individuals experience greenways in a variety of ways.
- Ease of wayfinding and orientation, so visitors are confident in understanding their options for experiencing the greenway.
- The opportunity for discovery, learning, and stewardship through relevant and cohesive messaging and storytelling.
- Inspiration through interesting, inclusive, and interactive interpretation of natural, cultural, and historical resources.



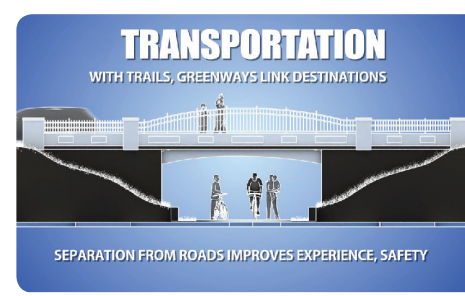
Corridors link larger hubs allowing plants and animals to thrive in a functioning ecosystem.



Destination or regional trails with a natural signature tie together a seamless system of local parks, regional parks, local trails, greenways, and schools.



Buffer strips, native vegetation, and land management practices improve water quality and ecosystem management.



Trails with grade separated crossings and four-season maintenance link activity centers across the county and link a feeder system of local trails.

Guideline Purpose

The purpose of the Greenway Design Guidelines is to provide local municipalities, developers, consultants, and Dakota County departments who may be implementing a greenway project clear instructions on the design and implementation process and design guidance for greenway corridor trails and amenities. Guidelines promote consistency and a high level of service users can expect in the greenways. The guidelines are not meant to reimagine what greenways are, but rather build upon early greenway implementation projects to create an easy-to-follow process, communicate design expectations, and provide technical guidance on corridor typology cross-sections and typical greenway amenity layouts.

Prior to implementation each greenway will have an approved master plan that identifies the greenway corridor alignment and connections to recreation destinations and activity centers. Greenway master plans also identify locations for greenway amenities; such as nodes, gateways, and trailheads. Early greenway implementation projects serve as models for typical cross-sections and amenities. Promoting design consistency promotes a higher user experience overall.

The Greenway Design Guidelines will reference Dakota County's Parks and Greenway Standards, Signage Guidelines, Greenway Master Plans, and Greenway Natural Resource Management Plans to provide information on specific site amenities and natural resource management practices used within the Dakota County parks system. If a Greenway does not yet have an adopted Natural Resource Management Plan, refer to the Master Plan for a Natural Resources inventory and recommendations for water quality improvements.

Because of the varying site conditions throughout the county, each greenway will require design and engineering that responds to site specific conditions, features, and the incorporates identified interpretative elements or themes. This document will not provide design guidance that differentiates greenways from each other nor does it provide logos or branding. It is assumed the Greenways will adhere to Dakota County Parks and Greenway signage and branding.





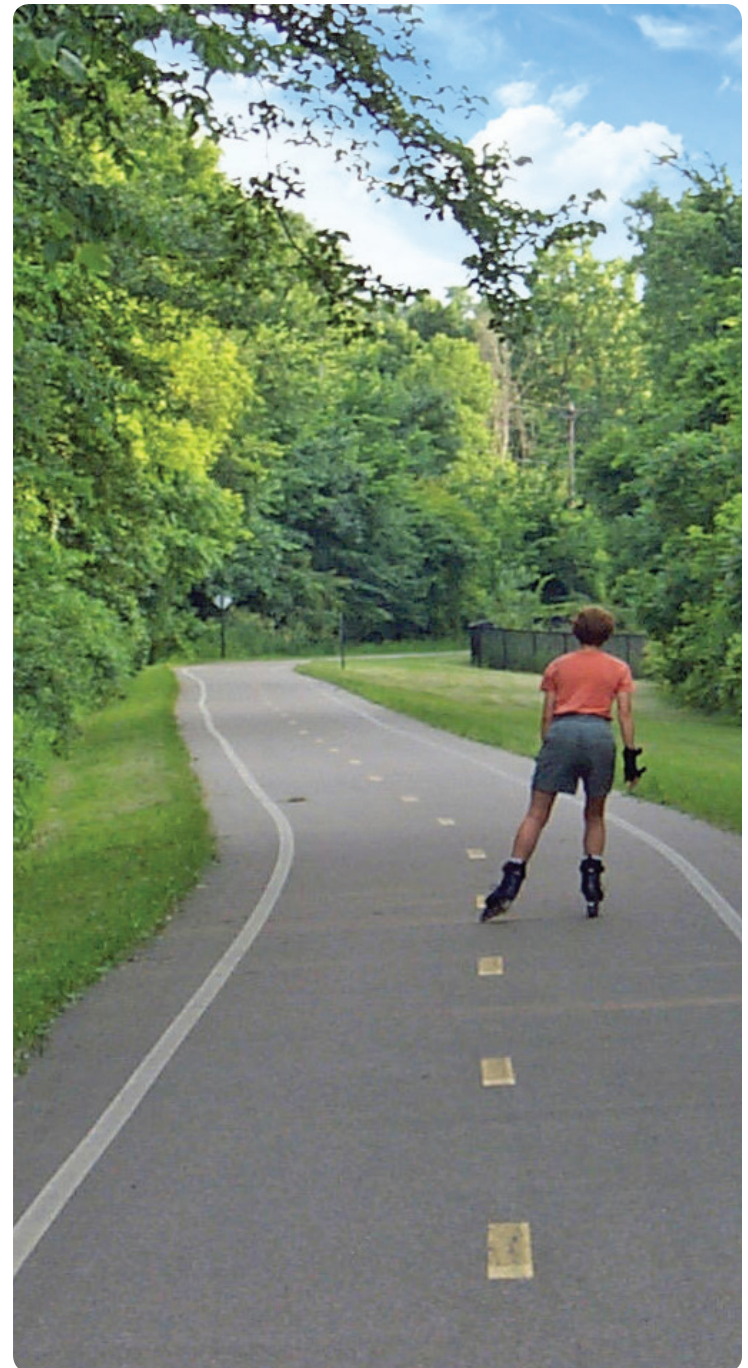
Chapter 2

GREENWAY IMPLEMENTATION

County Process

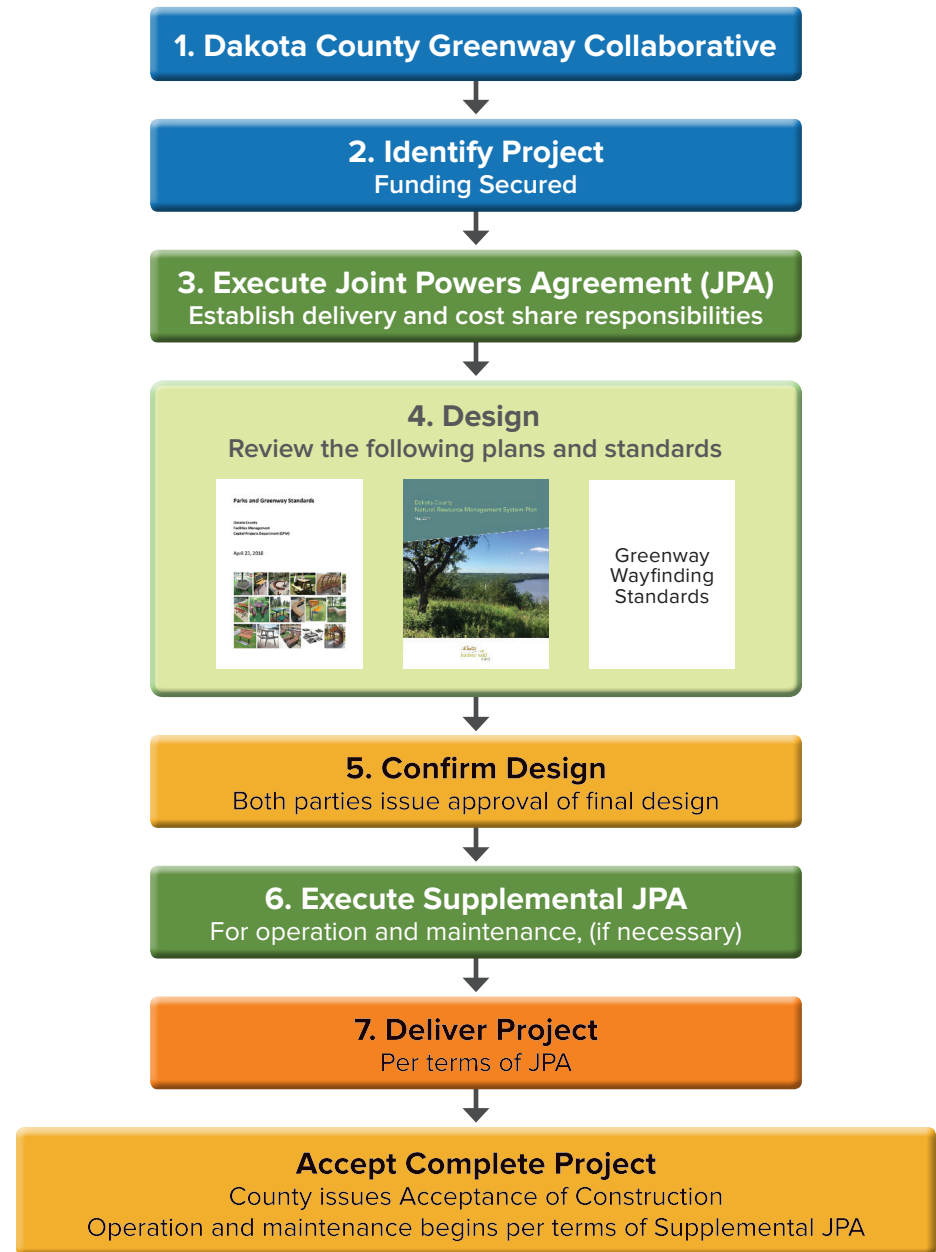
Greenways are implemented by various municipalities and developers throughout the County. When a project has been prioritized for implementation, the implementing agency will coordinate with the following county staff during design to ensure the greenway meets the design guidelines:

