GREENWAY GUIDELINES FOR THE EAST TENNESSEE REGION:
RECOMMENDATIONS FOR WATER, RAIL, AND ROADSIDE TRAILS IN REGIONAL LANDSCAPES

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Full Greenway Guidelines document available online at:
http://planeasttn.org/GrowStronger/DemonstrationProjects/GreenwayGuidelines.aspx

Intended Audience for Guidelines

- Those beginning to learn about greenways:
  - Some elected officials
  - Community activists interested in getting a trail
- Experienced planners and advocates

Intended Use for Guidelines

- **As an introduction** to the design and planning of greenway systems and corridors

- **As a graphic reference** for greenways in East Tennessee

- **As a resource** to guide readers to additional information

What's Included in the Guidelines

- Intro to greenways and trail design
- Overview of greenways in typical landscapes:

- Visual index
- Appendices

Open space settings

Often include some combination of passive and active parks, agricultural fields, woodlots, woodlands, floodplains, unimproved drainages or hillsides, undisturbed open space, and other natural features. Open space settings can be found in rural, suburban or urban locations, and are a primary component of rural settings.

Rural Settings

Often include some combination of agricultural land, rivers, creeks, unimproved drainages, hillsides, undisturbed open space, and other natural features.

Suburban Settings

Often include low-density residential housing communities and highly developed commercial areas along major roadways. They often feature larger parks and sports complexes.

Urban and Town Center Settings

Often include a mix of residential, commercial, and entertainment uses. They vary in scale from small towns to large cities. Parks are usually of mixed size and use.

