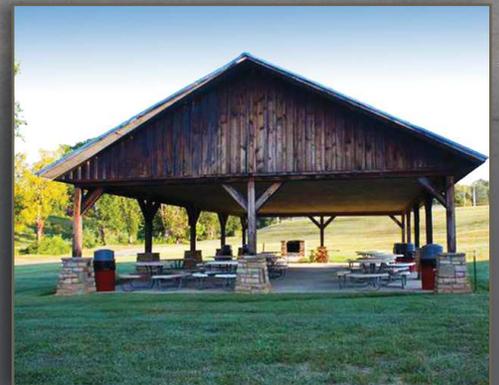


# CORE OF DANDRIDGE PEDESTRIAN AND BICYCLE MASTER PLAN

September 2016



G R E S H A M  
S M I T H   A N D  
P A R T N E R S

*Funded through the Community Transportation Planning Grant Program*

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# CORE OF DANDRIDGE PEDESTRIAN AND BICYCLE MASTER PLAN

*The Tennessee Department of Transportation (TDOT) established the Community Transportation Planning Grant (CTPG) program to assist Tennessee's small and rural communities in developing transportation plans to address transportation, land use, and growth management issues. The program is designed to better integrate multimodal transportation systems with local land use objectives to achieve statewide transportation goals.*

*The Town of Dandridge is one of eight grant recipients during the program's inaugural 2014 grant cycle. The report documents the work efforts and findings of the Core of Dandridge Pedestrian and Bicycle Master Plan.*

## 1. OVERVIEW

Dandridge is Tennessee's second oldest town and a desirable place to live, work, and visit. A historic, walkable downtown, good access to employment centers via I-40, a world-class waterfront on Douglas Lake that attracts events such as national Bassmaster fishing tournaments, and good schools are a handful of factors that contribute to the Town's desirability. Between 1990 and 2015, the population of Dandridge almost doubled from just over 1,500 to over 2,900 (source; US Census).

As Dandridge grows, the Town would like to ensure that it retains its livability. In particular, the Town would like to focus on increasing accessibility to three of its most popular activity centers:

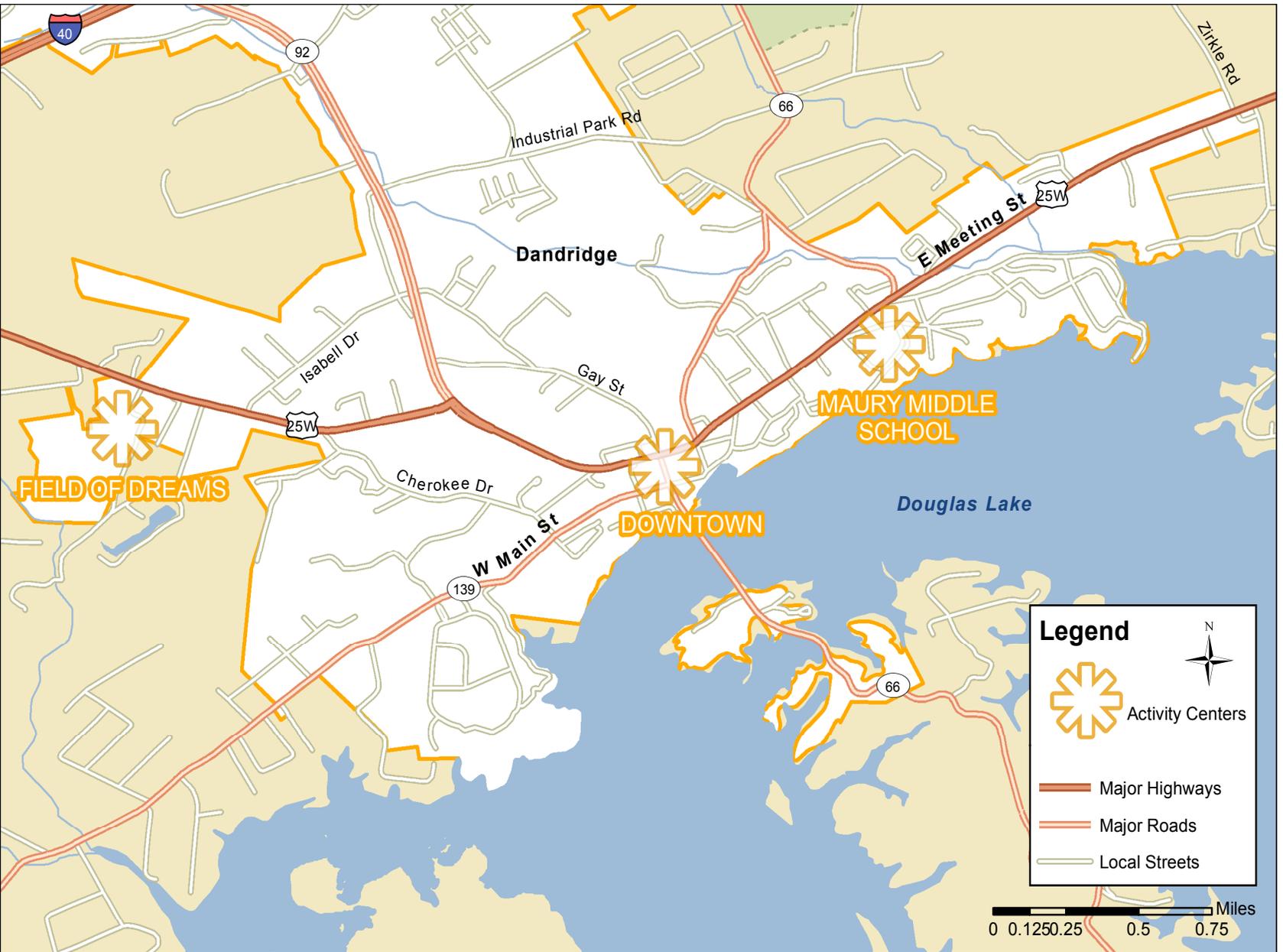
1. Downtown and waterfront,
2. Field of Dreams Activity Center Complex, and
3. Maury Middle School.

These three activity centers, as shown in Figure 1-1, are community-wide assets. The Town would like to make them more accessible by residents and visitors of all ages through the creation of a balanced transportation network by providing safe, comfortable, and convenient opportunities for walking and biking.

The Core of Dandridge Pedestrian and Bicycle Master Plan provides a plan and vision for a cohesive, integrated multimodal network through the completion of several important objectives:

- A clear understanding of issues and opportunities shaped through analysis of existing data and a stakeholder engagement process.
- Development of distinct alternatives for achieving pedestrian and bicycle connections that vary based on alignment and facility type.
- Establishment of a thoughtful decision-making process by providing relevant information on each alternative to stakeholders, including cost, comfort and convenience, connectivity, and safety.
- A recommended plan that can be implemented by the Town and its partners.

Figure 1-1. Study Area with Activity Centers



## 2. ISSUES AND OPPORTUNITIES

There are a number of issues and opportunities that shape the context for creating the Pedestrian and Bicycle Master Plan. The project team performed several field reviews, assembled and analyzed available data, and engaged various stakeholders, including a workshop and open house with members of the public and Planning Commission. The results of the public meetings are summarized in Appendix A. The most relevant and impactful issues and opportunities are summarized below.

### Field of Dreams Activity Center

The Field of Dreams Activity Center is the crown jewel of Dandridge's parks and recreation system. It includes two full basketball courts, wellness center, and multi-purpose room. The adjacent grounds include six baseball/softball fields, a

football/soccer field, and playground. It plays host to tournaments and leagues for volleyball, basketball, football, soccer, baseball, softball, and cheerleading throughout the year as well as regular fitness classes, meetings, and special events. It is the recreational and social focal point of the community.

The Activity Center is located just inside the western boundary of the Town limits on US 25W. Currently, the only way to access the Activity Center is by car. The Town would like to make the Activity Center more accessible to residents and visitors of all ages by providing safe and comfortable bicycle and pedestrian connections.

*Field of Dreams Athletic Fields*



*Field of Dreams Activity Center*



## Core of Dandridge Pedestrian and Bicycle Master Plan

*Downtown Dandridge – Gay Street*



*Downtown Dandridge – Main Street and Gay Street*



## Downtown and Waterfront

The Town's historic, walkable downtown continues to be a traveler destination, drawing from the nearby Great Smoky Mountains' large tourism base. The adjacent waterfront and Douglas Lake is a center for active sports and sporting events. Two national Bassmaster fishing tournaments are held in Dandridge each year.

Dandridge recently completed a Waterfront and Downtown Master Plan to encourage economic development (Figure 2-1). The plan includes a number of proposed enhancements and amenities, including a waterfront amphitheater,

mountain biking trails, boating facilities, and additional parking. Additionally, TDOT is constructing a new bridge over Douglas Lake connecting downtown to waterfront amenities that will include facilities for walking and bicycling.

One of the top priorities emanating from the Waterfront Master Plan community engagement process is the ability to move around safely on bicycle and by foot. This need will become amplified once the recommendations of the Master Plan are implemented.

Figure 2-1. Map of Waterfront and Downtown Recommendations



*Maury Middle School*



## Maury Middle School

Maury Middle School is located on the east side of town on US 25W. As a community-based public school, the Town would like to see Maury Middle School better connected to the rest of the community. The Pedestrian and Bicycle Master Plan will not only make the school better connected to the other activity centers, it will provide increased accessibility and connectivity to the surrounding community. Future extensions of the plan could include connections to some of the other public schools that serve Dandridge.

*Maury Middle School Multi-Use Path*



## Active Transportation as a Health and Lifestyle Choice

In the past, walking and bicycling were seen as modes of necessity for those that did not have access to an automobile. However, the last decade or so has seen active transportation grow in popularity as a health and lifestyle choice. More and more Americans choose, or would like to choose, walking and bicycling as a means of transportation.

A recent survey found that two-thirds of Americans want more freedom to choose how they get around, but that almost three out of four feel they have no choice but to drive (Future of Transportation National Survey, 2010). The Centers for Disease Control and Prevention (2012) found that over one-third of Americans would be willing to walk at least a mile to work.

Compared to older Americans, millennials take fewer and shorter trips, and take a larger share of trips by walking, bicycling, or other modes. Between 2001 and 2009, the average number of miles per person driven by 16 to 34-year-olds dropped by 23 percent (Transportation for America).

If Dandridge is to become a growing, next-generation community, it must offer compatible lifestyle choices. A robust active

source: www.pedbikemages.org / xAdam Darin



transportation network is a key part of that lifestyle offering. The Core of Dandridge Pedestrian and Bicycle Master Plan is the first step in that process.

## Lack of Facilities and Network Gaps

One of the main barriers to walking and bicycling is the lack of adequate facilities and gaps in the current network. All three activity centers are linked by US 25W/70. Between downtown and Maury Middle School, a narrow sidewalk alternates between the north and south sides of US 25W/70. Between downtown and the Field of Dreams Activity Center, US 25W/70 has no sidewalks or other pedestrian facilities.