- Dakota County Office of Planning – Principal Planner
- Dakota County Parks – Director
- Dakota County Capital Projects Management – Manager



1. The implementing agency will contact Dakota County Office of Planning to establish the Greenway Collaborative comprised of county staff and stakeholders.
2. The project is identified and includes implementation length, start and end points, anticipated Greenway amenities, and any other scope of work items. Project funding should be secured and land rights negotiated for implementation, if required.
3. The implementing agency will work with the County to develop and execute a Joint Powers Agreement (JPA) that establishes the delivery and cost share responsibilities.
4. During project design, the Greenway Collaborative will review design at submittals identified at the beginning of the design process. Chapters 4 and 5, along with Appendix A, provide guidance on typical Greenway design features and corridor typologies. Other County standards and plans should be referenced, such as Natural Resource Management Plans, Park and Greenway Design Standards, and Signage and Wayfinding Standards in order to provide continuity in Greenway design and maintain a high level of service throughout the County.
5. The Greenway Collaborative confirms the design meets the Greenway Design Guidelines and the County issues an Acceptance of Design.
6. If there has been deviation in design from the original scope of work outlined in the JPA, the JPA may be amended to reflect design changes. A Supplemental Agreement to the JPA is executed that outlines operation and maintenance roles and expectations.
7. The implementing agency oversees constructions and delivers the project per the JPA.
8. After project close-out, and per the terms of the JPA, the County issues an Acceptance of Construction. Operation and maintenance activities begin per the terms of the Supplemental JPA.

Design and Implementation



■ Planning ■ Parks ■ Parks + CPM ■ CPM ■ Partner



Chapter 3

GREENWAY TYPOLOGY CROSS-SECTIONS

Design consistency is important for a high-quality greenway system. These guidelines help inform different implementing agencies and developers on the distinct typologies of greenways and how the operational zone, which includes the regional trail, may fit within each. Three greenway typologies have been identified for Dakota County regional greenways. It is important that a successful greenway meets the goals of improved water quality, habitat connectivity, recreation, and non-motorized transportation. Interpretation should be inter-woven throughout the greenway design adhering to adopted Interpretive Plans or identified important historic, cultural, or natural resources.



Operational Zone

The County Operational Zone is typically the 30-foot portion of the greenway that the County has operational control and is outlined in the Joint Powers Agreement. The operational zone typically includes the trail and amenities directly related to the trail function.

While minimum widths are provided for each typology, there may short distances the minimum width cannot meet and only the operational zone cross-section is feasible to maintain non-motorized transportation and recreation continuity. Trail design within the Operational Zone is governed by multiple regulations and standards and references are included in Chapter 6.

- Trail design: refer to the Dakota County Parks and Greenway Standards for materials, furnishings, and site specific features.
- Stormwater design: all stormwater generated from the trail shall be managed within the operational zone. This may also include conveyance of stormwater from other facilities to a regional stormwater system.
- Natural resources: natural resource management and planting design along the operational zone should refer to the Natural Resource Management Plan (NRMP) for each greenway. If a NRMP has not been completed for the Greenway, a Natural Resources Inventory and recommendations is included in adopted Greenway Master Plans. Planting design should be site specific and higher maintenance plantings should be limited to areas of high visibility.

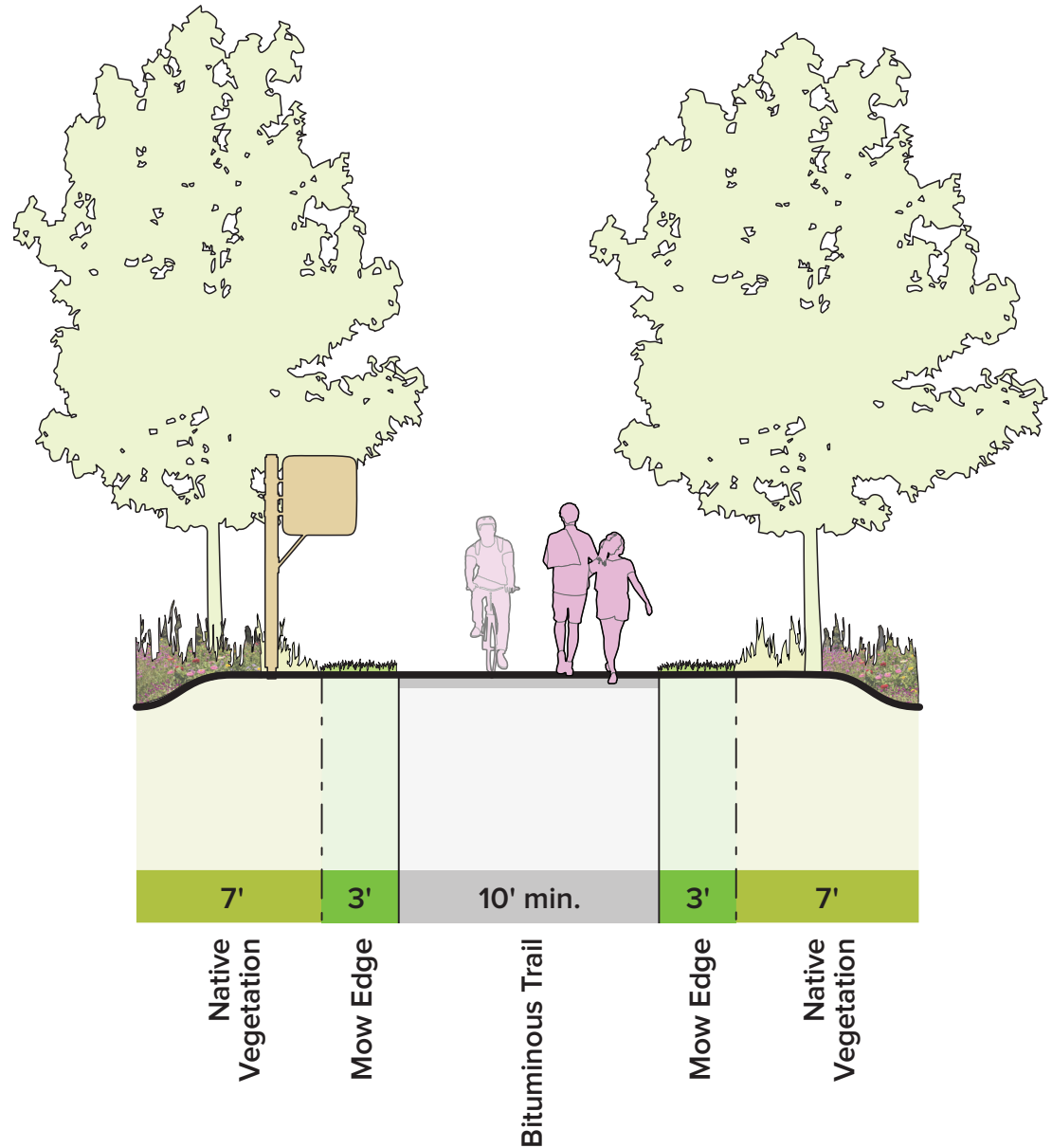


FIGURE 3.1 OPERATIONAL ZONE

Rural Typology

Rural greenways typically have the greatest opportunity to meet the 300-foot critical function dimension for healthy habitat and water quality. This greenway typology is predominant when the greenway is within a rural area, aligned with a natural waterway, or capitalizes on adjacencies to regional or local parks and open space. A rural typology should be the predominant greenway typology established within the greenway system. Design of the operational zone should be done to minimize disruption to any identified high-quality natural resources to the extent possible. Restoration practices should be implemented to restore degraded environments according to the specific greenway Natural Resource Management Plan. Greenways are meant to highlight the natural scenic, cultural, and/or historic landscape, therefore designed landscapes requiring higher maintenance should be limited to high visibility areas such as trailheads, gateways, and nodes within these corridors.