# TYPICAL LOCATIONS FOR TRAILS: RIGHTS-OF-WAY AND EASEMENTS

(A) Roadside locations   (B) Railside locations   (C) Waterside locations   (D) Utility corridors   (E,F) Adjacent to Property lines and in Open Spaces
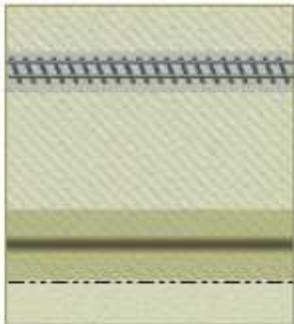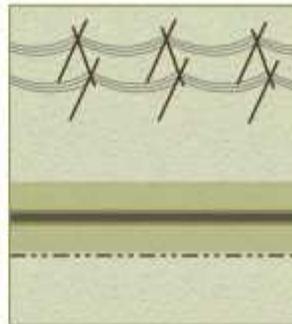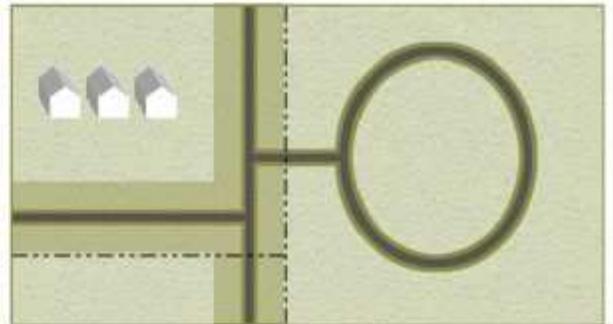
BEFORE
UNION COUNTY. TN
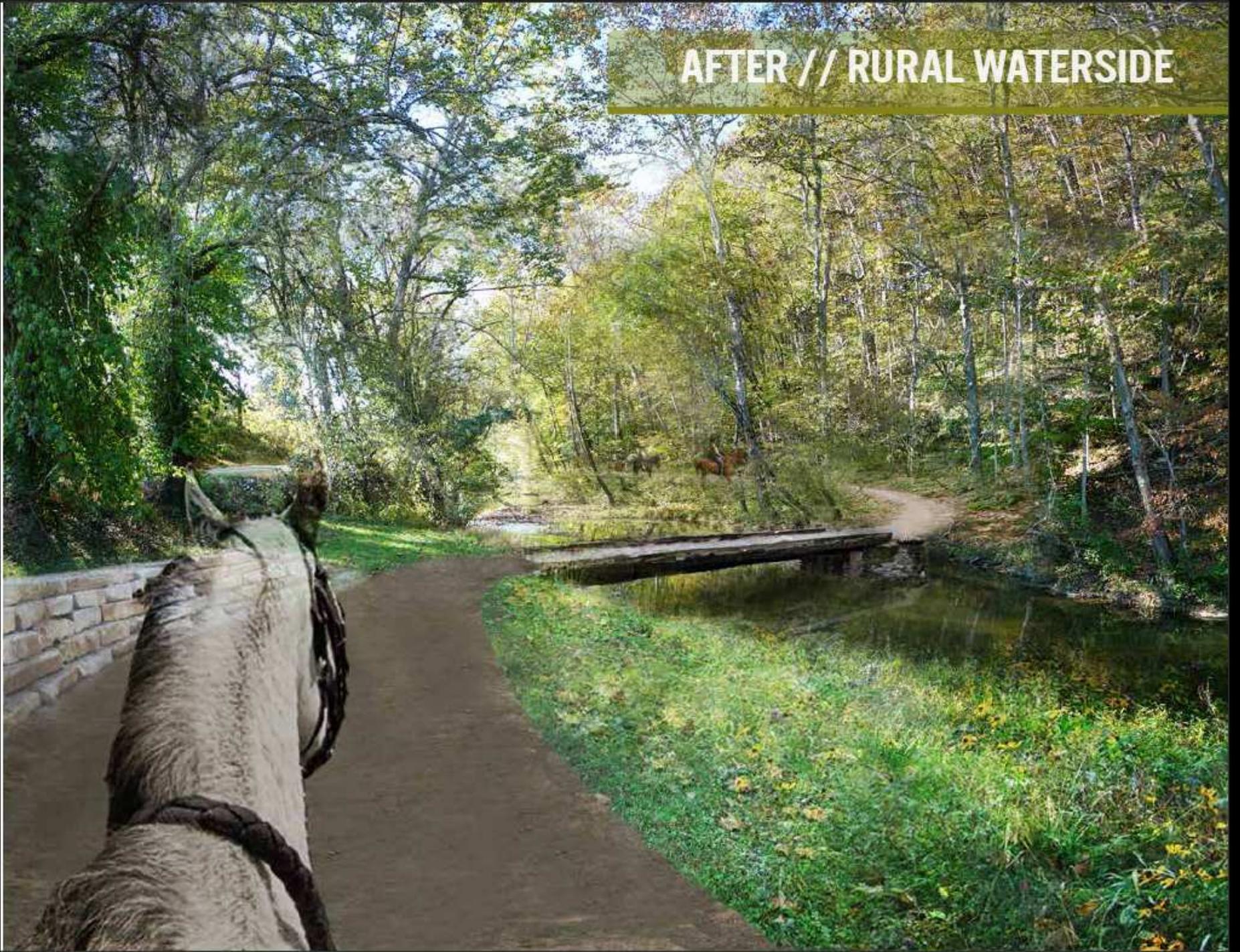
WATERSIDE // SUBURBAN COMMERCIAL

- FLOODWAY
- FLOODPLAIN
- STREAM PROTECTION BUFFER
- TRAIL & MAINTENANCE AREA

BEFORE
ANDERSON COUNTY, TN

AFTER // SUBURBAN COMMERCIAL ROAD

CONTROLLED-ACCESS // RURAL

■ VARIABLE ROAD RIGHT-OF-WAY
■ TRAIL & MAINTENANCE AREA

BEFORE
LOUDON COUNTY, TN

AFTER // SMALL TOWN RAIL TO TRAIL

RAILS WITH TRAILS // URBAN

VARIABLE RAILROAD RIGHT-OF-WAY

TRAIL & MAINTENANCE AREA

INTRODUCTION

When trails intersect other trails, transportation infrastructure, steep terrain, or environmentally sensitive areas, a variety of approaches may be taken.

Crossing under obstacles such as roads, rail lines, and natural barriers usually requires an underpass or tunnel. These structures can be made safer and more pleasant with proper lighting and public art.