Paved shoulders are included on most of US 25W/70 between the three activity centers, but they are not marked for cyclists and are, for the most part, substandard width (less than four feet). Given the traffic design characteristics of the road (see the next section), it would not be appropriate for young, inexperienced or casual cyclists.

Traveling along and crossing US 25W/70 is a significant barrier, especially for younger, more inexperienced walkers and bikers. The Town also has a number of hills that make active transportation less appealing to some groups. Douglas Lake to the south is a valuable resource for the community but it also limits the path of travel between the three activity centers. Finally, Jefferson County maintains an active quarry to the east of the Field of Dreams Activity Center that currently limits access to the facility to one entrance.



## Safety

Annual average daily traffic on US 25W through downtown Dandridge has stayed at nearly 13,000 vehicles over the past 15 years (TDOT). According to data obtained from the TDOT E-TRIMS database, there were a total of 74 crashes along US 25W/70 from 2012 and 2014 between the three activity centers. The majority of these crashes were rear end collisions near the intersections. While there were no crashes involving pedestrians or bicyclists on US 25W/70 from 2012 to 2014, it is assumed

that there are relatively few walkers and bicyclists currently using the roadway due to the lack of bicycle and pedestrian facilities along the road.

According to research on the factors influencing bicycling behavior by Dill (2012) and Geller (2005), most people, approximately 60 percent of the population, are “interested but concerned” about biking and would bike with higher-comfort facilities such as separated bicycle lanes or multi-use paths.

Providing bicycle facilities and pedestrian amenities can improve safety and reduce conflicts with motor vehicles. The current transportation system in Dandridge includes very few facilities for cycling. There are many potential motorist-bicyclist conflicts that must be addressed before cycling can be considered feasible. In communities that have effectively accommodated bicyclists, conflicts between motorists and cyclists decrease.

## Public Workshop

To help enhance the project team’s understanding of the issues and opportunities for walking and cycling, a public workshop was held prior to the Dandridge Planning Commission Meeting on February 25th, 2016. Workshop participants, which included many members of the Planning Commission, used a map of the study area to convey their ideas. Issues and opportunities identified during the workshop include:

- Possible off-road trail connections, such as along the waterfront, behind Food City, and east of Cherokee Drive;
- Connections to planned improvements from the Waterfront Master Plan and improvements to the new SR 92 bridge;
- Hazardous conditions on Cherokee Drive; and,
- Lack of shoulders on US 25W near the Field of Dreams Activity Center.

# 3. DEVELOPMENT AND EVALUATION OF ALTERNATIVES

Building on the issues and opportunities, the project team developed and evaluated three distinct alternatives for connecting the activity centers via bicycle and pedestrian facilities. By design, the alternatives vary based on a number of factors, including facility type (on-street versus off-road), user comfort and skill level required, accessibility and cost.

## Alternative Alignments

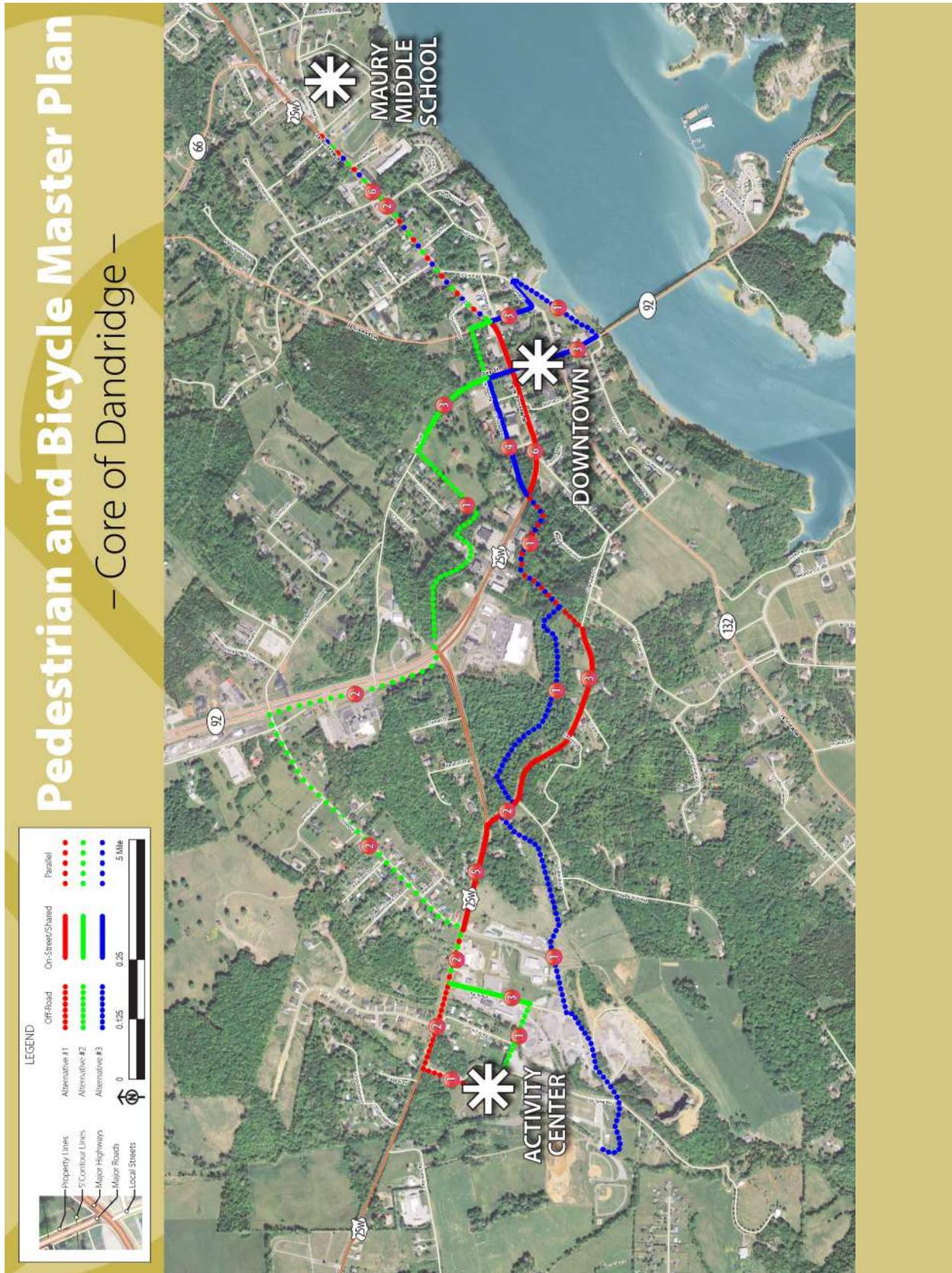
The three alternative alignments each provide distinct pedestrian and bicycle connections. Figure 3-1 illustrates each alternative by alignment and facility type. A brief narrative for each alternative is provided below.

### *Alternative 1*

Alternative 1 begins as an off-road multi-use path traveling north through the Field of Dreams Activity Center to US 25W/70. It transitions to

a parallel multi-use path along US 25W/70. At Isabell Drive it transitions to an on-street facility due to right-of-way (ROW) constraints. The route continues south as an on-street facility along Cherokee Drive until reaching a platted (but unconstructed) road ROW near the McSpadden property, which is located between Cherokee Drive and US 25W north of Squirewood Way, where it turns northeast towards US 25W/70 as an off-road path. The off-road path travels behind the BP gas station and medical building before reaching US 25W/70. Along US 25W/70, the route transitions back to an on-street facility traveling through the downtown area. At Hopewell Street, the route continues along US 25W/70 either as an on-street facility or separated as a multi-use path parallel to the roadway.

Figure 3-1. Alternative Routes



## Alternative 2

Alternative 2 begins as an off-road multi-use path and travels through the county owned gravel site to Shale Road where it turns north as an on-street facility until reaching US 25W/70. It transitions to a parallel multi-use path along US 25W/70 continuing north on Isabell Drive (still as a parallel path). Once reaching SR 92, the route turns south and continues as a parallel facility until crossing the roadway at the US 25W/70 intersection. The route transitions to an offroad facility on an existing platted road ROW near the Swann Woods subdivision. The offroad path travels behind the Goodwill store and then turns northeast, traveling along the large parcel owned by the Dezan family, before reaching Gay Street. Along Gay Street, the route transitions to an on-street/shared facility before turning left on the platted road ROW for Banner Street extended as offroad facility and reaching Hopewell Street. At Hopewell Street, the route turns south as an on-street/shared facility until it reaches US 25W/70. The route continues along US 25W/70 as either an on-street facility or separated as a multi-use path parallel to the roadway.

## Alternative 3

Alternative 3 provides access to the Field of Dreams Activity Center at the southern end and travels the existing platted road ROW for Shales Road extended as a multi-use path. Reaching the Everett Shrader Farm property, the offroad path continues along the northern property line until reaching the platted road ROW that runs through the parcel, behind the homes along Pineridge Road. A small parallel path runs south along Cherokee Drive before traveling along the southern edge of the Commonwealth Dandridge property behind Food City as an offroad trail. The route travels along the platted ROW near the McSpadden property where it turns toward US 25W/70. The off-road path travels behind the BP gas station and medical building before reaching US 25W/70. Crossing US 25W/70 at Academy Circle extended, the route travels on-street on Academy Circle and Banner Street before turning south onto Gay Street through the downtown area. The route heads northeast along the existing dike as an

## RECOGNIZING THE DIFFERENCES AMONG POTENTIAL USERS AND FACILITY TYPES IS AN IMPORTANT COMPONENT

off-road path and transitions to an on-street facility traveling north onto East Main Street. At US 25W/70, the route continues either as an on-street facility or separated as a multi-use path parallel to the roadway.

## Evaluation Results

Each of the three alternatives are evaluated in terms of relevant criteria, including user comfort, safety, accessibility, landscape enhancements, costs, and anticipated right-of-way impacts. This information is provided so that the Town, stakeholders and public can make informed decisions on the best set of options and strategies. What follows is a brief summary of the evaluation results.

### EVALUATION CRITERIA

- **User Comfort and Perceived Safety:** Is the route convenient and appealing to a broad range of ages and ability levels?
- **Accessibility:** How many homes are within 500 feet of the route? 1,000 feet?
- **Opportunities for Aesthetic/Landscape Enhancement:** Does the route help implement a component of the Waterfront Master Plan? Does the route have views of the lakefront or vistas or travel through a forested area? Does the route enhance the character of the downtown?
- **Cost:** How much does it cost to construct the route?
- **Anticipated Property/Right-of-Way Impacts:** How many property owners and how many total acres of private land are impacted by the route?