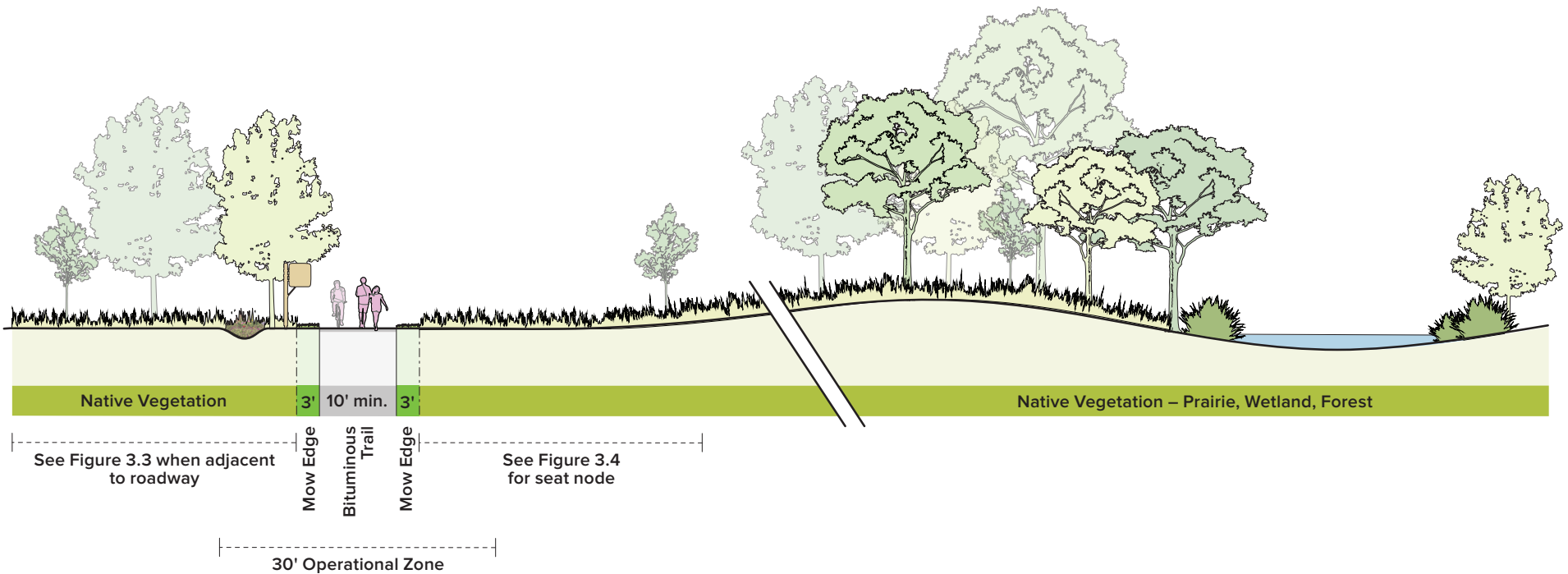


FIGURE 3.2 RURAL CROSS-SECTION

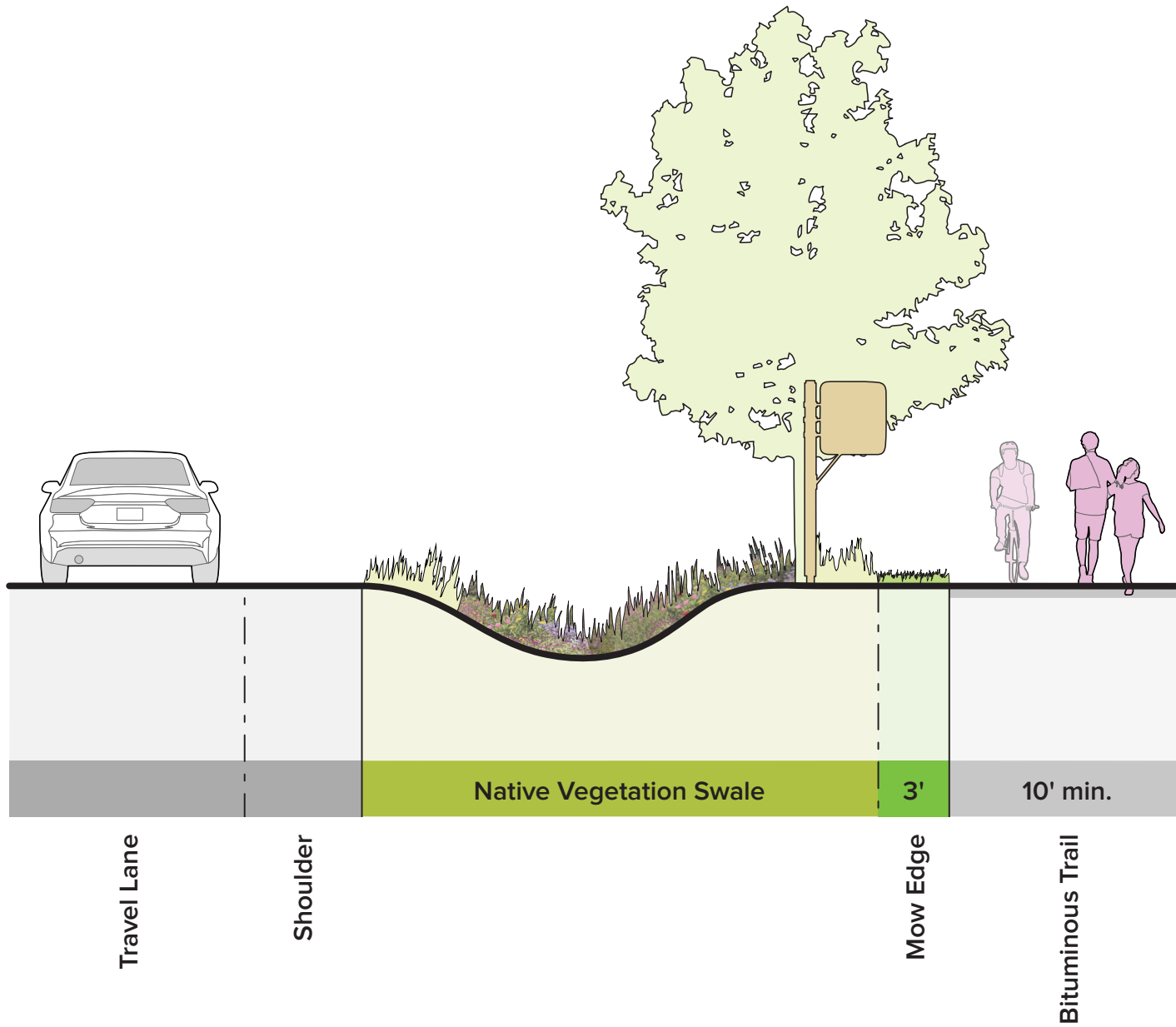


FIGURE 3.3 RURAL CROSS-SECTION ALONG ROAD

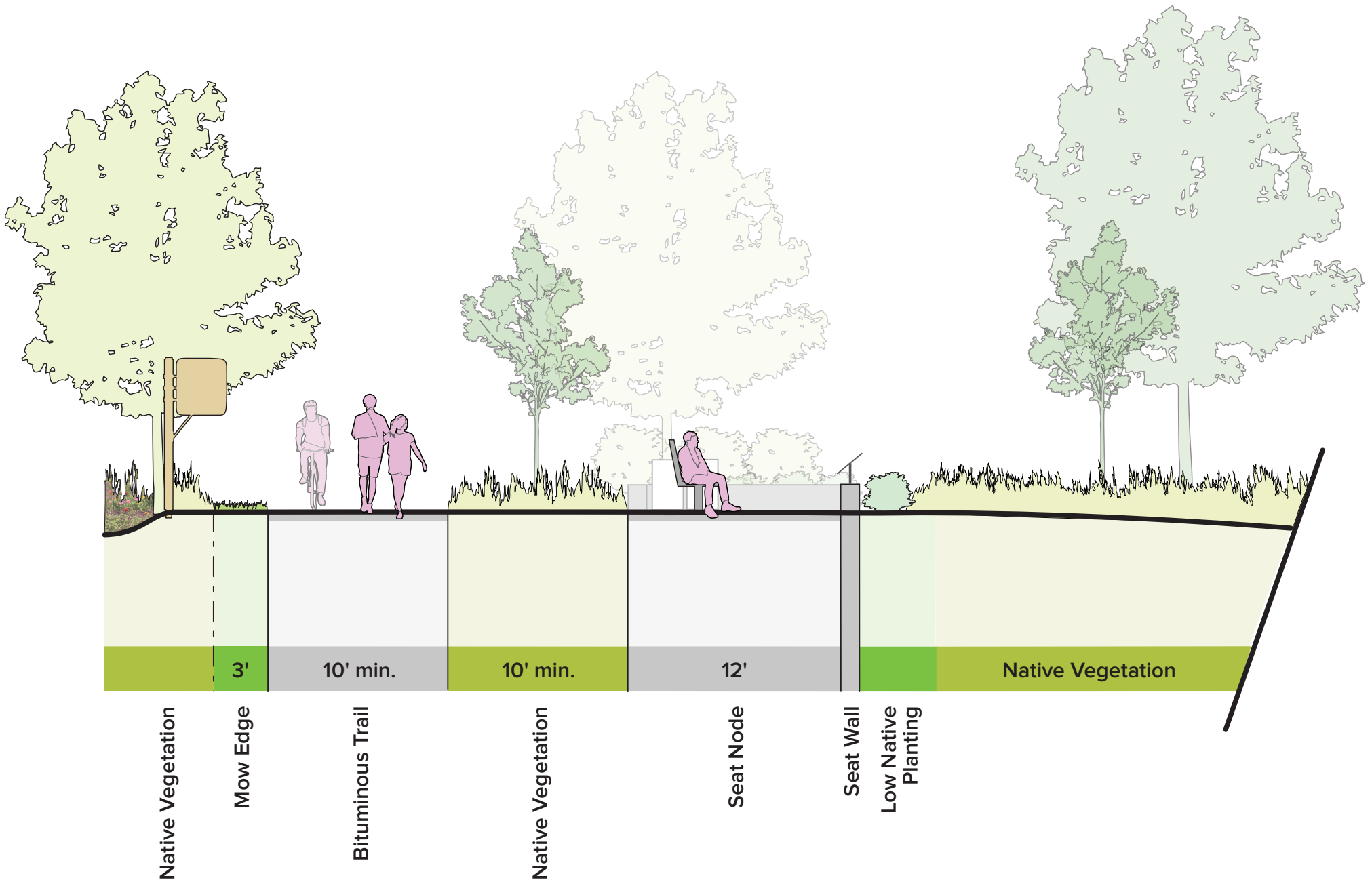


FIGURE 3.4 RURAL CROSS-SECTION WITH NODE

Suburban Typology

Suburban greenways are typically 200 feet in width and are located in developed or developing neighborhoods. These corridors can be designed into the surrounding development as shared greenspace with stormwater infrastructure creating recreation opportunities and non-motorized connections to local parks, schools, and community destinations. This shared use provides additional benefits to water quality and habitat connectivity. The suburban typology can also take advantage of adjacency to public and private natural features, ponds, streams, parks, and open space. Buffers should be provided between buildings and the operational zone to block or enhance views based on the type of development.