RESOURCES

- AASHTO Guide for the Development of Bicycle Facilities — refer to section on shared-use paths

- CPTED — refer to this PDF for an understanding of how design can aid in crime prevention: www.humanics-es.com/cpted.pdf

- FHWA — report "Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations Final Report and Recommended Guidelines," FHWA-HRT-04-100

- FHWA — summary guidance on the Rectangular Rapid Flash Beacon, FHWA-SA-09-009

- Rails to Trails Conservancy — refer to this for trails crossing active rail lines: www.railstotrails.org/ourwork/trailbuilding/toolbox/information-summaries/crossings.html

UNDERPASSES

TUNNELS

Mural
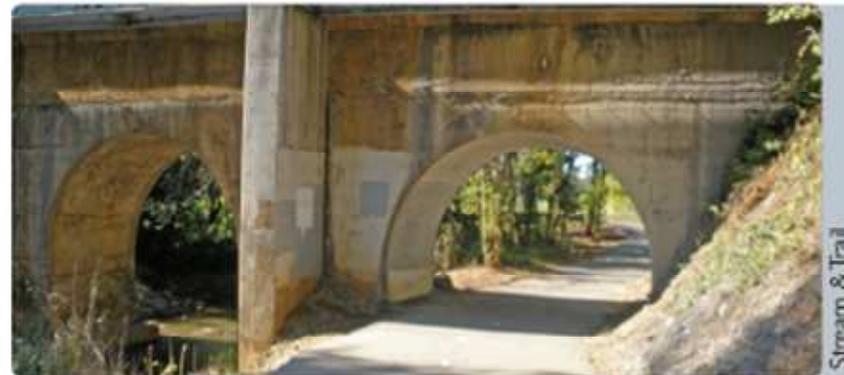
Partial Separation

Stream & Trail

Lights & Art

Creative Lighting

Arch

B₂ TYPICAL TRAIL SURFACE MATERIALS

ACCESSIBLE TRAIL

Concrete is an attractive, durable material for high-traffic areas or flood-prone areas.

Cost: $$
Maintenance: Low
Durability: High

Unit Pavers are an attractive, permeable option for amenity sites.

Cost: $$$
Maintenance: Low-Medium
Durability: Medium-High

Asphalt is an economical, durable material that withstands high traffic.

Cost: $
Maintenance: Medium
Durability: Medium-High

Rubberized Track is an appropriate choice for pedestrian-only recreation loops.

Cost: $$$
Maintenance: Low-Medium
Durability: Medium-Low

Permeable Pavements have similar characteristics as impervious versions yet prevent pooling/icing.

Cost: $$
Maintenance: High
Durability: Medium-High

Compacted Soil is a low-cost option for pedestrian and equestrian trails. Made ADA accessible by top-sealing.

Cost: $
Maintenance: Medium
Durability: Medium-Low

RECREATION TRAIL

Crusher Fines are an economical choice for recreational pedestrian and bicycle trails.

Cost: $
Maintenance: Medium-High
Durability: Medium-Low

Woodchips are an economical choice for recreational pedestrian trails.

Cost: $
Maintenance: Medium-High
Durability: Medium-Low

Turf Grass strips provide a low-cost trail surface for recreational activities.

Cost: $
Maintenance: High
Durability: n/a

BOARDWALKS & BRIDGES

Wood Decking may be used for crossings, but may become slippery when wet.

Cost: $$
Maintenance: Medium
Durability: Medium-High

Concrete Decking is a durable, slip-resistant material for crossings.

Cost: $$$
Maintenance: Low
Durability: High

Metal Grating is an attractive, low-maintenance, slip-resistant option for crossings.