### User Comfort and Perceived Safety

Recognizing the differences among potential users and facility types is an important component for bicycle and pedestrian planning. More experienced cyclists are comfortable riding on most types of bicycle facilities, including on roads without treatments for bicyclists. Casual and less confident riders prefer to use bicycle lanes and multi-use paths. The Dandridge Pedestrian and Bicycle Master Plan is intended to be accessible to wide range of potential users, therefore the type of facilities chosen should target casual bicyclists and pedestrians (Table 3-1).

Alternative 1 includes many in-street facilities. Thus it is most appropriate for more skilled and advanced cyclists. Because of potentially hazardous conditions on several shared use facilities, such as Cherokee Drive, Alternative 1 is not suitable for young and inexperienced users.

Alternative 2 consists mostly of parallel multi-use paths that provide a comfortable experience for most bicyclists. A short on-street/shared facility on Gay Street may not be comfortable for less experienced riders who are not likely to ride on city streets unless bike lanes or other facilities are present.

Consisting mostly of off-road trails, Alternative 3 is most suitable for beginning and casual riders including children who are often less confident and comfortable biking as far away from motor vehicle traffic as possible.

### Slope

Slope plays an important role in user comfort as steeper grades require a significant level of effort. Net elevation change over the course of a route is a good summary measure of slope. Alternative 2 contains the lowest net elevation change of 193 feet, while Alternative 1 is very similar at 204 feet. Alternative 3 exhibits the greatest elevation gain among the three alternatives with a net change of approximately 340 feet. Generally, all of the routes have a steady elevation climb between the Field of Dreams Activity Center and Downtown (Figure 3-2).

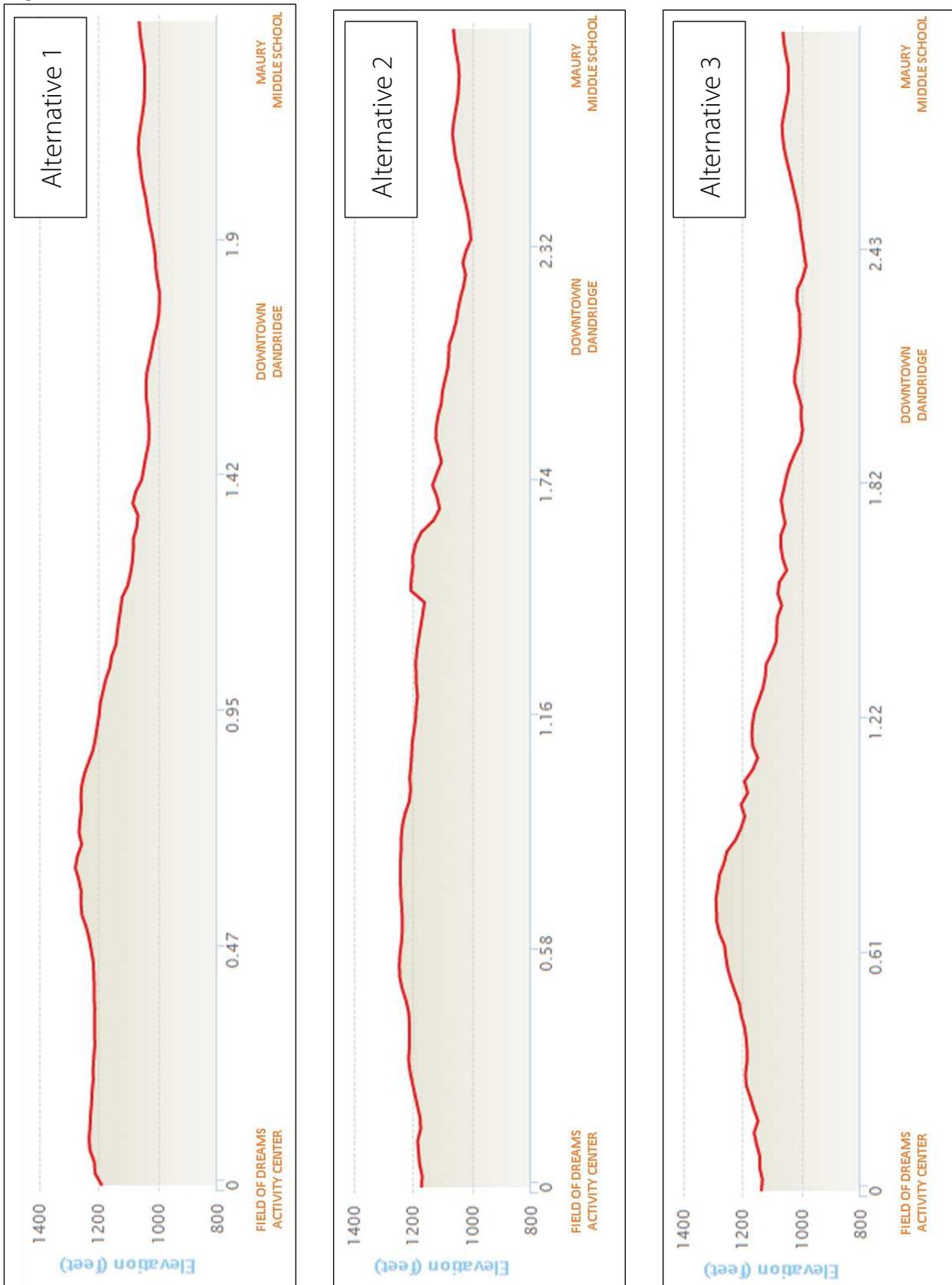
According to the United States Access Board, a federal agency that promotes equality for people with disabilities through accessible design, not more than 30 percent of the total length of a trail shall have a running slope steeper than 8.33 percent. The running slope of any segment of a trail shall not be steeper than

Table 3-1. User Comfort and Perceived Safety

 Comfort		Alternative 1	Alternative 2	Alternative 3
		Good	Better	Best
Skill Level	Young/inexperienced			
	Casual			
	Skilled/Advanced			
	Slope	Gentle	Gentle	Moderate
	Directness (total route length)	2.38 miles	2.89 miles	3.05 miles

Key:  Not appropriate  May be appropriate  Appropriate

Figure 3-2. Route Elevations



12 percent. All alternatives could be constructed to meet Access Board accessibility standards.

### Directness

The more direct a route (measured by distance), the less time and effort it will take users to reach their destination. Alternative 1 is the most direct route reaching each major destination in approximately 2.4 miles. Alternative 2 is nearly 2.9 miles in length, while Alternative 3 includes nearly 3.1 miles of facilities.

### Accessibility

To ensure the pedestrian and bicycle system is well-used, it must be as accessible as possible. Trailheads with parking lots are one way to provide access, but providing direct access to neighborhoods represents the highest level of accessibility. As shown in Table 3-2, Alternative 1 provides access to the highest number of homes. Approximately 140 homes are within 500 feet of the proposed alignment and approximately 470 homes are within 1,000 feet. Alternative 2 provides a similar level of accessibility as Alternative 1 with approximately 130 homes within 500 feet and an estimated 420 homes within 1,000 feet. Alternative 3 is the least accessible with approximately 80 homes within 500 feet and 280 homes within 1000 feet.

Table 3-2. Accessibility: Alternatives 1-3

 Homes	Alternative		
	#1	#2	#3
within 500 ft of the proposed alignment.	140	130	80
within 1,000 ft of the proposed alignment.	470	420	280

### Points of Interest and Aesthetics

In many cases, users of the proposed system are interested in more than just a functional transportation network. A system that passes through points of interest and aesthetically pleasing environments can contribute greatly to the user experience. Each alternative provides varying levels of access to interesting places and scenic views (Table 3-3).

### Waterfront

The waterfront is a major element of the Town’s development strategy and is one of its greatest assets. Alternative 3 provides direct access to the waterfront by using the Dandridge Dike as an off-road trail, which is a recommendation of the Dandridge Waterfront Master Plan. Alternatives 1 and 2 do not provide visibility or direct access to the waterfront.

Table 3-3. Access to Points of Interest and Aesthetics: Alternatives 1-3

	Alternative 1	Alternative 2	Alternative 3
 Waterfront	No	No	Direct access
 Scenic Views	Some natural landscapes	Some natural landscapes	Natural landscape; Downtown
 Downtown	Passes through north downtown	No	Direct access to heart of downtown
 Other Points of Interest	Bethel Presbyterian Church, US Post Office, and Harris-Goddard House	First Baptist Church, First Tennessee Bank, Goodwill, and Rimmer Sporting Goods	Bethel Presbyterian Church, US Post Office, Harris-Goddard House, Food City, US Post Office, Dandridge Memorial Public Library, and Town Halle

### Scenic Views

In addition to the waterfront, Dandridge includes rolling topography and natural landscapes that are visually interesting. Each of the routes include sections that travel through natural landscapes. Alternative 3 provides the most scenic route as a predominantly off-road trail through forested land, behind the homes along Pineridge Road and through the Commonwealth Dandridge property behind Food City, and at the lakefront on top of the Dandridge Dike.

### Downtown

Alternative 1 passes through the northern section of downtown Dandridge via protected bicycle lanes on West Meeting Street. Alternative 2 glances the edge of the downtown area at the intersection of Hopewell Street/Main Street and West Meeting Street, but does not provide direct access to the heart of downtown. Finally, Alternative 3 provides direct access to the heart of downtown and the waterfront via Gay Street.

### Points of Interest

Each of the alternatives provide access to the three activity centers that are the focus of this plan: Field of Dreams, Maury Middle School and downtown (to varying degrees). Each alternative also provides additional value by giving access to other points of interest. For example, Alternative 1 serves the destinations on West Meeting Street including the Bethel Presbyterian Church, US Post Office, and Harris-Goddard House. Alternative 2 serves the First Baptist Church on SR 92 and provides an opportunity to connect to the First Tennessee Bank, Goodwill, and Rimmer Sporting Goods. Alternative 3 provides opportunities to connect to Food City, US Post Office, Dandridge

Memorial Public Library, and all of the historic sites throughout downtown Dandridge.

### Construction Cost

In light of limited resources for new transportation facilities, the Town must take cost into account when selecting a preferred option. Planning-level cost estimates to construct each alternative are estimated by the project team are included as Appendix C. Alternative 1 is the least expensive option, costing approximately \$1.77 million to design and construct. Alternative 2 is the most expensive option at \$2.59 million, while Alternative 3 is estimated to cost \$2.07 million.

Alternatives 2 and 3 are more costly to build because they are both longer in length and entail construction of new standalone trail facilities (as opposed to Alternative 1, which relies more on use of existing roads). Alternative 2 is the most costly because the route requires more crossing improvements and includes the construction of sidewalks along Gay Street. It is important to note that the cost estimates do not include right-of-way (ROW) acquisition. If the Town must purchase ROW to construct the system, it will entail additional cost.

### Anticipated Property/ Right-of-Way Impacts

The project team estimated ROW impacts of each alternative for evaluation purposes based on their conceptual alignments, typical sections and parcel boundaries in GIS. Actual ROW impacts will be determined during more detailed design phases that will rely on survey information. Generally speaking, the greater the amount of property impacts, the more intrusive, complicated and costly a project becomes.