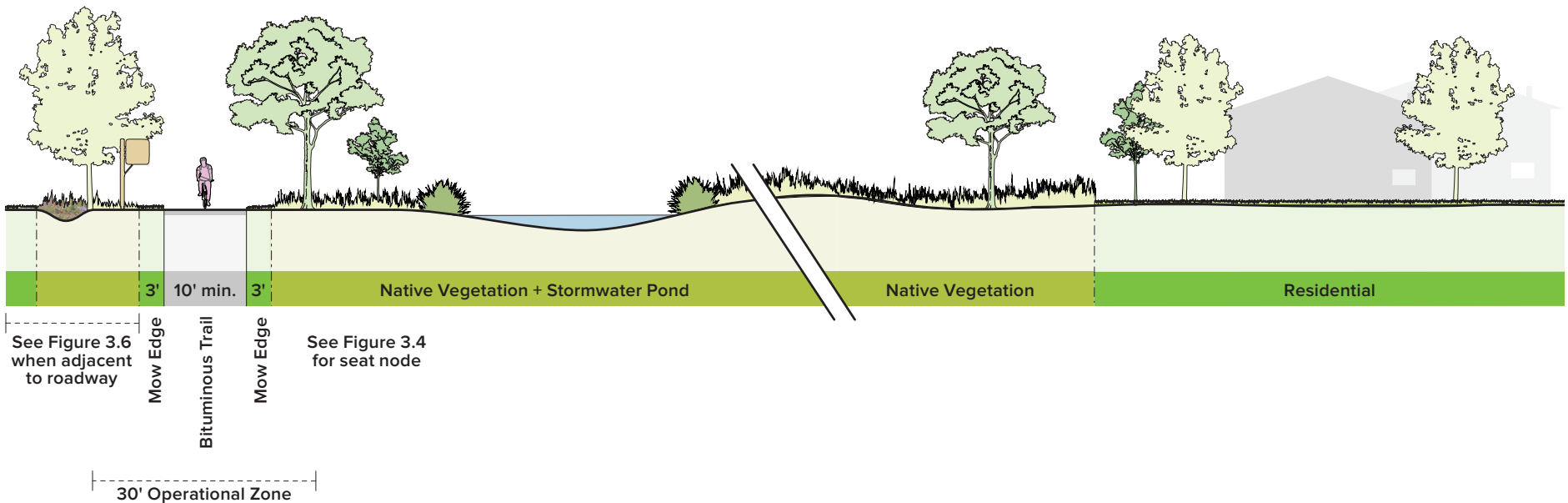


FIGURE 3.5 SUBURBAN CROSS-SECTION

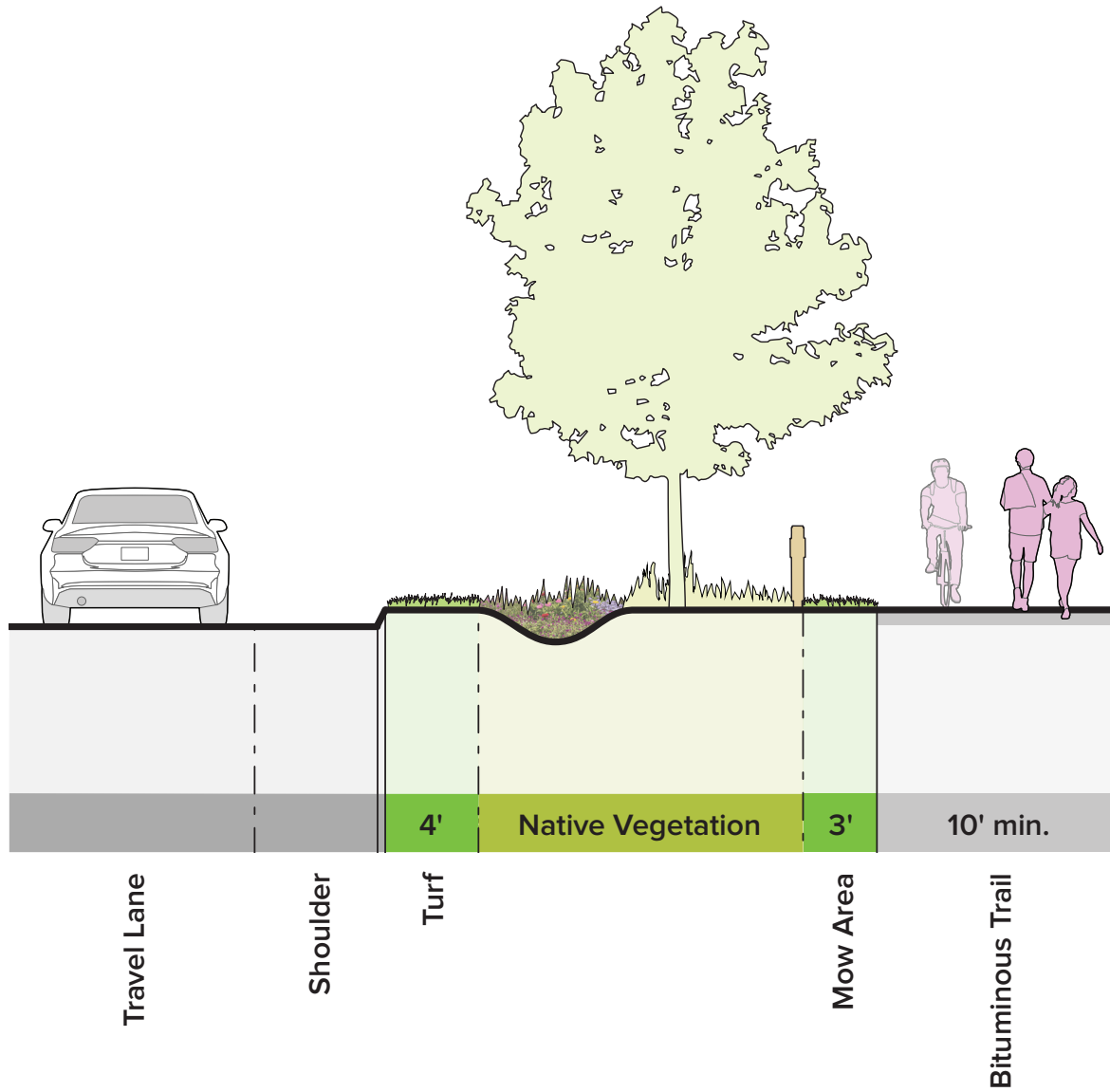


FIGURE 3.6 SUBURBAN CROSS-SECTION ALONG ROAD

Urban Typology

Urban greenways occur in areas of higher density with less than ideal width for habitat connectivity and water quality improvements. This typology is more for recreation and providing non-motorized transportation facilities that connect to parks, open space, community destinations, and natural features. A typical width for the urban typology is 100 feet, but in some instances this may be reduced to just the Operational Zone. Alignment of the urban typology should take advantage of adjacencies to park and open space as much as possible.