Cost: $$$
Maintenance: Low
Durability: High

TRAIL SURFACE MATERIALS SELECTION MATRIX

Legend:
- ● STRONGLY RECOMMENDED
- ◐ PARTIALLY RECOMMENDED
- ○ LOW
- ◉ MEDIUM
- ⬢ HIGH
- + EXHIBITS CHARACTERISTIC

		MULTI-USE TRAILS						RECREATIONAL TRAILS			ABOVE GRADE CROSSINGS		
		CONCRETE	ASPHALT	PERMEABLE PAVEMENTS	UNIT PAVERS	RUBBERIZED TRACK	COMPACTED SOIL	CRUSHER FINES	WOODCHIPS	TURFGRASS	WOOD DECKING	CONCRETE DECKING	METAL GRATE
TRAVEL MODES	ADA APPROVED SURFACE	●	●	●	◐	●	◐	◐			●	◐	◐
	RUNNING	◐	●	◐	◐	●	◐	◐	◐	◐	●	●	●
	HIKING		◐				●	●	●	◐	●	●	◐
	BICYCLE–RECREATIONAL						●	●	◐	◐	◐		◐
	BICYCLE–COMMUTER	●	●	●	◐							●	
	EQUESTRIAN						●		●		●	●	
USE ON RUNNING SLOPE	< 2% Slope	●	●	●	●	●	●	●	●	●	●	●	●
	2–8% Slope	●	●		●	◐	●	◐		●	●	●	
	> 8% Slope		●		●		◐						
SURFACE PERMEABILITY	HIGHLY PERMEABLE			+	+			+	+	+	+		+
	SEMI–PERMEABLE				+		+					+	
	IMPERVIOUS	+	+			+						+	
LOCATION	URBAN NON–RESIDENTIAL	●	●	●	●	●						●	●
	URBAN RESIDENTIAL	●	●	●	●	●		◐				●	●
	SUBURBAN NON–RESIDENTIAL	●	●	●	●	●		◐				●	●
	SUBURBAN RESIDENTIAL	●	●	●	●	●	●	●	◐		●	●	●
	RURAL		●	●			●	●	●	●	●	●	●
MONETARY FACTORS	COST	◉	○	◉	⬢	⬢	○	○	○	○	◉	⬢	⬢
	MAINTENANCE	○	◉	⬢	◉	◉	◉	◉	◉	⬢	◉	○	○
	DURABILITY	⬢	◉	◉	◉	○	○	○	○	n/a	◉	⬢	⬢

C1 SIGNAGE & SIGNALS – TYPES

INTRODUCTION

Signage and signals are used to aid wayfinding and to increase the safety of trail users.

Regions or communities usually identify a set of typical signs, infrastructure and amenities to help unify wayfinding and lets users know when they are in the greenway system. Design guideline documents are an easy way to make examples and guidelines available digitally or in print. Including decorative variations on the typical signage, infrastructure and amenity selections in the design guidelines helps communicate character and theme of corridor segments, and can let users know when they are in a particular community or corridor segment type.

Two local examples of signage guidelines are listed in the resources – the Knoxville Regional Transportation Planning Organization Greenway Signage Guidelines (see Appendix E) and the 2012 Downtown Knoxville Wayfinding & Signage Program. It is important that greenway signage designs comply with all relevant local, state, and national standards for signage. Local Metropolitan Planning Organizations or Transportation Planning Organizations (MPOs/TPOs) or the Tennessee Department of Transportation (TDOT) may be able to provide information or assistance with signage standards to a community.

POST MOUNTED

Standard Post
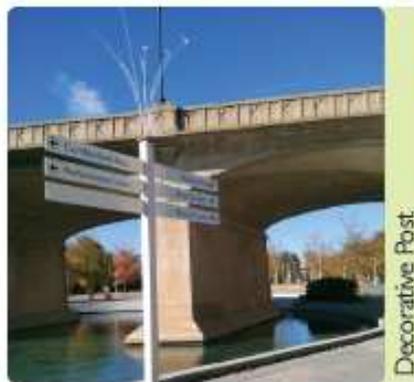
Decorative Post

Projecting Sign / Banner

SPECIALTY

Kiosk

Pavement – Painted

Building Mounted

Pylon Sign

Great Smoky Mountains National Park

Monument Sign

KNOXVILLE'S URBAN

Creative Signs

D3 BARRIERS

BARRIERS

Barriers improve safety, discourage trespass, and promote privacy by impeding physical access between areas of incompatible use within the greenway corridor. Safety barriers include walls, rails, and other elements that meet transportation safety specifications. Privacy and trespass barriers include fences, walls, and plantings that screen sightlines. They also limit transmission of sound and physical access to property located adjacent to the trail corridor. Bollards allow trail users to pass, but prevent unauthorized vehicles entering. However, bollards may pose a hazard to bicyclists. For guidance on when and how to use bollards, see Appendix E: TPO Guidelines for Signing and Marking Greenway Trails.

RESOURCES

- AASHTO Guide for the Development of Bicycle Facilities

- Crime Prevention Through Environmental Design (CPTED) guidelines: www.humanics-es.com/cpted.pdf

- Rails to Trails Conservancy – find resources for designing safe rails-with-trails here: www.railstotrails.org/ourWork/trailbuilding/toolbox/informationSummaries/rails-with-trails.html