Alternative 1 impacts one property, the fewest of the three alternatives. Alternative 2 impacts two properties, while Alternative 3 impacts six properties. Both Alternative 2 and Alternative 3 also impact county-owned property not reflected in Table 3-5. In terms of total acreage, Alternative 1 impacts approximately 0.43 acres, again the least of the three alternatives. Alternative 2

Table 3-4. Construction Cost

	Alternative		
	#1	#2	#3
Total Cost	\$1,766,000	\$2,590,000	\$2,070,000

Table 3-5.  
Anticipated Property/Right-of-Way  
Impacts: Alternatives 1-3



	Alternative		
	#1	#2	#3
Total Properties	1	2*	6*
Area	0.43 acres	0.62 acres	1.85 acres

\*Also impacts county owned property.

impacts approximately 0.62 acres of private land. Alternative 3 impacts approximately 1.85 acres, the most of the three alternatives. Alternative 3's property impacts are so much greater than the other two alternatives because so much of the alignment is an off-road trail.

## Summary of Evaluation Results

In terms of the evaluation criteria, none of alternatives outperformed the others across the board. Each alternative has its pros and cons.

Alternative 1 provides access to the greatest number of homes, has a lower construction cost and the fewest anticipated property impacts, while Alternative 3 is best-suited for all users and provides the most scenic and visually interesting route. The largest downside of Alternative 1 is a good portion of the route is either on or adjacent to roads with heavier traffic and higher motor vehicle speeds, meaning that it would most likely be used only by experienced cyclists. Alternative 3's downsides are accessibility, because it is mostly off-road and away from existing neighborhoods, and anticipated property impacts.

For most of the criteria, Alternative 2 falls somewhere in the middle or below the other two alternatives. It provides a similar level of accessibility as Alternative 1, but provides the least visually interesting route and is the most costly to build.

Table 3-6. Summary of Evaluation  
Results: Alternatives 1-3



Criteria	Alternative		
	#1	#2	#3
User Comfort and Perceived Safety	3	2	1
Accessibility	1	1	3
Access to Points of Interest and Aesthetics	2	3	1
Design and Construction Cost	1	3	2
Property Impacts	1	2	3

## Stakeholder Feedback

A public open house was held on May 16, 2016 at the Field of Dreams Activity Center to gather feedback on the three alternatives. Additionally, workshop content was posted on the Town's website along with an online survey for stakeholders who could not be at the workshop. Participants were not asked to vote for or otherwise select one of the alternatives, but rather to provide feedback on what they like and do not like about each alternatives.

Overall, survey respondents and meeting attendees indicated that Alternative 3 served the most destinations and integrated more favorable facility types. Comments indicated that Alternatives 1 and 2 included too many shared on-street facilities and did not adequately serve

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MANY COMMENTS ABOUT DIRECTING THE  
ROUTES OFF-ROAD AS MUCH AS POSSIBLE

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Table 3-7. Summary of Public Feedback on Alternatives

Alternative 1		Alternative 2		Alternative 3	
Likes	Dislikes	Likes	Dislikes	Likes	Dislikes
<ul style="list-style-type: none"> <li>Easiest of the alternatives to implement.</li> <li>Passage through a residential area.</li> </ul>	<ul style="list-style-type: none"> <li>Too many shared on-street facilities.**</li> <li>Misses out on the scenic parts of Dandridge.</li> </ul>	<ul style="list-style-type: none"> <li>Not on as many busy streets.</li> </ul>	<ul style="list-style-type: none"> <li>Too much along streets.**</li> <li>Goes too far away from downtown and waterfront.*</li> <li>Longer distance than the other options.</li> <li>Needs more "nature" trails.</li> </ul>	<ul style="list-style-type: none"> <li>Greenway/off-road.**</li> <li>Access to waterfront and downtown.**</li> <li>Not on streets.*</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>

\* At least two participants made this comment.

\*\* Several participants made this comment.

the scenic parts of Dandridge, including the waterfront.

Many of the comments indicated that respondents prefer routes that include the integration of off-road greenways, the downtown area, and the

waterfront. There were many comments about directing the routes off-road as much as possible, although many respondents were favorable to including protected bicycle lanes in the downtown area.

## 4. PREFERRED MASTER PLAN VISION

The proposed vision and plan for the Town of Dandridge seeks to enhance the character of the Town to create opportunities for active transportation that increase health, safety, and livability and support community and economic development. At the same time, limited resources mean that recommendations must balance cost with the value of the improvements.

The preferred vision for the Core of Dandridge Pedestrian and Bicycle Master Plan combines the best-performing elements of each of the three alternatives into a "hybrid" recommendation. It includes two different alignments:

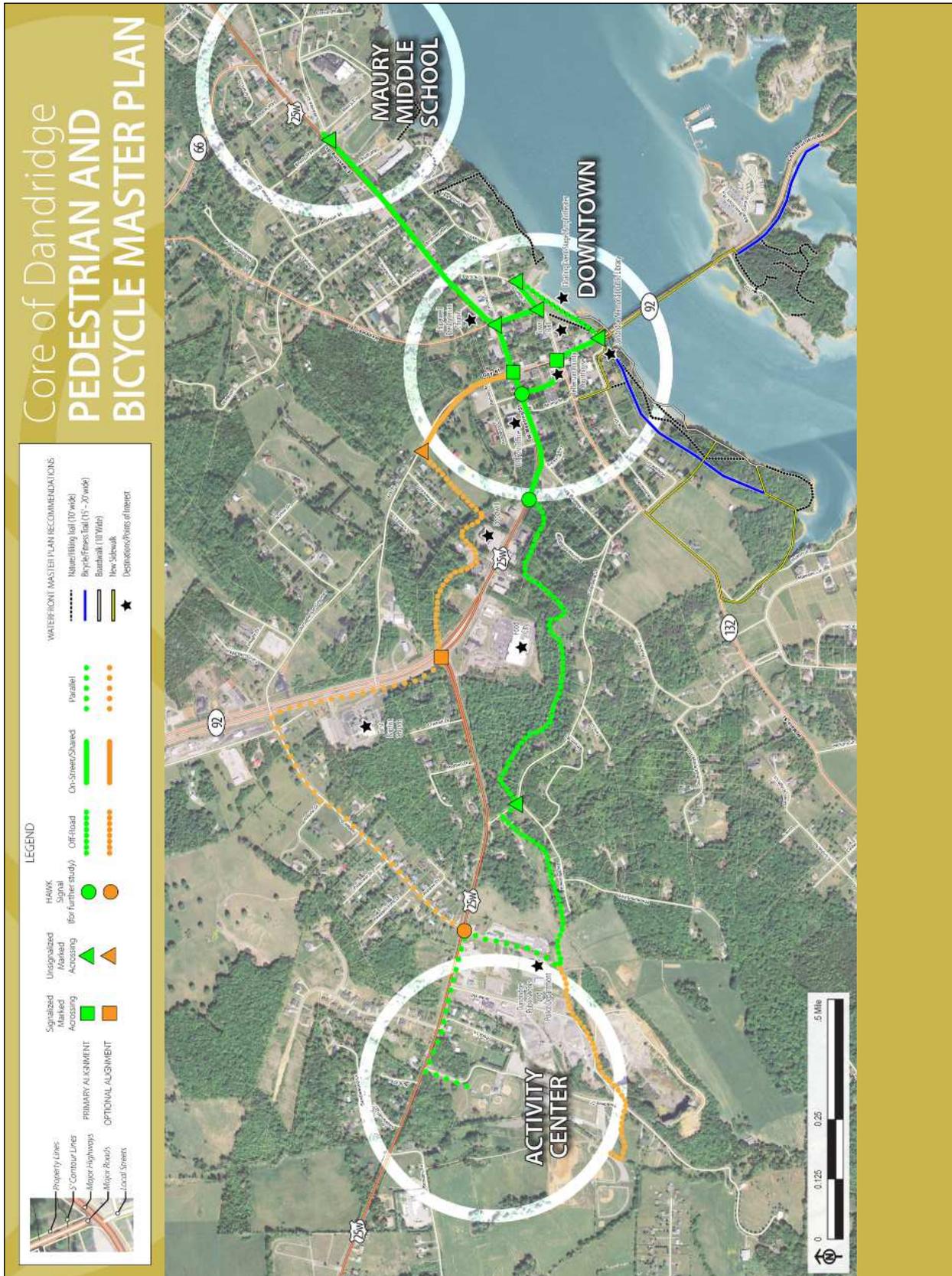
- Primary Alignment:** The optimal alignment based on evaluation results and stakeholder feedback. This should be pursued first.
- Optional Alignment:** An additional set of bicycle and pedestrian connections that can add value to the overall network. Segments of this alignment should be pursued if the

opportunity arises. For example, a road repair or resurfacing project located along the optional alignment could be modified to include bicycle lanes.

### Primary Alignment

The primary alignment begins as a parallel multi-use path traveling north through the Field of Dreams Activity Center to US 25W/70. The path continues east along US 25W/70 until Isabell Drive where it turns south towards the Dandridge Public Works and Police Department. Reaching the Everett Shrader Farm property, an off-road path travels south and then west until reaching the platted road ROW that runs through the parcel, behind the homes along Pineridge Road. A small parallel path runs south along Cherokee Drive before traveling along the southern edge of the Commonwealth Dandridge property behind Food City as an off-road trail. The route travels along the platted ROW near the McSpadden property where

Figure 4-1. Master Plan Vision



it turns toward West Meeting Street (US 25W/92). The off-road path travels behind the BP gas station and medical building before reaching West Meeting Street (US 25W/92), where it transitions to on-street protected bicycle lanes and sidewalks. At East Meeting Street (US 25W) the route continues to Maury Middle School as on-street protected bicycle lanes and sidewalks.

The primary alignment also includes a loop through downtown and the waterfront. The loop begins at West Meeting Street (US 25W) as an on-street facility along Middle Alley to West Main Street. The route connects to Gay Street (SR 92) where it turns south as shared lanes and connects to the existing dike as an off-road path. Finally, the downtown loop transitions to an on-street facility traveling north onto East Main Street and reconnecting to the main route along East Meeting Street (US 25W).

### Optional Alignment

In order to reach as many homes as possible and to provide additional options for pedestrians and cyclists an additional optional alignment is proposed. The optional alignment includes a parallel multi-use path along Isabell Drive from US 25W/70 to SR 92. At SR 92, the route turns south and continues as a parallel facility until crossing the roadway at the West Meeting Street (US 25W) intersection. The route transitions to

an off-road facility on an existing platted road ROW near the Swann Woods subdivision. The off-road path travels behind the Goodwill store and then turns northeast, traveling along the Dezan property line, before reaching Gay Street. Along Gay Street, the route transitions to an on-street/shared facility meeting the main route along East Meeting Street (US 25W).