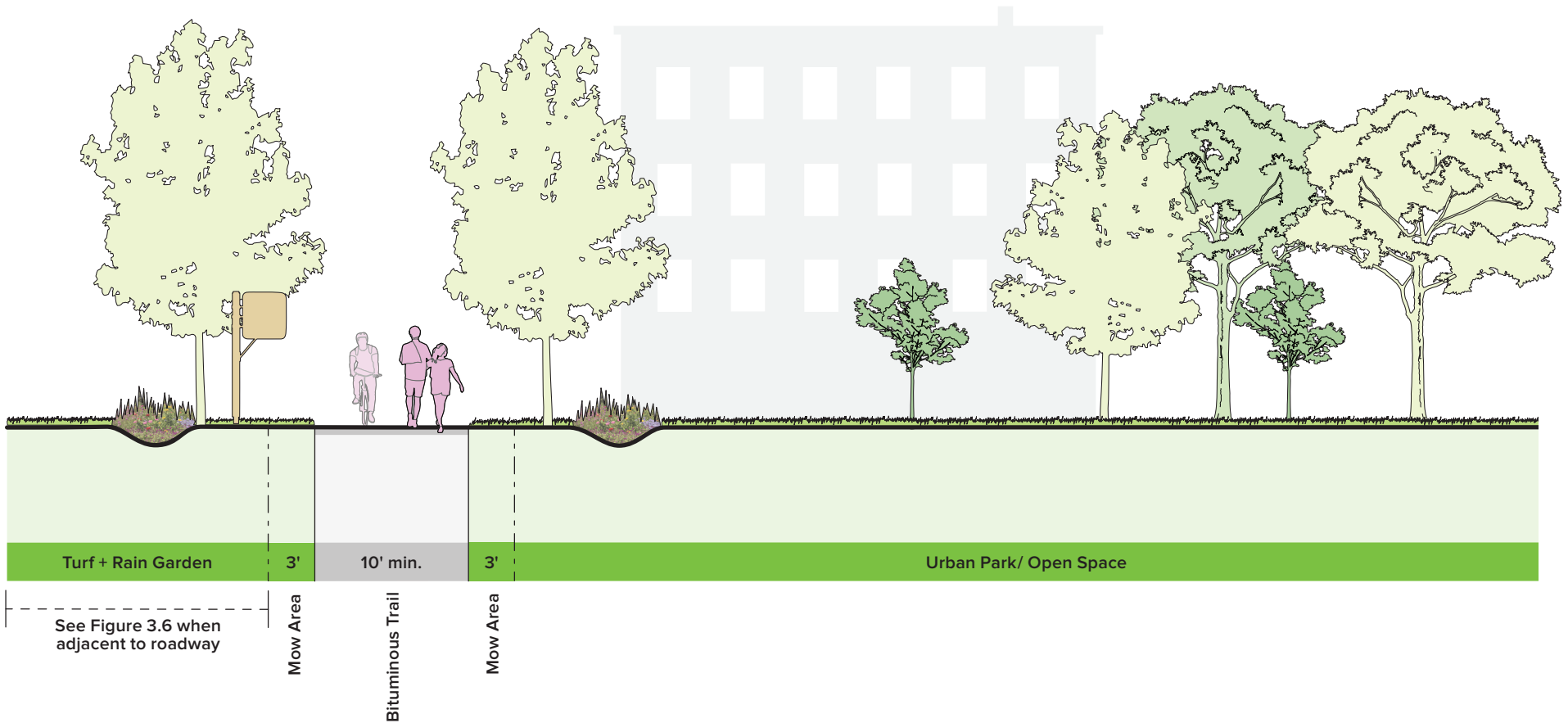


FIGURE 3.7 URBAN CROSS-SECTION

Urban Landscape

The urban corridor at 100 feet or less may not provide enough width to successfully manage a native landscape and is located within more densely developed areas. A native landscape should be implemented where width allows, 10 feet or greater, otherwise this corridor is typically mown blue grass or low-mow turf grass, overstory trees, and designed landscape plantings. These corridors have a higher visibility and therefore higher maintenance requirements. A primary goal in an urban ecosystem is plant success, specifically overstory trees.

An urban forest provides critical services to urban areas by reducing the urban heat island effect, improving water quality, providing wildlife habitat, and improving our well-being. It is essential trees are planted in areas with appropriate growing conditions with adequate room for root growth, sufficient soil volume and water, and protection from compaction and maintenance equipment. Trees should be planted at a minimum 4 feet from the edge of the trail so roots don't impact the integrity of the pavement causing heaving and cracking.

In areas of high impervious surface, consideration should be taken to provide the proper root growth area. This may involve tree trenches, structural soil media, or silva cell infrastructure.

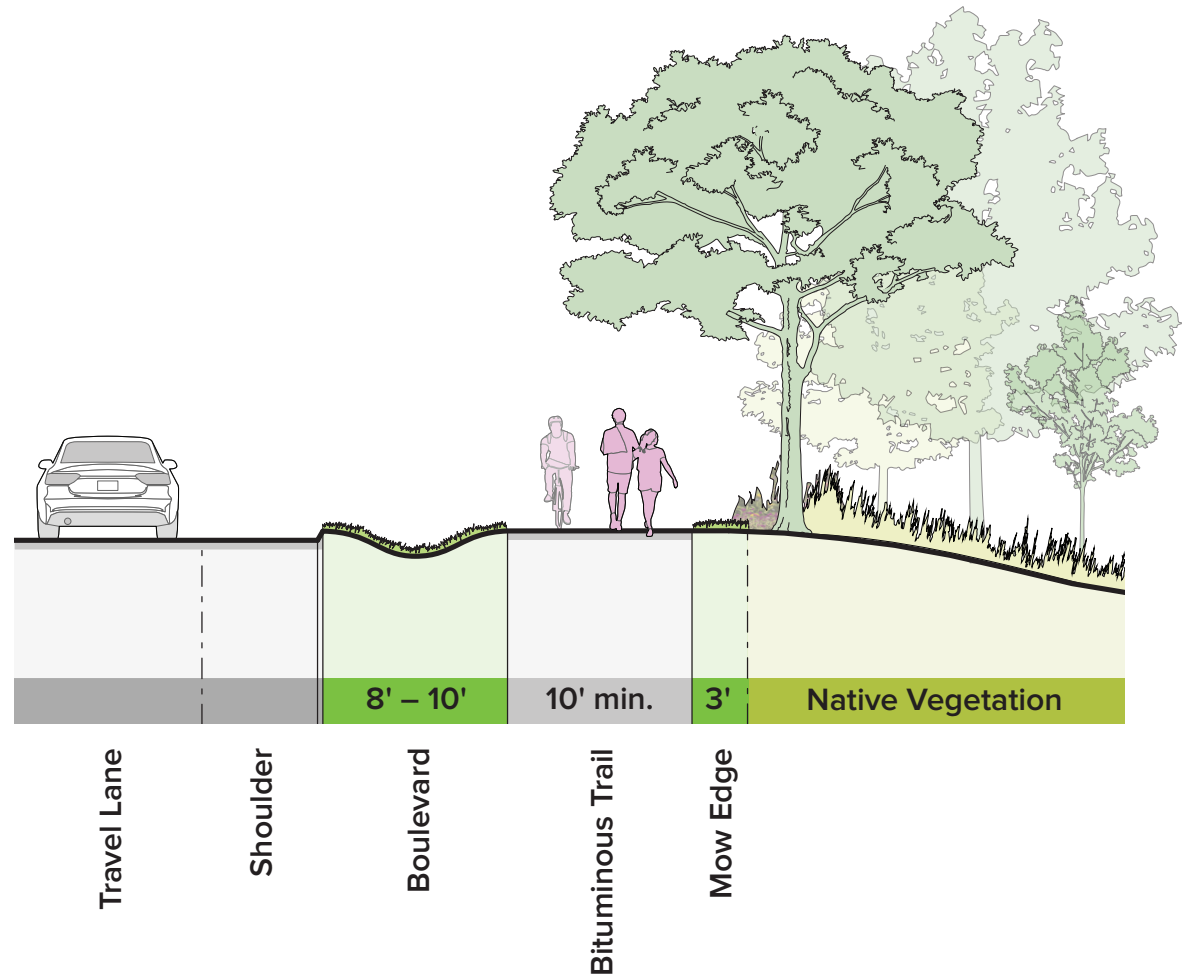


FIGURE 3.8 URBAN ROAD (CONSTRAINED LOCATION)



Chapter 4

GREENWAY AMENITIES

Greenway amenities are facilities along the greenway such as trail access points, trail intersections, rest areas, and wayfinding and interpretive elements. They provide consistent visual elements to enhance the user experience. Greenway amenity locations are typically identified during the greenway master planning process, but their location may be further refined during implementation depending on specific requirements. This guide provides typical examples of greenway amenities to create a functional, attractive, and inviting system using elements such as seating, signage, and plantings to create a unique identity for the greenways. The graphics on the following pages are examples only and each amenity should be designed within the site context of each location. Interpretive elements and design can also be interwoven throughout amenities along a greenway to promote a primary theme. All of these details work together to create a consistent and complete experience for all users



Trailhead

Trailheads serve as a primary access to the greenway and rest area for users, particularly those who may need to drive to access the system. Trailheads are located throughout the greenway system and may be co-located within a regional park, city park, or public open space. Trailheads provide public facilities such as parking, restrooms, identification and wayfinding signage, bike facilities, seating, picnicking, and other typical park and trail features. Interpretive signage may be included if the trailhead is located near significant natural, cultural, or historical resources or is located within the greenway with an identified interpretive theme. Site specific design features should be considered during the design process to promote an interpretive theme or to highlight natural features. Site amenity specifications are described in the Park and Greenway Standards.

Refer to the Project Readiness Checklist in Appendix A for required features.

1. Entrance monument sign
2. Permeable pavement
3. Restroom (with drinking fountain)
4. Kiosk (wayfinding and interpretation)
5. Bench
6. Bike facilities
 - Racks
 - Fix-It Station
7. Trash/recycling Receptacle
 - Pet Waste
8. Picnicking
9. Raingarden
10. Landscape plantings (accent perennials)
11. Site specific feature

Other infrastructure may include:

- Lighting
- Utilities (water, electric, internet)
- Security cameras
- Electric vehicle charging stations