SAFETY BARRIERS

Vehicular Guardrail

Railing

Bollards

PRIVACY & TRESPASS PREVENTION BARRIERS

Topography & Vegetation

Vegetation Screen & Wall

Fence

Vegetation & Fence

Vegetation & Fence

Split Rail Fence

TRAIL LIGHTING MATRIX

Legend: ● STRONGLY RECOMMENDED ◐ PARTIALLY RECOMMENDED

		SECURITY LIGHTING		USER LIGHTING		MAINTENANCE AREA LIGHTING				FOOTPATH LIGHTING				
		ROADWAY LIGHTING	PARKING LOT LIGHTING–SHIELDED	PEDESTRIAN POLE LIGHT–STANDARD	PEDESTRIAN POLE LIGHT–DECORATIVE	LANDMARKS, WALLS, SIGNAGE	LOW-LEVEL FLOOD LIGHTS	BOLLARD LIGHTS	IN-GRADE ARCH LIGHT FIXTURES	LOW-LEVEL FLOOD LIGHTS	RECESSED WALL LIGHTS	STEP LIGHTS	BENCH LIGHTS	CREATIVE LIGHTS
RURAL	MAJOR TRAILHEAD		●	◐		◐								
	MAJOR TRAILHEAD AT NON-RESIDENTIAL		◐	◐	◐									◐
	MINOR TRAILHEAD				●	◐		◐						◐
	STANDARD TRAIL SEGMENT													
	STANDARD TRAIL CROSSING TRAIL			◐										◐
	STANDARD TRAIL CROSSING ROADS OR RAILS	●												
SUBURBAN RESIDENTIAL	MAJOR TRAILHEAD		●	◐	◐	◐		◐						◐
	MAJOR TRAILHEAD AT NON-RESIDENTIAL			◐	●	◐		◐						◐
	MINOR TRAILHEAD													
	STANDARD TRAIL SEGMENT			◐										◐
	STANDARD TRAIL CROSSING TRAIL													
	STANDARD TRAIL CROSSING ROADS OR RAILS	●												
SUBURBAN COMMERCIAL	MAJOR TRAILHEAD		◐	●	●	◐		◐						◐
	STANDARD TRAIL SEGMENT			◐	●	●	◐		◐	◐		◐	◐	◐
	STANDARD TRAIL CROSSING TRAIL			◐	●	●	◐		◐	◐		◐	◐	◐
	STANDARD TRAIL CROSSING ROADS OR RAILS	●				●								
URBAN RESIDENTIAL	MAJOR TRAILHEAD		●	◐	◐	◐		◐						◐
	MINOR TRAILHEAD			◐	●	◐		◐						◐
	STANDARD TRAIL SEGMENT													
	STANDARD TRAIL CROSSING TRAIL			◐	●			◐						◐
	STANDARD TRAIL CROSSING ROADS OR RAILS	●						◐						
URBAN COMMERCIAL	MAJOR TRAILHEAD		●	●	●	◐		◐		◐	◐	◐	◐	◐
	STANDARD TRAIL SEGMENT			◐	●	●	◐		◐	◐	◐	◐	◐	◐
	STANDARD TRAIL CROSSING TRAIL			◐	●	●	◐		◐	◐				
	STANDARD TRAIL CROSSING ROADS OR RAILS	●		◐	●	●	◐	◐						◐
SPECIAL TRAIL PLACES	LEARNING LANDSCAPES					●								◐
	SCENIC PLACES												◐	
	EVENT PLAZAS			◐	●	●	●		●	●	●	●	●	●
	POCKET PARKS			◐	◐									◐
	EMERGENCY CALL SITES			◐	●									

F₅ REST & SHELTER

REST & SHELTER

Seating and shade are important amenities for the comfort of greenway users. Shade trees not only add comfort, but they can improve air quality as well.

Shade and seating can usually be provided at very low cost by the thoughtful placement of trees and the inclusion of occasional lawn areas, landscape berms or boulders along the path edge. Benches and picnic areas are welcome additions to trails in populated areas.

While shelter structures come in many forms, material selection and design of the shelters should reinforce the character and theme of each trail location as well as the overall greenway system. Care should be given to ensure shelters have open sightlines for the safety of users and are durable and easy to maintain.