Another alignment option entails coordination with Jefferson County on an off-road multi-use path exiting the Field of Dreams Activity Center at the southern end and traveling the existing platted road ROW for Shales Road extended through the quarry. Reaching the Everett Shrader Farm property, the path would connect with the primary alignment. The feasibility of traversing the active quarry property is undetermined.

### Crossing Treatments

The Primary and Optional Alignments each include a handful instances of where it will be necessary for users to cross a street. In these locations, some type of crossing treatment is necessary. Recommended crossing treatments fall under three separate categories:

- **Signalized marked crossing:** These are street crossings at locations that currently include traffic signals. At these locations, treatments include pedestrian indications (countdown

Table 4-1. Crossing Treatment Categories

	Crossing Treatment		
	Signalized Marked Crossing	Unsignalized Marked Crossing	HAWK Signal (for further study)
Primary Alignment	<ul style="list-style-type: none"> <li>• West Main Street at Gay Street</li> </ul>	<ul style="list-style-type: none"> <li>• Off-road trail at Cherokee Street</li> <li>• Off-road trail (on waterfront dike) at Gay Street</li> <li>• Off-road trail (on waterfront dike) at Church Street</li> <li>• Church Street at East Main Street</li> <li>• East Meeting Street (US 25W) at East Main Street/Hopewell Street</li> <li>• East Meeting Street (US 25W) at Maury Circle</li> </ul>	<ul style="list-style-type: none"> <li>• West Meeting Street (US 25W) at Middle Alley</li> <li>• Off-road trail at West Meeting Street (US 25W)</li> </ul>
Optional Alignment	<ul style="list-style-type: none"> <li>• US 92 at US 25W</li> </ul>	<ul style="list-style-type: none"> <li>• Off-road trail (Dezan property line) at Gay Street</li> </ul>	<ul style="list-style-type: none"> <li>• US 25W at Isabell Drive</li> </ul>

Source: (left) HAWK signal, ELTEC Corp.; (right) Federal Highway Administration/Wayfinding Signage



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**HAWK**  
**(HIGH-INTENSITY ACTIVATED CROSSWALK)**  
IS A RELATIVELY NEW TRAFFIC CONTROL  
DEVICE THAT STOPS TRAFFIC AND  
ALLOWS PEDESTRIANS AND CYCLISTS TO  
CROSS SAFELY.

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timers), pavement marking, and ADA ramps (where necessary).

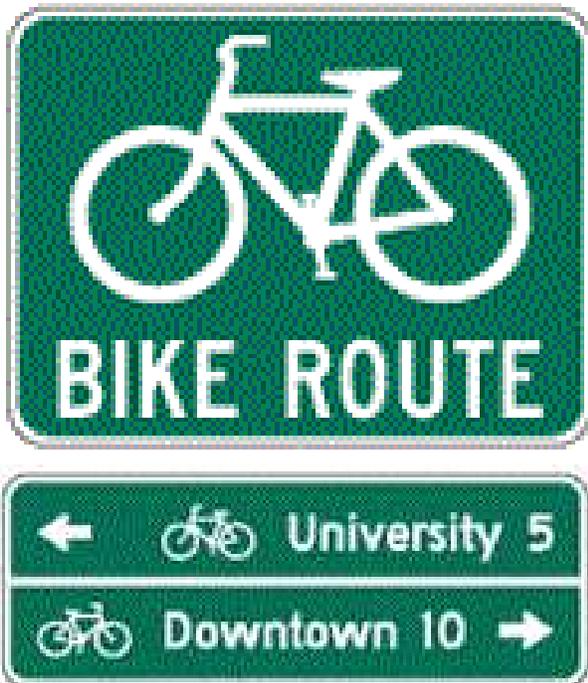
- **Unsignalized marked crossing:** These are locations that do not include traffic signals and existing traffic and design characteristics do not necessitate signalization. These can occur at road intersections or at midblock locations. Treatments include signage, pavement marking and ADA ramps (where necessary).
- **HAWK signals:** In some locations, the bicycle, pedestrian and/or motor vehicle traffic volumes, speeds and other factors may warrant installation of a new signal. HAWK (High-Intensity Activated Crosswalk) is a relatively new traffic control device that stops traffic and allows pedestrians and cyclists to cross safely. These can occur at road intersections or at midblock locations.

Treatments include overhead signage and signalization, pavement marking and ADA ramps (where necessary). In locations where HAWK signals are proposed, further study is necessary.

A HAWK signal is a pedestrian-activated warning device located on the roadside or on mast arms over midblock pedestrian crossings. The beacon head consists of two red lenses above a single yellow lens. After displaying brief flashing and steady yellow intervals, the device displays a steady red indication to drivers and a "WALK" indication to pedestrians, allowing them to cross a major roadway while traffic is stopped. After the pedestrian phase ends, the "WALK" indication changes to a flashing orange hand to notify pedestrians that their clearance time is ending. The HAWK beacon displays alternating flashing red lights to drivers while pedestrians finish their crossings before going dark at the conclusion of the cycle.

### Wayfinding Signage

Wayfinding signage is recommended to identify the route and to direct users toward points of interest. Wayfinding signs provide a number



of benefits for bicycle and pedestrians. They familiarize users with the active transportation network and identify the best routes to specific destinations. Signage that includes mileage and travel time to destinations may help minimize the tendency to overestimate the amount of time it takes to travel by bicycle. They also help indicate to motorists that they are driving along a bicycle route and should use caution. Guidance for wayfinding signage is found in Chapter 9 of the Manual on Uniform Traffic Control Devices and in the NACTO Urban Bikeway Design Guide. Signage should be considered during each phase of implementation. In the downtown area, signage must be consistent with the Town's downtown historic design guidelines.

### Trailhead Amenities

At each of the three main activity centers - Field of Dreams, Downtown and Maury Middle School – trailhead amenities should be provided. These include items such as bicycle racks, shaded seating areas, water fountains, trash receptacles and a map of the route system with points of interest. The trailheads can be placed on existing public rights-of-way and use existing parking.

## 5. IMPLEMENTATION

The preceding section casts a vision for the Town of Dandridge to make walking and bicycling safer and more convenient, to support economic development and tourism, and to increase the overall livability of the community. Below are some suggested steps to help make the vision a reality.

### Projects and Cost Estimates

In order to assist with implementation and cost estimation, the primary alignment of the Master Plan has been categorized into four different sections based on logical termini and facility type. Each of the facility types described below would provide a safe, convenient, and diverse walking and cycling experience for a wide variety of users.

#### *Field of Dreams to Dandridge Public Works and Police Department*

A parallel multi-use path along the entrance to the Field of Dreams Activity Center (Treadway Drive) and south side of US 25W/70 into the Public Works and Police Department would limit the number of street crossings along this portion of the route (see Figure 5-1).

#### *Everett Shrader Farms - Commonwealth Dandridge Path*

As shown in Figure 5-2, a greenfield multi-use path would connect the Dandridge Public Works and Police Department to US 25W, with a small portion running parallel to Cherokee Drive. The path could include additional amenities such as benches and lighting to improve the experience for users.

#### *US 25W Separated Bicycle Lanes*

It is recommended that protected bicycle lanes be used on US 25W (Figure 5-3). Protected bicycle lanes have been shown to increase the real and perceived safety of bicyclists using the facilities. The majority of US 25W also includes sidewalks for pedestrians to walk safely to and from their desired destinations.

#### *Downtown Loop*

Recommended improvements in the downtown area can be of two different types. Smaller local roads such as Middle Alley can accommodate bicyclists safely with painted sharrows as shown in Figure 5-4. Roads such as East Main Street main be more appropriate to be bicycle lanes as shown in Figure 5-5.

Figure 5-1. Parallel Multi-Use Path

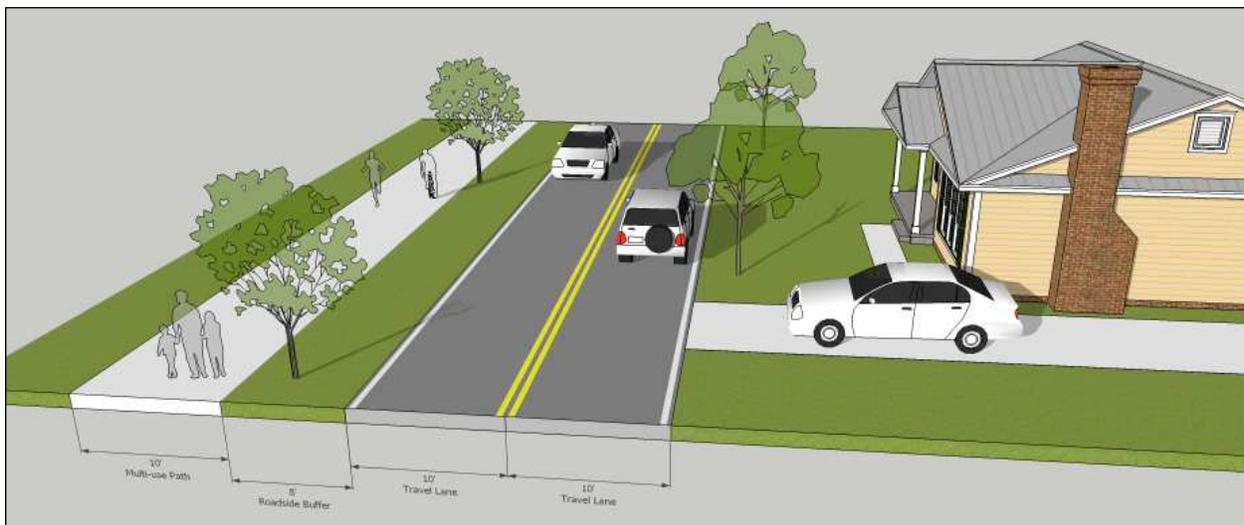


Figure 5-2. Greenfield Multi-Use Path



Figure 5-3. Arterial Road with Protected Bicycle Lanes



Figure 5-4. Local Road with Sharrows

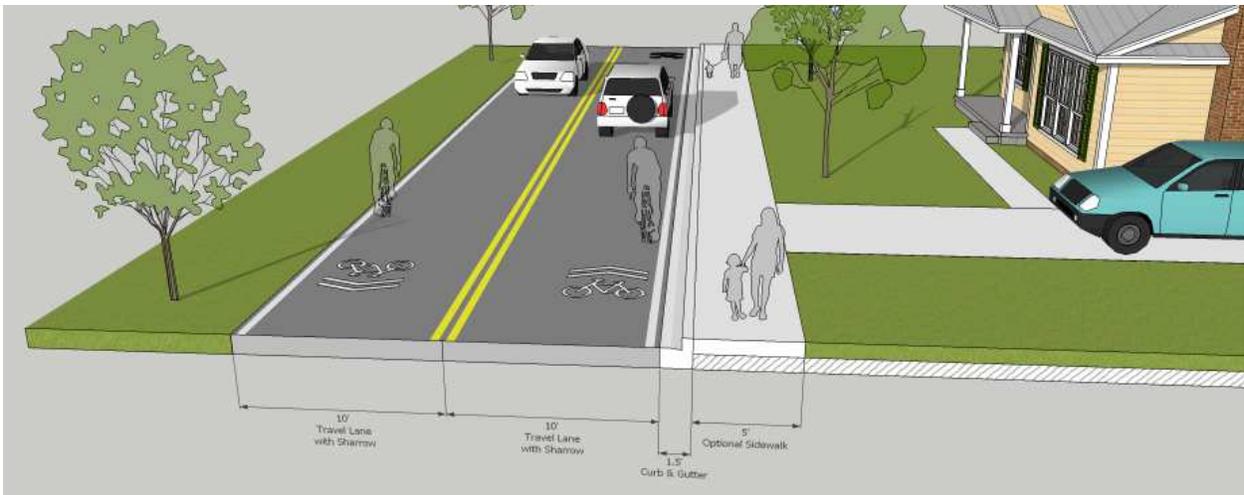


Figure 5-5. Local Road with Bicycle Lanes



### *Design and Construction Costs*

The primary alignment, including crossing improvements and HAWK signal, wayfinding signage, and trailhead amenities is estimated to cost \$2.92 million for design and construction (Table 5-1). The optional alignment would cost an additional \$1.82 million.