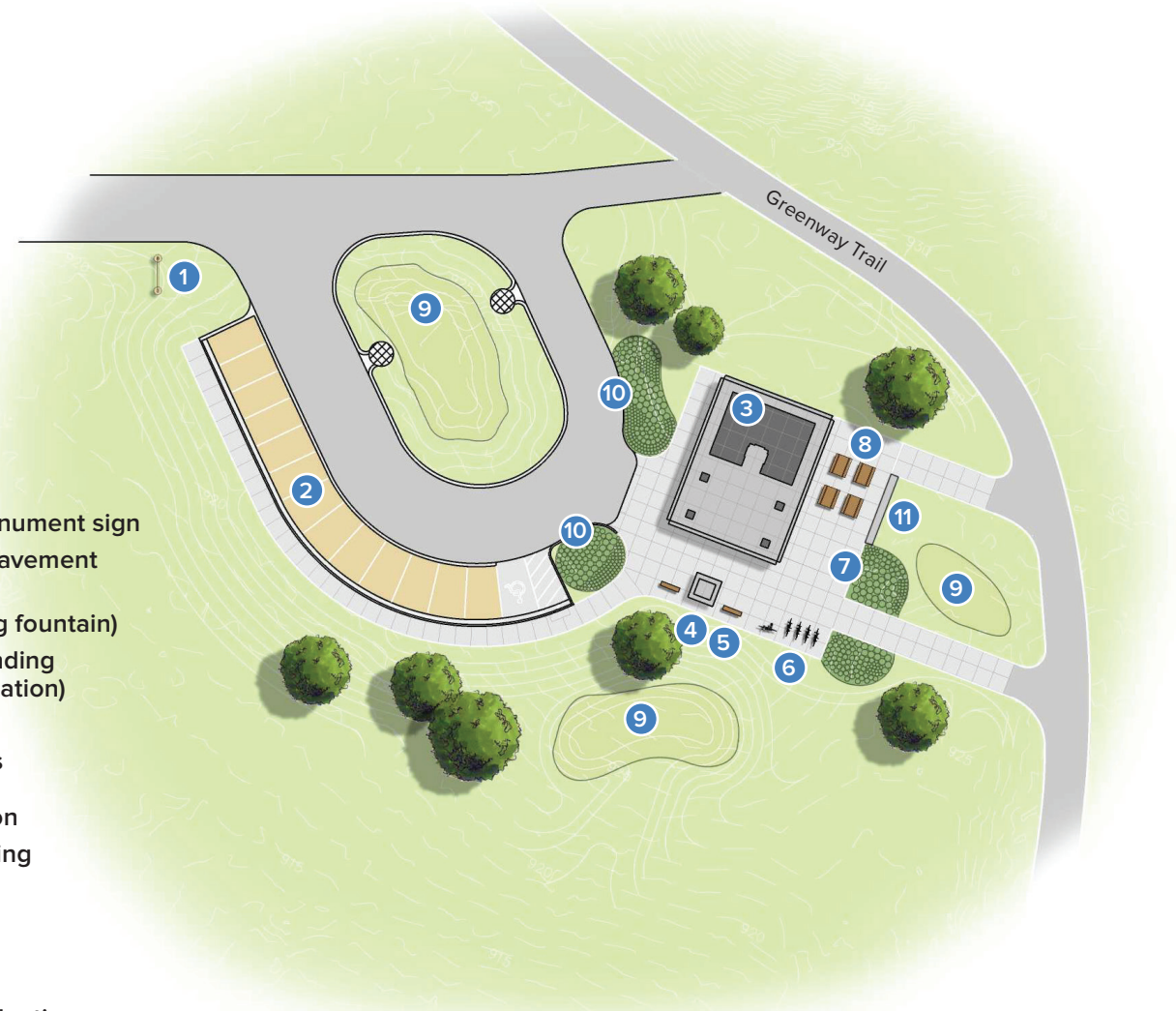


FIGURE 4.1 TRAILHEAD

Gateways

Gateways create spaces that welcome users to the greenways from local trail connections, neighborhoods, and community destinations. They provide users a visual cue that they are entering the greenway system, distinguish the greenways from other trails and walks, and provide a space for wayfinding signage. By using specific design elements, they give users visual cues when conditions may change, such as entering a new city or community or an intersection with another greenway. Design cues should be used to differentiate between greenways, such as a planting palettes or colored concrete banding along the trail.

NEIGHBORHOOD GATEWAY A LOCAL TRAIL INTERSECTION

1. Colored concrete accent band (along Greenway corridor)
2. Stamped color concrete pavement
3. Picnic table
4. Kiosk
5. Drinking fountain
6. Bike rack
7. Trash/recycling
8. Seat wall
9. Wayfinding sign
10. Landscape plantings with seasonal accent perennials
11. Overstory tree

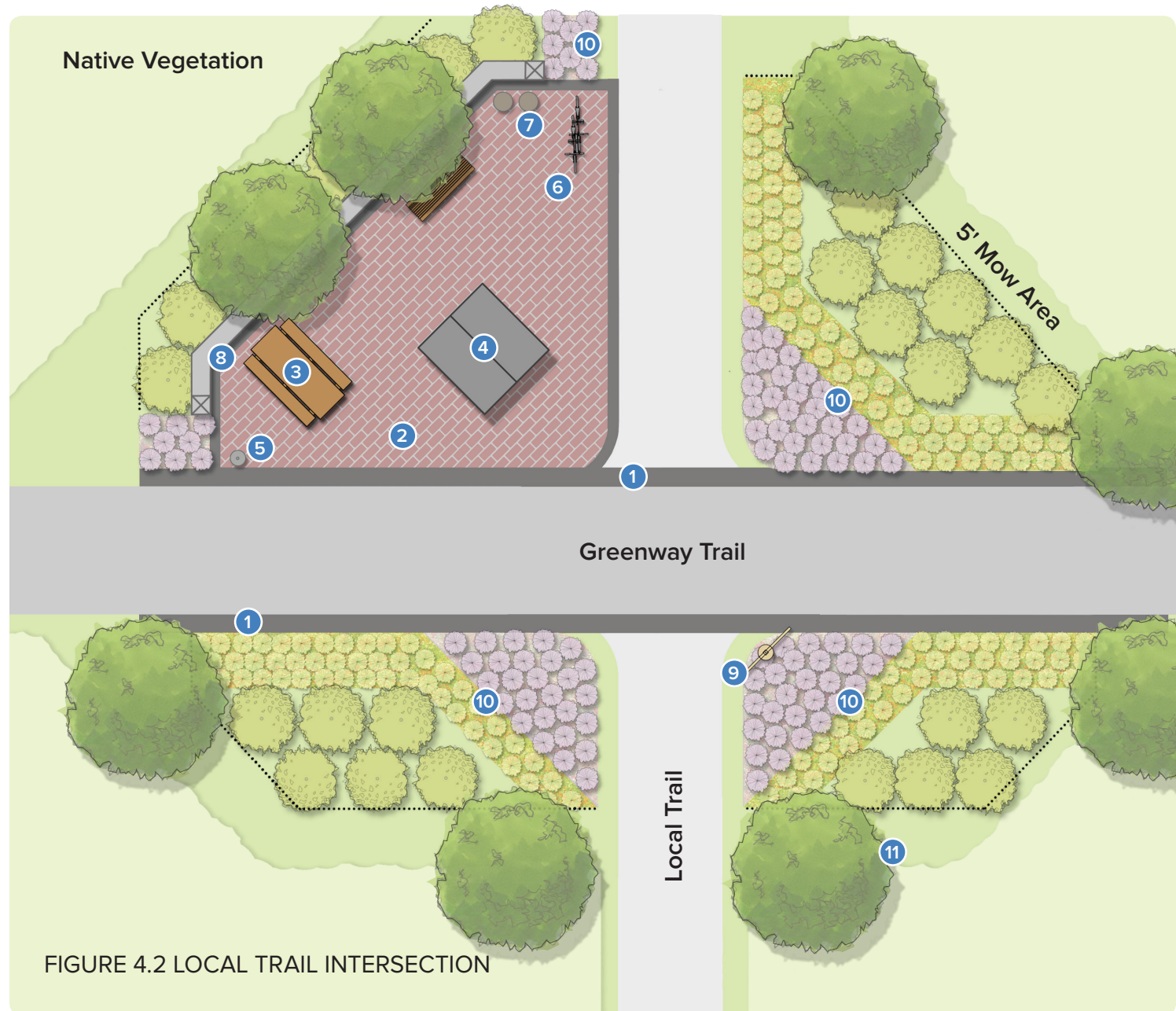
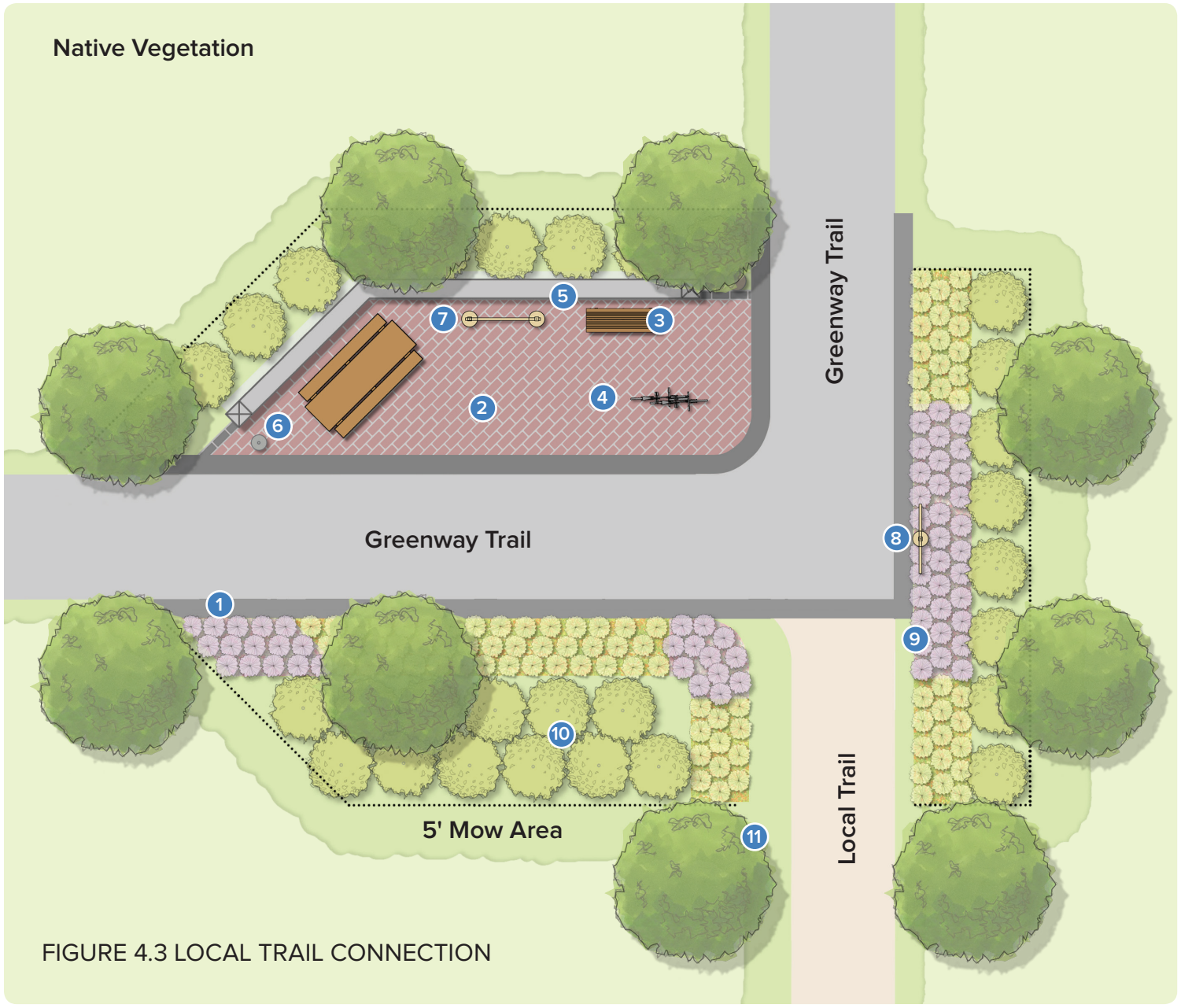