RESOURCES

- 2010 ADA Standards for Accessible Design, Chapter 10: Recreational Facilities – refer to this for accessibility standards for benches and shelters

- Crime Prevention Through Environmental Design (CPTED) guidelines: www.humanics-es.com/cpted.pdf

SEATING

Architectural Site Walls

Benches

Boulders & Natural Benches

SHELTER

Bus Shelter

Picnic Pavilion

Rustic Shelter

SHADE

Street Trees

Pergolas & Trellis

Woodlot Clearing

TRAIL AMENITIES MATRIX

Legend:
- ● STRONGLY RECOMMENDED
- ◐ PARTIALLY RECOMMENDED
- R RECOMMENDED for RURAL

		Convenient Storage	Bicycle Parking	Electric Bicycle Charging Station	Emergency Stations	Horse Parking	Water Fountain (dog/people)	Restroom	Dog Sanitation Station	Changing + Shower Areas	Waste + Recycling Receptacles	Seating	Shelter	Shade	Fitness Equipment	Playful Amenities	Pocket Parks
RURAL	MAJOR TRAILHEAD		◐		◐	●	◐	●			●	●		●			
	MAJOR TRAILHEAD AT NON-RESIDENTIAL	◐	●		◐					●	●		●				
	MINOR TRAILHEAD		◐		◐	●	◐				◐	●		●			
	STANDARD TRAIL SEGMENT											●		●			
	STANDARD TRAIL CROSSING TRAIL											●	◐	●			
	MID-TRAIL EMERGENCY SITE											●	◐	●			
SUBURBAN	MAJOR TRAILHEAD		●	◐	◐		◐	◐	●		●	●		●			
	MAJOR TRAILHEAD AT NON-RESIDENTIAL	◐	●	◐							●	●		●			
	MINOR TRAILHEAD		●		◐		◐	◐	◐		◐	●		●	◐	◐	◐
	STANDARD TRAIL SEGMENT											●		●			
	STANDARD TRAIL CROSSING TRAIL									◐			●		◐	◐	
	MID-TRAIL EMERGENCY SITE				●							●	◐	●			
URBAN	MAJOR TRAILHEAD	◐	●	◐	◐		◐	◐	●	◐	●	●	◐	●	◐	◐	
	MAJOR TRAILHEAD AT NON-RESIDENTIAL	●	●	◐	◐				●	◐	●	●		●		◐	
	MINOR TRAILHEAD	◐	●	◐					●		●	●		●	◐	◐	◐
	TRAILHEAD (SPONSORED)	●	●	◐	●		●	●	◐	●	◐	●	●	●	◐	◐	◐
	STANDARD TRAIL SEGMENT		◐									●		●			
	STANDARD TRAIL CROSSING TRAIL									◐	◐	●		●	◐	◐	
	MID-TRAIL EMERGENCY SITE			◐								●					
SPECIAL TRAIL PLACES	LEARNING LANDSCAPES		●			R					◐	●		●		◐	◐
	SCENIC PLACES		●			R	◐	◐	◐		◐	●	R	●			
	EVENT PLACES		●	◐	◐	R	●	●	●		●	●	●	●		●	

Greenway Guidelines Appendices

- Trail maintenance
- Mile markers
- Plant palette
- Sidepath checklist
- Guidelines for signing & marking greenway trails

GREENWAY SIGN EXAMPLES:

GREENWAY
G
City of Knoxville

Figure 1: Big G sign

ENTERING
THIRD CREEK GREENWAY

YOU
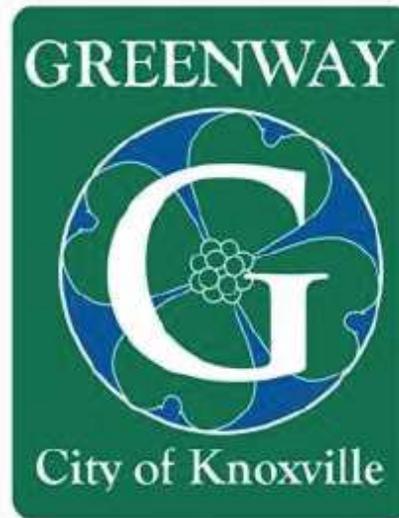
Figure 2: Entering map

CONNECTIONS

Figure 3: Connections map

BEARDEN GREENWAY

Figure 4: Greenway identifier

TYSON PARK
2.3 mi.

BEARDEN
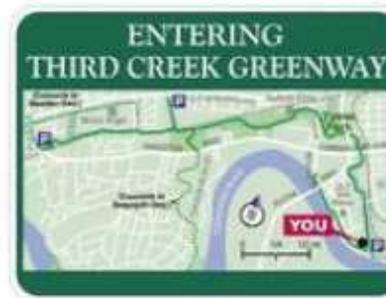
Figure 5: Directional/
destination sign