### Recommended Phasing Plan

It is anticipated that it will take a number of years for the Town and its partners to procure the necessary resources to complete the entire primary alignment. A suggested phasing program is included in Table 5-2.

Improvements to the downtown area should be considered first because of the importance of the downtown to the community and the desire to increase access to the waterfront. These improvements could be used as a starting point to the implementation of the Dandridge Waterfront Master Plan.

Improvements to US 25W are recommended as a next phase, the separated bicycle lanes could be completed together as a corridor wide program, the roadway could be restriped and bollards installed on both sides of the roadway from West Meeting Street to Maury Middle School. The HAWK signal and minor crossing improvements can also be completed during this time.

The parallel path along the Field of Dreams entrance, US 25W/70 and the entrance to the Dandridge Public Works and Police Department is the third phase of the primary alignment. The final phase would include the multi-use path connecting US 25W and the Dandridge Public Works and Police Building through Everett Shrader Farm and Commonwealth Dandridge properties. This section includes the most amount of right-of-way impacts and may take the most amount of time to be ready for construction.

The optional alignment costs are provided in Table 5-3 and could be implemented in separate pieces once the primary alignment is complete.

### Potential Funding Sources

There are a number of different venues the Town can pursue for funding the Pedestrian and Bicycle Master Plan, including state and federal grant programs and through private development. This section provides an overview of some of the more likely candidate funding sources.

### Piggyback Projects

The most cost-effective way to implement Master Plan projects is to “piggyback” them with other road projects that have already been programmed. This can be done at little or often no additional cost. For example, where on-street facilities are

Table 5-1. Design and Construction Costs

Route	Preliminary Engineering	Design Engineering	Construction Costs	Crossing Treatments	Wayfinding Signage	Trailhead Amenities	TOTALS	GRAND TOTAL	
									
Primary Alignment	Field of Dreams to Dandridge Public Works/ Police Department	\$30,000	\$38,000	\$374,000	\$49,000	\$4,000	\$5,000	\$500,000	\$2,920,000
	Everett Shrader Farms – Commonwealth Dandridge Path	\$58,000	\$72,000	\$719,000	\$157,000	\$8,000	\$-	\$1,014,000	
	US 25 W – Separated Bicycle Lanes	\$76,000	\$94,000	\$939,000	\$77,000	\$14,000	\$5,000	\$1,205,000	
	Downtown Loop Improvements	\$12,000	\$15,000	\$150,000	\$17,000	\$2,000	\$5,000	\$201,000	
Optional Alignment	Quarry Path	\$24,000	\$29,000	\$290,000	\$123,000	\$4,000	\$-	\$470,000	\$1,818,000
	Isabell Drive/ SR 92 Multi-Use Path	\$47,000	\$58,000	\$579,000	\$17,000	\$7,000	\$-	\$708,000	
	Swann Woods/ Dezan Path	\$26,000	\$32,000	\$319,000	\$-	\$4,000	\$-	\$381,000	
	Gay Street On-Street	\$18,000	\$22,000	\$219,000	\$-	\$-	\$-	\$259,000	

Table 5-2. Proposed Phasing Program  
Primary Alignment

 Phase	Description	Planning Level Cost Estimate
Phase I	Downtown Improvements	\$201,000
Phase II	US 25W Separated Bicycle Lanes	\$1,205,000
Phase III	Field of Dreams/Public Works Path	\$500,000
Phase IV	Everett Schrader Farm/ Commonwealth Dandridge Path	\$1,014,000

Table 5-3. Optional Alignment Costs

 Alignment	Planning Level Cost Estimate
Isabell Drive / SR 92 Multi-use Path	\$708,000
Swann Woods / Dezan Path	\$381,000
Gay Street On-Street	\$259,000
Quarry Path	\$470,000

proposed, they can be achieved concurrent with a programmed resurfacing of the corridor, at nominal cost (other than design). Examples of opportunities for piggyback projects include:

- Corridor resurfacing.
- Corridor reconstruction.
- Intersection and safety projects.
- Drainage projects.
- Utility projects.

There are no such projects known at this time. The City can remain vigilant of TDOT’s work program and its own public works program to identify opportunities to piggyback projects.

### State/Federal Grant Programs

There are a handful of grant opportunities at the state and federal level for which the City can apply (Table 5-4). Some of the more popular grant programs are described below.

### Policy

The Town wants to create a network of pedestrian and bicycle facilities as part of its desire to promote the health, safety, and welfare of the public. One way to increase pedestrian and bicycle facilities is to approve a sidewalk regulation ordinance with an optional fee in lieu of construction. Enacting such an ordinance that would require developers of property either to construct sidewalks, or upon the request of the developer and the approval of the Town, to pay a fee in lieu of constructing the sidewalks. The in lieu fee could be used to fund portions of the recommendations from the Pedestrian and Bicycle Master Plan. An example of a sidewalk regulation ordinance is included as Appendix B, the Town should revise the ordinance to meet the specific needs of the community.

Table 5-3. Grant Programs

	Examples of Eligible Project Types	Funding	How to Apply
<b>Transportation Alternatives Program (TAP)</b>			
The Transportation Alternatives Program (TAP) combines three previously separate sources of transportation funding: Transportation Enhancements, the Recreational Trails Program, and Safe Routes to School. TAP provides funding for programs and projects including pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation.	<ul style="list-style-type: none"> <li>• Pedestrian and Bicycle Facilities</li> <li>• Safe Routes for Non-Drivers</li> </ul>	<ul style="list-style-type: none"> <li>• There is a 20 percent non-federal construction share for of the proposed project must be provided as a hard cash match, and all preliminary engineering (PE), design and right-of-way expenditures are solely the responsibility of the local governmental agency.</li> </ul>	<ul style="list-style-type: none"> <li>• Application materials can be accessed on the TDOT website: <a href="http://www.tn.gov/tdot/topic/tap">www.tn.gov/tdot/topic/tap</a></li> <li>• The application cycle is open from July 1 to October 3 each year.</li> </ul>
<b>Safe Routes to School (SRTS)</b>			
Safe Routes to School (SRTS) is a federally funded program focusing on the benefits of children walking and biking to school. Its primary purpose is to encourage elementary and middle schoolchildren to safely walk and bicycle to school through infrastructure improvements, educational initiatives, and promotional activities.	<ul style="list-style-type: none"> <li>• Pedestrian and Bicycle Facilities</li> <li>• Safe Routes for Non-Drivers</li> </ul>	<ul style="list-style-type: none"> <li>• Projects and activities were 100 percent federally funded for the 2016 year; no local match is required.</li> <li>• Maximum award amount of \$250,000.</li> </ul>	<ul style="list-style-type: none"> <li>• Application materials can be accessed on the TDOT website: <a href="http://www.tn.gov/tdot/article/safe-routes">www.tn.gov/tdot/article/safe-routes</a></li> <li>• The previous application cycle closed on January 15, 2016.</li> </ul>



	Examples of Eligible Project Types	Funding	How to Apply
<b>Recreational Trails Program (RTP)</b>			
<p>The Recreational Trails Program (RTP) is a federally funded program designed to enhance both motorized and non-motorized recreation trail opportunities and to provide and maintain recreation trails. The goal of the RTP is to produce sustainable trails that are well designed, properly constructed and will require minimum future maintenance.</p>	<ul style="list-style-type: none"> <li>• Multi-use trails</li> <li>• Trailhead facilities</li> </ul>	<ul style="list-style-type: none"> <li>• State-funded at 80 percent with a 20 percent local match.</li> <li>• Maximum award amount of \$200,000.</li> </ul>	<ul style="list-style-type: none"> <li>• Application materials can be accessed on the TDOT website: <a href="http://tn.gov/environment/article/res-recreation-educational-services-grants">tn.gov/environment/article/res-recreation-educational-services-grants</a></li> <li>• The previous application cycle closed on April 22, 2016.</li> </ul>
<b>Multimodal Access Grant</b>			
<p>TDOT's Multimodal Access Grant is a state-funded program created to support the transportation needs of transit users, pedestrians, and bicyclists through infrastructure projects that address existing gaps along state routes.</p>	<ul style="list-style-type: none"> <li>• Pedestrian crossing improvements, including signage, signalization, median pedestrian refuge islands and crosswalks</li> <li>• Sidewalks</li> <li>• Bicycle lanes (on-road facility delineated with pavement markings and signs)</li> <li>• Pedestrian-scale lighting</li> <li>• Road diets or traffic calming measures that enhance bicycle and/or pedestrian safety</li> </ul>	<ul style="list-style-type: none"> <li>• State-funded at 95 percent with a 5 percent local match.</li> <li>• Total project costs must not exceed \$1 million.</li> </ul>	<ul style="list-style-type: none"> <li>• Application materials can be accessed on the TDOT website: <a href="http://www.tn.gov/tdot/topic/multimodal-multimodal-access-grant">www.tn.gov/tdot/topic/multimodal-multimodal-access-grant</a></li> <li>• The previous application cycle closed on January 15, 2016.</li> </ul>

## 6. SUMMARY

Dandridge has an opportunity to provide multimodal connections to three popular activity centers to increase the livability, safety, and attractiveness of its community. By adopting a sidewalk regulations ordinance, the Town can take the first step towards realizing a complete active transportation network that increases the health, safety, accessibility, and overall welfare of the community. The Pedestrian and Bicycle Master Plan for provides a comfortable experience users on a variety of active transportation facilities linking the Field of Dreams Activity Center, downtown Dandridge, and Maury Middle School. The plan also allows the Town to continue implementing aspects of the recently completed Waterfront

Master Plan. Dandridge is encouraged to be proactive in seeking out opportunities for grant funding and for other projects that the recommended projects can be piggybacked on to.