FIGURE 4.2 LOCAL TRAIL INTERSECTION



NEIGHBORHOOD GATEWAY B
LOCAL TRAIL CONNECTION

1. Colored concrete accent band
2. Stamped color concrete pavement
3. Bench
4. Bike rack
5. Seat wall
6. Trash/recycling
7. Panel sign
8. Wayfinding sign
9. Landscape planting with seasonal accent perennials
10. Low-growing shrub
11. Overstory tree

FIGURE 4.3 LOCAL TRAIL CONNECTION

Node

Nodes are paved areas located along the trail that provide a place for rest and relaxation. Nodes may also be interpretive in nature when located in areas of natural, historical, or cultural significance or along a greenway with an established interpretive theme. The graphics on the following pages are meant to show typical applications of node design. Each node will need to account for site specific conditions and be designed accordingly.

SEATING NODE

A seating node should be located along the corridor in half to one-mile locations and placed off of the greenway to allow for entering and exiting the greenway. Nodes should provide amenities such as seating, bike facilities, shade, and interpretive signage when appropriate. The incorporation of plantings around seat nodes can denote the uniqueness of the greenway and provide visual wayfinding cues for users if a consistent planting palette is used.

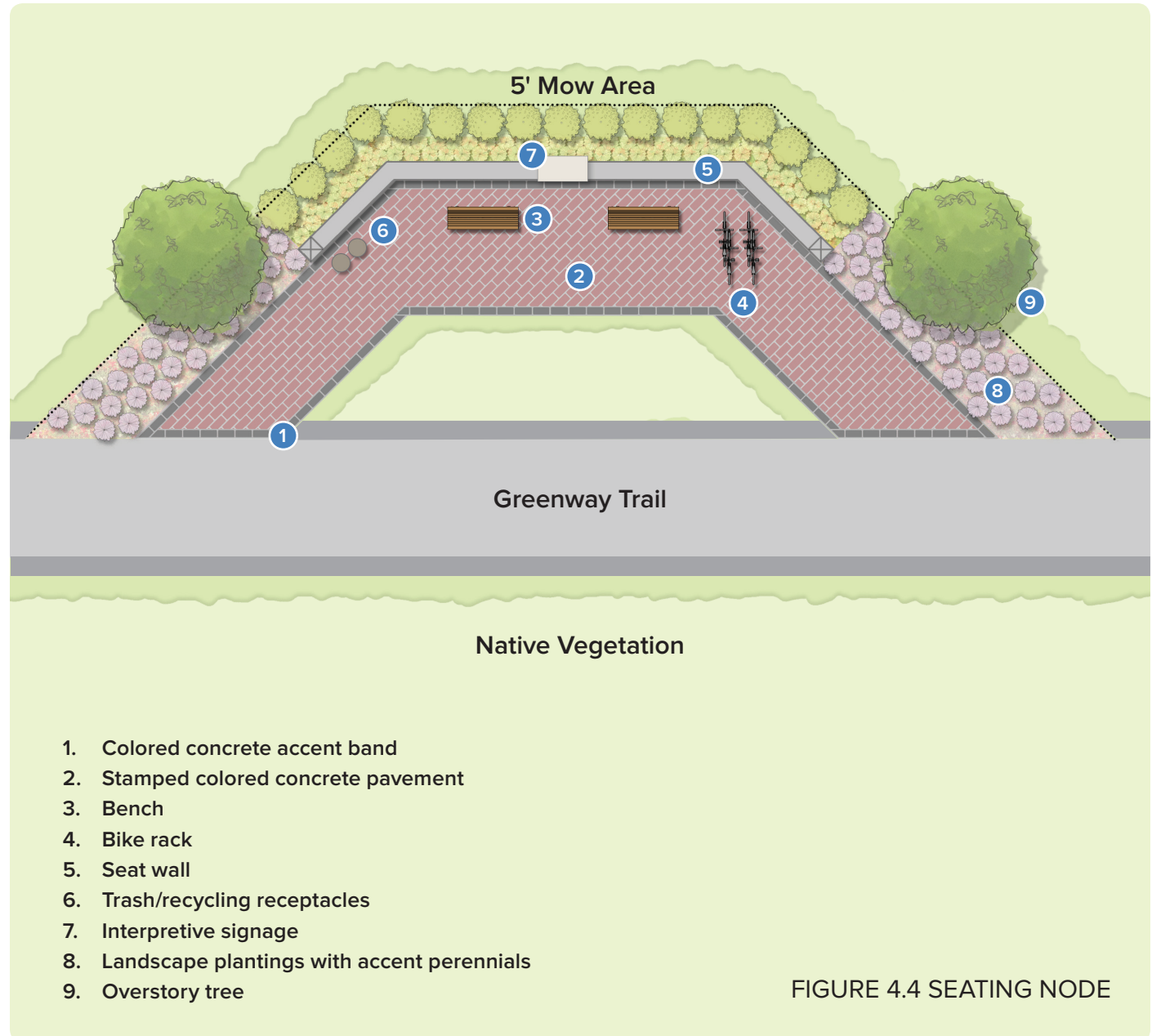
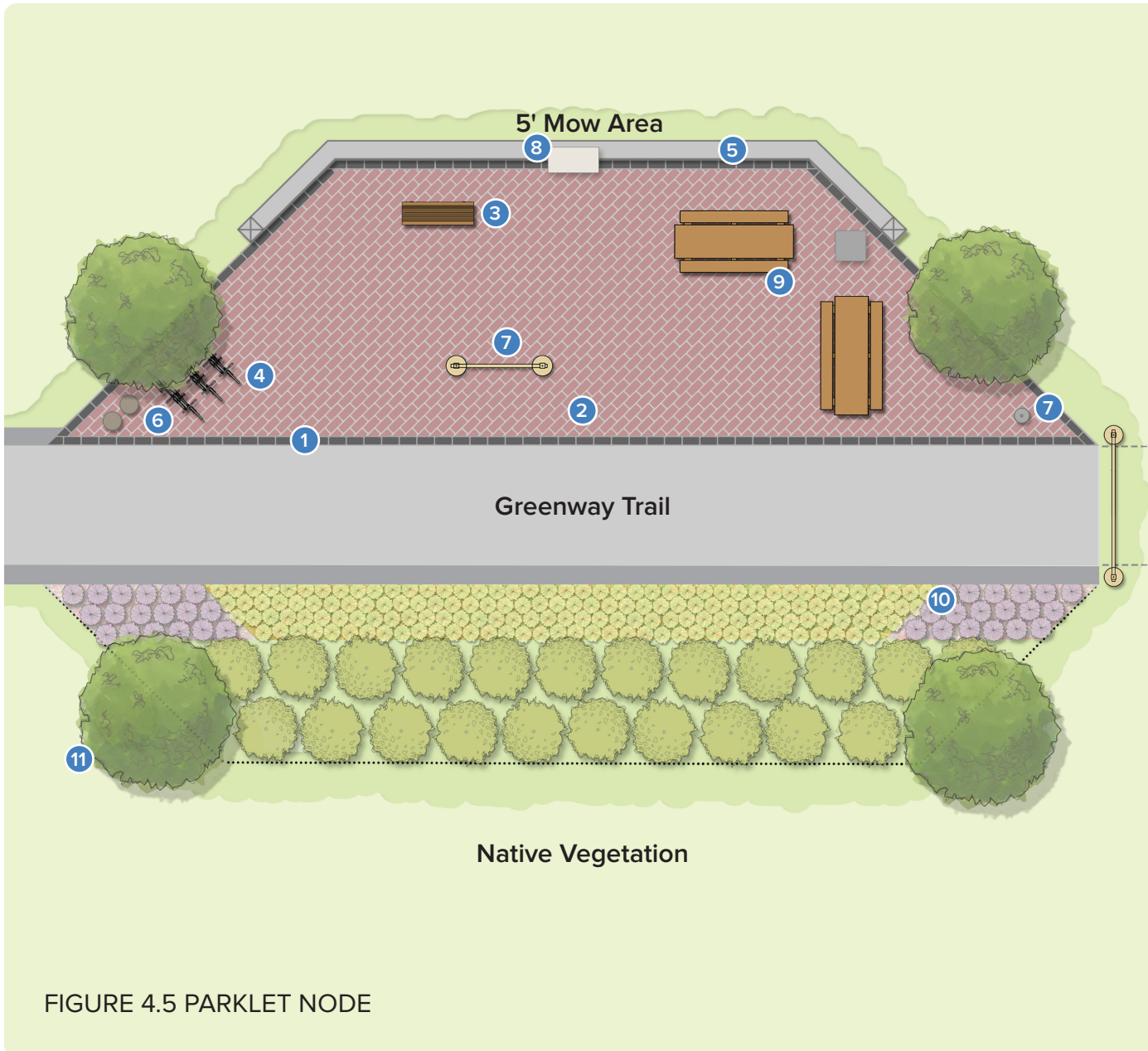


FIGURE 4.4 SEATING NODE



PARKLET NODE

A parklet node may be used as a terminus of a greenway when a future connection or phase is planned or when space allows along the greenway and additional amenities are appropriate.