# APPENDIX A. PUBLIC OUTREACH SUMMARY

## **Public Involvement Summary**

### **Public Input**

Public participation plays a key role in developing a planning document. Opportunities for public and stakeholder input were provided throughout the plan process, from the data-gathering stage to the final recommendations stage.

### **Public Meetings**

Two public meetings were held as part of the plan process: the first at the existing conditions data-gathering stage, and the second to present preliminary recommendations.

#### ***Public Workshop – February 2016***

An initial workshop was held prior to the Dandridge Planning Commission meeting on February 25<sup>th</sup> at the Dandridge Town Hall. The format provided opportunity for the public to ask questions, familiarize themselves with this planning effort, and give input about the types of improvements they would like to see. A large map was provided to show current conditions throughout the city. Participants documented areas where improvements were needed, areas that they currently enjoy bicycling, and areas or facilities that are currently barriers to their bicycle travel. Issues and opportunities identified during the workshop include:

#### ***Public Open House – May 2016***

The second public event was held on May 16<sup>th</sup> at the Field of Dreams Activity Center. The meeting was presented in an open house format, allowing residents to spend as much time as desired reviewing recommendations, asking questions, and providing comments.

The preliminary project recommendations were presented in the form of the recommended network map, recommended typical section board, and evaluation criteria boards. Participants were asked to review three proposed alignments and provide comments on each route. Comments from the public open house are included in the community survey responses.



### Community Survey

The survey, which was open from mid-May to mid-June, contained questions for the respondent about what characteristics about each of the alternative routes they liked and disliked, and whether they had another additional comments regarding the Pedestrian and Bicycle Plan. In total, 33 responses were received. Information on survey responses is shown in the following pages.

### Survey Results Summary

#### Alternative #1

##### Pros

Easiest of the alternatives to implement  
Favorite alternative (3)

##### Cons

Too many shared on-street facilities (10)  
Misses out on the scenic parts of Dandridge

#### Alternative #2

##### Pros

Not on as many busy streets

##### Cons

Too much along streets (5)  
Goes too far away from downtown and waterfront (2)  
Longer distance than the other options  
Passage through a residential area  
Needs more 'nature' trails

Alternative #3

Pros

Greenway/off-road (7)

Access to waterfront and downtown (11)

Not on streets (2)

Cons

APPENDIX B.  
DRAFT SIDEWALK REGULATIONS  
MODEL FEE-IN-LIEU ORDINANCE

## **ARTICLE IX - SIDEWALK REGULATIONS**

### **9.1 - PURPOSE**

The purpose of this Article is to provide a comprehensive system of sidewalk regulation that will implement the policies of the city of Johnson City as identified in the Johnson City General Plan. Specifically, these policies seek to promote improved pedestrian safety and interaction, expanded opportunity for recreational walking and running activities, more cohesive neighborhoods, and easier access to shopping and other commercially related pursuits.

### **9.2 - REQUIREMENTS**

#### **9.2.1 LOCATION:**

Sidewalks shall be required as specified by the following, except as provided by Subsection 9.2.2, Exceptions:

9.2.1.1 Sidewalks shall be constructed along the public street frontage, excluding limited access highway frontage, of all commercial, office, and multi-family residential developments.

9.2.1.2 Sidewalks shall be constructed along the collector and arterial public street frontages of all industrial developments.

9.2.1.3 Sidewalks shall be constructed whenever a new principal building is built or an existing principal building is renovated or expanded sufficiently to increase its value by twenty-five (25) percent before a Certificate of Occupancy may be issued.

#### **9.2.2 EXCEPTIONS:**

Under the following circumstances, exceptions to required construction of sidewalks under Subsection 9.2.1 are permitted.

##### **9.2.2.1 Optional Fee in Lieu of Construction:**

A. For required sidewalks under Subsection 9.2.1, the developer may choose to pay a fee in lieu of construction, except when one or more of the following circumstances exists:

1. The location is specified for sidewalks in the city's adopted Sidewalk Plan;
2. The location is within one thousand (1,000) feet of an existing sidewalk on the same side of the street;

- 3 The development is expected to generate significant numbers of pedestrians. Examples of such facilities include, but are not limited to schools, day-care centers, office buildings, churches, multi-family residential, and other residential facilities (i.e. group homes, nursing homes, and residential homes for the aged);
- 4 The development contains retail uses expected to attract customers from residences, retail areas, places of employment, or places of public assembly within fifteen hundred (1,500) feet of the development;
- 5 The development is within fifteen hundred (1,500) feet (street distance) of a regular Johnson City Transit stop; or
- 6 The development is within one-half mile (street distance) of an existing or proposed school.

- B. The developer shall be required to grade the location of the proposed future sidewalk, unless waived by the Public Works Director.
- C. The fee shall be calculated as a fixed amount per linear foot. This amount shall be established by the City Commission by resolution upon the recommendation of the Public Works Director and reviewed periodically.
- D. The fee shall be paid before a Certificate of Occupancy is issued.
- E. All funds collected in lieu of construction shall be in addition to all other sidewalk funding and shall be placed in a separate account to be used only for new sidewalk construction.

9.2.2.2 Street Construction Plan:

- A. When the adjoining public street does not have curbing and is scheduled for improvement within five years, as outlined in the Public Works Street Construction Plan, the developer shall pay a fee in lieu of construction.
- B. The fee shall be calculated as a fixed amount per linear foot. This amount shall be established by the City Commission by resolution upon the recommendation of the Public Works Director and reviewed periodically.
- C. The fee shall be paid before a Certificate of Occupancy is issued.

- D. The fee shall be held by the city's Finance Department in an interest-bearing escrow account to be used for sidewalk construction to be done at the time of street reconstruction. To cover the cost of inflation, all accrued interest shall be applied to the cost of sidewalk construction.

### **9.3 - SIDEWALK CONSTRUCTION AND DESIGN**

#### **9.3.1 CONSTRUCTION DETAILS:**

9.3.1.1 Construction of sidewalks shall be in accordance with General Requirements & Standards of Design of the Subdivision Regulations.

9.3.1.2 The office of the City Engineer shall be responsible for inspection of sidewalks during construction. Completion of sidewalk construction shall be required, to the satisfaction of the City Engineer, before a Certificate of Occupancy may be issued.

#### **9.3.1.3 Insufficient Right-of-Way:**

A. When the sidewalk is to be built at the time of development and there is insufficient right-of-way for the sidewalk, the dedication of an additional width for a transportation and drainage easement shall be required. An easement agreement shall be entered into by the city and the property owner. The agreement, provided by the city's Staff Attorney, shall stipulate guaranteed public access in perpetuity and shall be recorded with the appropriate county Register of Deeds.

B. When the sidewalk is to be built after the time of development and the right-of-way width is less than the standard for that street's designation (minor, collector, or arterial), dedication of additional right-of-way to the width standard for that street, as measured from the center line, shall be required. Such right-of-way dedication shall be platted at the time of development and shall be approved by the Johnson City Regional Planning Commission. Said plat shall remain on file with the Planning Department and a copy shall be filed with the appropriate county Register of Deeds.

#### **9.3.2 DESIGN DEVIATION:**

9.3.2.1 In certain circumstances it may be desirable or necessary to adjust the standards for sidewalk construction to conform to the unique characteristics of a site. Economic benefit alone is not sufficient grounds

for deviation; unusual or exceptional topographic, physical, or natural conditions must be present to justify a design deviation.

- 9.3.2.2 Any deviation from established sidewalk design standards must be reviewed and approved by the City Engineer. If the City Engineer denies the deviation, the applicant may appeal to the Planning Commission for approval of the design deviation. The Planning Commission shall hear the appeal for design deviation and make its recommendation to the City Commission, which shall have final authority to grant or deny any design deviation.

## **9.4 VARIANCE PROCEDURE**

- 9.4.1 A variance to the sidewalk regulations shall be granted only upon approval by the Board of Zoning Appeals provided that the decision of the Board of Zoning Appeals may be appealed to the proper court of jurisdiction either by the applicant or the city.
- 9.4.2 Prior to applying for a variance, the applicant shall make a bona fide attempt to identify and design an alternative method to provide for pedestrian access and movement, according to the provisions of Section 9.3.2 of the Johnson City Zoning Code.
- 9.4.3 The general procedures and powers authorized and stated in the Zoning Code, Article XV, Board of Zoning Appeals, shall apply to the Board of Zoning Appeals when considering sidewalk variances. Decisions of the Board must be based solely on the findings contained in the record.
- 9.4.4 In considering a sidewalk variance request, the Board of Zoning Appeals shall apply the following criteria, all of which must be satisfied before a variance may be granted. The burden of proof shall be on the applicant to demonstrate that the criteria are satisfied before a variance may be granted.
  - 9.4.4.1 A variance may be granted only where exceptional physical conditions (such as rock, extreme slope, or other natural or manmade obstacle) exist. Said condition must cause the installation of a standard sidewalk to be extremely difficult or prohibitively expensive. In considering this question, the Board of Zoning Appeals shall balance the present or future need for the sidewalk with the additional cost of installation.

- 9.4.4.2 Any variance granted under the provisions of this section shall be the minimum adjustment necessary, and every attempt shall be made to ensure that the needs of pedestrians are accommodated to the maximum extent possible.
- 9.4.4.3. The granting of a variance shall be in harmony with the general purpose and intent of the Zoning Code and the Sidewalk Element of the General Plan. No variance may be granted which is injurious to the neighborhood or detrimental to the public safety and welfare.

# APPENDIX C. DETAILED COST ESTIMATES

CORE OF DANDRIDGE PEDESTRIAN AND BICYCLE MASTER PLAN  
DETAILED COST ESTIMATES

1	A	B	C	D	E	F	G	H
2	Route		Length - Feet	Length - Miles	Alt. Length	Const. Staking	Clearing 1	Clearing 2
3						3.60	1.50	1.25
4	Primary Alignment	Field of Dreams Entrance	3157	0.5979	17684	11,365	-	3,946
5		Everett Shrader Farms - Commonwealth Dandridge Path	6211	1.1763		22,359	8,991	271
6		US 25W Protected Bicycle Lanes	4848	0.9181		17,451	-	-
7		Downtown Improvements	3469	0.6570		12,488	1,609	-
8	Optional Alignment	Quarry Path	2505	0.4745	12107	9,019	3,758	-
9		Isabell Drive / SR 92 Multi-use Path	5415	1.0255		19,493	-	6,768
10		Swann Woods / Dezan Path	2760	0.5227		9,935	4,140	-
11		Gay Street On-Street	1427	0.2703		5,138	-	-
12								
13								
14	Route		Grading 1,2	Grading 3,6	Topsoil 1	Topsoil 2	Culverts	Endwalls
15			3.50	1.50	1.50	1.50	3.00	1.75
16	Primary Alignment	Field of Dreams Entrance	11,049	-	-	4,735	9,471	5,525
17		Everett Shrader Farms - Commonwealth Dandridge Path	21,738	-	8,991	326	18,633	10,869
18		US 25W Protected Bicycle Lanes	-	7,271	-	-	-	-
19		Downtown Improvements	3,755	-	1,609	-	3,219	1,878
20	Optional Alignment	Quarry Path	8,769	-	3,758	-	7,516	4,384
21		Isabell Drive / SR 92 Multi-use Path	18,951	-	-	8,122	16,244	9,476
22		Swann Woods / Dezan Path	9,659	-	4,140	-	8,280	4,830
23		Gay Street On-Street	-	2,141	-	-	-	-
24								
25								
26								
27	Route		Curb Inlets	Storm Sewer	MUP	Bike Lane	Saw Cutting Pavm't 3	Saw Cutting Pavm't 6
28			12.00	30.00	50.00	95.00	2.00	6.00
29	Primary Alignment	Field of Dreams Entrance	-	-	157,846	-	-	-
30		Everett Shrader Farms - Commonwealth Dandridge Path	-	-	310,543	-	-	-
31		US 25W Protected Bicycle Lanes	-	-	-	460,519	-	29,085
32		Downtown Improvements	-	-	53,645	-	-	-
33	Optional Alignment	Quarry Path	-	-	125,268	-	-	-
34		Isabell Drive / SR 92 Multi-use Path	-	-	270,732	-	-	-
35		Swann Woods / Dezan Path	-	-	137,993	-	-	-
36		Gay Street On-Street	17,126	42,816	-	-	2,854	-
37								
38								
39								
40	Route		Sidewalk	Combined C&G 3	Landscaping 1	Landscaping 2	EPSC 1,2	EPSC 3
41			25.00	19.00	5.50	7.50	3.50	2.75
42	Primary Alignment	Field of Dreams Entrance	-	-	-	23,677	11,049	-
43		Everett Shrader Farms - Commonwealth Dandridge Path	-	-	32,966	1,628	21,738	-
44		US 25W Protected Bicycle Lanes	-	-	-	-	-	-
45		Downtown Improvements	-	-	5,901	-	3,755	-
46	Optional Alignment	Quarry Path	-	-	13,779	-	8,769	-
47		Isabell Drive / SR 92 Multi-use Path	-	-	-	-	18,951	-
48		Swann Woods / Dezan Path	-	-	15,179	-	9,659	-
49		Gay Street On-Street	35,680	27,116	-	-	-	3,925
50								
51								

CORE OF DANDRIDGE PEDESTRIAN AND BICYCLE MASTER PLAN  
DETAILED COST ESTIMATES

A	B	C	D	E	F	G	H	
52								
53	<b>Route</b>		<b>EPSC 6</b>	<b>Seeding 1,2</b>	<b>Sod</b>	<b>Striping 3,5</b>	<b>Striping 4,6</b>	<b>Stanchions</b>
54			2.00	0.75	1.50	3.50	4.50	15.00
55	Primary Alignment	Field of Dreams Entrance	-	2,368	4,735	-	-	-
56		Everett Shrader Farms - Commonwealth Dandridge Path	-	4,658	9,316	-	-	-
57		US 25W Protected Bicycle Lanes	9,695	-	-	-	21,814	72,714
58		Downtown Improvements	-	805	1,609	8,386	-	-
59	Optional Alignment	Quarry Path	-	1,879	3,758	-	-	-
60		Isabell Drive / SR 92 Multi-use Path	-	4,061	8,122	-	-	-
61		Swann Woods / Dezan Path	-	2,070	4,140	-	-	-
62		Gay Street On-Street	-	-	2,141	4,995	-	-
63								
64								
65	<b>Route</b>		<b>BASE ITEM SUB-TOTALS</b>	<b>Traffic Control</b>	<b>Traffic Maint.</b>	<b>Mobilization</b>	<b>TOTALS</b>	
66				L.S.	L.S.	L.S.		
67								
68	Primary Alignment	Field of Dreams Entrance	\$ 245,766	\$ 24,577	\$ 4,915	\$ 49,153	\$ 324,411	
69		Everett Shrader Farms - Commonwealth Dandridge Path	\$ 473,027	\$ 47,303	\$ 9,461	\$ 94,605	\$ 624,395	
70		US 25W Protected Bicycle Lanes	\$ 618,550	\$ 61,855	\$ 12,371	\$ 123,710	\$ 816,486	
71		Downtown Improvements	\$ 98,659	\$ 9,866	\$ 1,973	\$ 19,732	\$ 130,230	
72	Optional Alignment	Quarry Path	\$ 190,658	\$ 19,066	\$ 3,813	\$ 38,132	\$ 251,668	
73		Isabell Drive / SR 92 Multi-use Path	\$ 380,920	\$ 38,092	\$ 7,618	\$ 76,184	\$ 502,814	
74		Swann Woods / Dezan Path	\$ 210,025	\$ 21,003	\$ 4,201	\$ 42,005	\$ 277,233	
75		Gay Street On-Street	\$ 143,932	\$ 14,393	\$ 2,879	\$ 28,786	\$ 189,990	
76								
77								
78	<b>Route</b>		<b>CONTINGENCY</b>	<b>Construction Total</b>	<b>Preliminary Design</b>	<b>Design Engineering</b>	<b>Design &amp; Construction Total</b>	
79								
80								
81	Primary Alignment	Field of Dreams Entrance	\$ 48,662	\$ 373,072	\$ 29,846	\$ 37,307	\$ 2,572,223	
82		Everett Shrader Farms - Commonwealth Dandridge Path	\$ 93,659	\$ 718,054	\$ 57,444	\$ 71,805		
83		US 25W Protected Bicycle Lanes	\$ 122,473	\$ 938,958	\$ 75,117	\$ 93,896		
84		Downtown Improvements	\$ 19,535	\$ 149,765	\$ 11,981	\$ 14,977		
85	Optional Alignment	Quarry Path	\$ 37,750	\$ 289,419	\$ 23,153	\$ 28,942	\$ 1,657,854	
86		Isabell Drive / SR 92 Multi-use Path	\$ 75,422	\$ 578,236	\$ 46,259	\$ 57,824		
87		Swann Woods / Dezan Path	\$ 41,585	\$ 318,818	\$ 25,505	\$ 31,882		
88		Gay Street On-Street	\$ 28,498	\$ 218,488	\$ 17,479	\$ 21,849		
89								
90								
91								
92								
93								
94			<b>Crossing Treatments</b>	<b>Wayfinding Signage</b>	<b>Trailhead Amenities</b>	<b>GRAND TOTAL</b>		
95								
96								
97								
98								
99								
100								
101								
102								

CORE OF DANDRIDGE PEDESTRIAN AND BICYCLE MASTER PLAN  
DETAILED COST ESTIMATES

	<i>Signalized Crossing</i>					
	High Visibility Crosswalk	Push Buttons	Signals	Curb Ramp (Detectable Domes)	Wheelchair Ramp	Total Signalized
Field of Dreams Entrance	3,258	785	5,189	45	860	\$ -
Everett Shrader Farms - Commonwealth Dandridge Path	-	-	-	-	-	\$ -
US 25W Protected Bicycle Lanes	13,032	3,141	20,757	357	6,877	\$ 44,163
Downtown Improvements	-	-	-	-	-	\$ -
Quarry Path	13,032	3,141	20,757	357	6,877	\$ 44,163
Isabell Drive / SR 92 Multi-use Path	-	-	-	-	-	\$ -
Swann Woods / Dezan Path	-	-	-	-	-	\$ -
Gay Street On-Street	-	-	-	-	-	\$ -

	<i>Unsignalized Crossing</i>			
	Crosswalk	Curb Ramp (Detectable Domes)	Wheelchair Ramp	Total Unsignalized
Field of Dreams Entrance	2,218	45	860	\$ -
Everett Shrader Farms - Commonwealth Dandridge Path	26,615	1,070	20,630	\$ 48,315
US 25W Protected Bicycle Lanes	17,743	713	13,753	\$ 32,210
Downtown Improvements	8,872	357	6,877	\$ 16,105
Quarry Path	-	-	-	\$ -
Isabell Drive / SR 92 Multi-use Path	8,872	357	6,877	\$ 16,105
Swann Woods / Dezan Path	-	-	-	\$ -
Gay Street On-Street	-	-	-	\$ -

	<i>HAWK Signal</i>						
	High Visibility Crosswalk	Push Buttons	HAWK Signal	Signals	Curb Ramp (Detectable Domes)	Wheelchair Ramp	Total HAWK
Field of Dreams Entrance	3,258	785	61,210	5,189	45	860	\$ -
Everett Shrader Farms - Commonwealth Dandridge Path	6,516	3,140	122,421	20,757	178	3,438	\$ 156,451
US 25W Protected Bicycle Lanes	-	-	-	-	-	-	\$ -
Downtown Improvements	-	-	-	-	-	-	\$ -
Quarry Path	3,258	1,570	61,210	10,379	89	1,719	\$ 78,225
Isabell Drive / SR 92 Multi-use Path	-	-	-	-	-	-	\$ -
Swann Woods / Dezan Path	-	-	-	-	-	-	\$ -
Gay Street On-Street	-	-	-	-	-	-	\$ -

	<i>Wayfinding Signage</i>			
	Signing 1,2	Signing 4,5	Signing 3,6	Total Signage
Field of Dreams Entrance	1,25	2,00	2,75	\$ -
Everett Shrader Farms - Commonwealth Dandridge Path	3,946	-	-	\$ 3,946
US 25W Protected Bicycle Lanes	7,764	-	13,331	\$ 7,764
Downtown Improvements	-	-	-	\$ -
Quarry Path	1,341	-	-	\$ 1,341
Isabell Drive / SR 92 Multi-use Path	3,132	-	-	\$ 3,132
Swann Woods / Dezan Path	6,768	-	-	\$ 6,768
Gay Street On-Street	3,450	-	-	\$ 3,450

	<i>Trailhead Amenities</i>					
	Bicycle Rack	Bench	Trash/Recycling	Signage	Concrete Pad	Total Trailhead
Field of Dreams Entrance	700	1,762	1,507	371	451	\$ 4,791
Everett Shrader Farms - Commonwealth Dandridge Path	700	1,762	1,507	371	-	\$ -
US 25W Protected Bicycle Lanes	700	1,762	1,507	371	451	\$ 4,791
Downtown Improvements	700	1,762	1,507	371	451	\$ 4,791
Quarry Path	-	-	-	-	-	\$ -
Isabell Drive / SR 92 Multi-use Path	-	-	-	-	-	\$ -
Swann Woods / Dezan Path	-	-	-	-	-	\$ -
Gay Street On-Street	-	-	-	-	-	\$ -