1. Colored concrete accent band
2. Stamped colored concrete pavement
3. Bench
4. Bike rack
5. Seat wall
6. Trash/recycling receptacles
7. Drinking fountain
8. Interpretive signage
9. Picnic tables
10. Landscape plantings (seasonal accent perennials)
11. Overstory tree

FIGURE 4.5 PARKLET NODE

BENCH NODE

A bench node is used when space along the corridor is constrained and a seating node is not feasible. These are used to ensure there is seating every half to one mile. These typically include a bench, trash receptacle and a bike rack. Bench nodes should be used sparingly, as the larger seating nodes pulled away from the trail is preferred.

1. Colored concrete accent band
2. Stamped colored concrete pavement
3. Bench
4. Bike rack
5. Trash/recycling receptacles

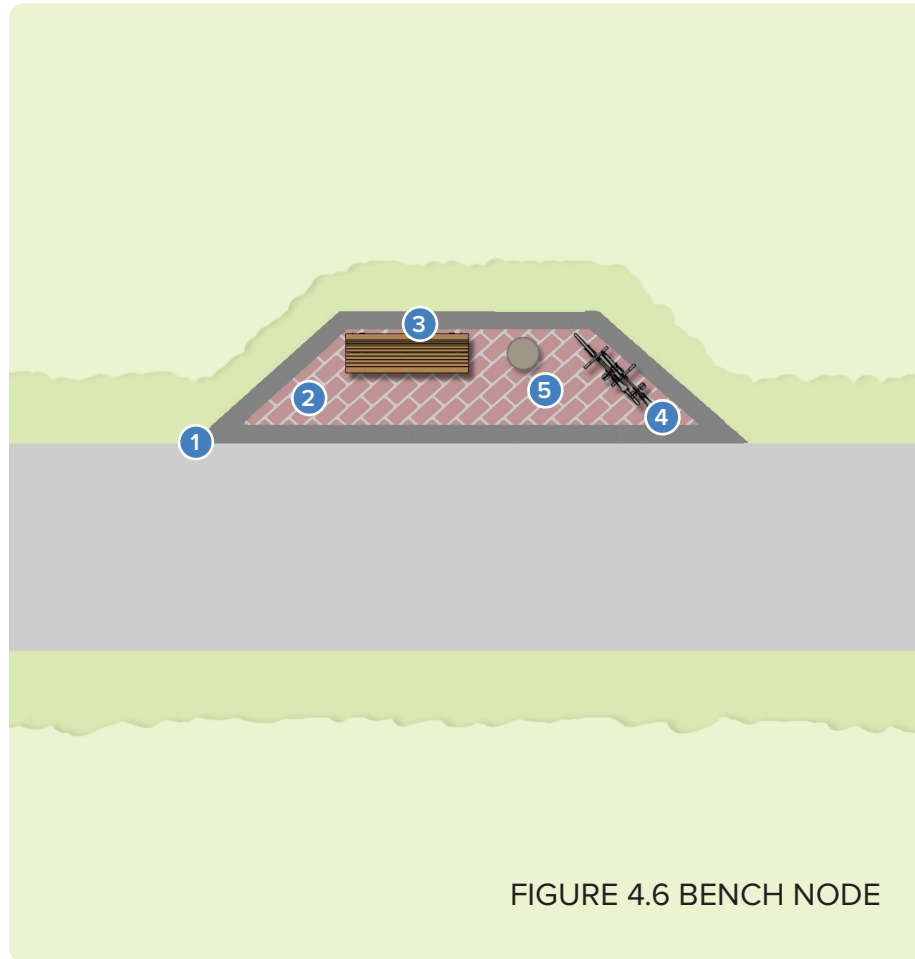


FIGURE 4.6 BENCH NODE

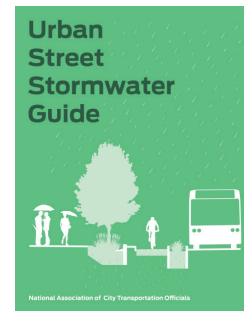
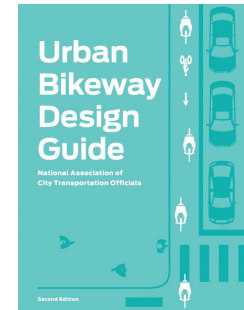


Chapter 5

REFERENCES

The Greenway Design Guidelines provide typical cross-section and amenity layouts for design guidance. The following is a list of regulations and standards for reference during detailed design. Local laws, ordinances, and codes should also be consulted.

- AASHTO: The American Association of State Highway and Transportation Officials
- ADA: American with Disabilities Act
- [Bicycle Facility Design Manual, Minnesota Department of Transportation](#)
- Dakota County Greenway Natural Resource Management Plans
- Dakota County Wayfinding and Signage Standards (forthcoming)
- Dakota County Parks and Greenway Standards
- [MMUTCD: Minnesota Manual on Uniform Traffic Control Devices](#)



- [MPCA Stormwater Manual](#)
- National Association of City Transportation Officials (NACTO): Urban Bikeway Design Guide
- NACTO Urban Street Stormwater Guide
- PROWAG: Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-way



Glossary

Clear Zone: The area outside of the traveled way along the trail that must remain clear of any vertical obtrusions, such as signage, trees, and site amenities. On greenways, the mown shoulder may be wider than the clear zone. Refer to the Minnesota Department of Transportation Bicycle Facility Design Manual for required width.

Corridor: A linear tract of land providing passage for people and wildlife.

Greenway: A linear corridor planned, designed, and managed to provide multiple benefits to water quality, habitat, recreation, and transportation.

Multi-use Trail: A paved surface that accommodates non-motorized transportation for pedestrians and bicyclists.

Open Space: Land not occupied by buildings or dominated by pavement; typically a naturally vegetated tract of land. This can be publicly or privately held land.

Operational Zone: Area within the greenway under the direct control of the County.

Right-of-Way: A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Shoulder: The surface area directly adjacent to the trail. Typically either mown turf or aggregate for greenways.





Appendix

Dakota County Greenway Implementation
Project Readiness Form

DAKOTA COUNTY GREENWAY IMPLEMENTATION PROJECT READINESS FORM					
Project Name:			Date:		
Implementing Agency:			Implementing Agency Contact:		
Project Location (City or Township):			City/Partner Contact:		
Short Project Description:					
List Greenway Corridor Typologies Identified (Rural, Suburban, Urban):					
Dakota County office of Planning Contact:					
Dakota County Parks Department Contact:					
Dakota County Capital Projects Management Contact:					
PROGRAMMATIC CHECKLIST	MEETS GUIDELINES	DOES NOT MEET GUIDELINES	N/A	VARIANCE REQUESTED	NOTES
GREENWAY CORRIDOR DESIGN					
Project is within an approved Master Plan					
Greenway corridor typology identified (Rural, Suburban, or Urban)					
Trail is not along roadway for more than 20% of corridor length					
10' bituminous trail					
3' mown shoulder					
Trees offset a minimum of 4' from trail edge					
Trailhead location(s) identified					
Gateway location(s) identified					
Node locations identified and spaced 1/2 - 1 mile apart					
Design supports improved water quality					
Signage appropriately located					
Project is within an approved Natural Resource Management Plan					
Native vegetation is predominant within corridor					
Planting design and restoration meets Natural Resource Management Plan					
Interpretive opportunities identified and addressed					
Lighting locations identified					
NODE DESIGN					
Colored/stamped concrete pavement					
Colored concrete edge along greenway					
Bench					
Bike rack					
Seat wall					
Trash/recycling receptacle					
Interpretive signage					
Designed plantings (accent plantings coordinated along greenway)					

Dakota County Greenway Implementation
Project Readiness Form

PROGRAMMATIC CHECKLIST	MEETS GUIDELINES	DOES NOT MEET GUIDELINES	N/A	VARIANCE REQUESTED	NOTES
TRAILHEAD DESIGN					
Entrance sign					
Pervious pavement parking area					
Permanent restroom (Major trailhead)					
Temporary restroom (Minor Trailhead)					
Wayfinding signage					
Drinking fountain					
Benches					
Bike racks					
Bike Fix-it station					
Trash/ Recycling receptacles					
Pet waste facility					
Picnicking					
Surface stormwater treatment (raingardens)					
Site specific landscaped areas					
Interpretive signage					
Site specific design feature					
Lighting					
Utilities (water, electric, internet)					
Security cameras					
Electric vehicle charging stations					
GATEWAY DESIGN					
Colored/stamped concrete pavement					
Colored concrete edge along greenway					
Wayfinding kiosk					
Wayfinding panel sign					
Wayfinding directional signage					
Bench					
Seatwall					
Bike rack(s)					
Drinking fountain					
Trash/recycling receptacle					
Pet waste facility					
Designed plantings (accent plantings coordinated along greenway)					
Interpretive signage					
Site specific design feature					
Dakota County Parks Department Approval					
Name:		Signature:			
Title:		Date:			