

# Alabaster Master Plan

## For Walking and Biking System

### APPLE Study



**PREPARED BY:**

SAIN ASSOCIATES, INC.  
Two Perimeter Park South  
Suite 500 East  
Birmingham, Alabama 35243  
(205) 940-6420

**January 2022**

**SAIN PROJECT# 210045**



# Table of Contents

1	Executive Summary .....	1
	Study Initiation.....	1
	Purpose for the Study .....	1
	Master Plan.....	2
	Constructability Review.....	2
	Planning-Level Opinions of Probable Cost .....	3
	Prioritization Procedure .....	3
	Funding Sources.....	3
	Next Steps.....	4
2	Introduction.....	5
	Purpose of the Feasibility Study.....	5
	Study Approach.....	7
3	Existing Conditions .....	7
	Existing Documents .....	9
4	Environmental Features.....	11
	Threatened and Endangered Species.....	11
	Prime and Unique Farmlands .....	11
	Historic and Archaeological Properties.....	12
	Wetlands and Floodplains .....	12
	Environmental Justice .....	13
5	Master Plan.....	14
	The Approach .....	14
	New Walking and Biking Accommodation Locations .....	15
	Constructability Review .....	20
	Easy Installation.....	22
	Medium Installation .....	22
	Difficult Installation.....	22
	Planning-Level Opinions of Probable Cost.....	24
	Prioritization Procedure .....	25
6	Accessibility.....	28

7	Funding Sources.....	28
	Federal Funding.....	29
	State Funding.....	31
	Local Funding .....	31
8	Stakeholder Input .....	32
9	Next Steps.....	32

## List of Figures

Figure 1: Location Map .....	6
Figure 2: Existing Facilities Map .....	8
Figure 3: Master Plan .....	18
Figure 4: Constructability Map.....	21
Figure 5: Prioritization Review .....	27

## List of Tables

Table 1: Socioeconomic Overview .....	13
Table 2: Facility Availability .....	19
Table 3: Alabaster City Council Comments .....	20
Table 4: Constructability Rating Examples.....	23
Table 5: Cost Estimates.....	24
Table 6: Funding Options .....	28

## Appendices

- Appendix A – Environmental Features
- Appendix B – Toolbox
- Appendix C – Alabaster-Helena-Pelham Connection Map
- Appendix D – Alabaster-Montevallo Connection Map

# 1 Executive Summary

## Study Initiation

The study was initiated by the City of Alabaster through the Advanced Planning, Programming, and Logical Engineering (APPLE) program developed by the Regional Planning Commission of Greater Birmingham (RPCGB). The City requested professional planning assistance in creating a Master Plan for walking and biking accommodations, including a review of existing and potential sidewalk, bike lane, and trail locations. This review also included an evaluation of the feasibility of installation for the proposed walking and biking facilities contained in the Master Plan.

## Purpose for the Study

The study area includes all roadways located in the City of Alabaster. Under existing conditions, sidewalks are limited predominately to newer subdivisions scattered through the city, offering very little accessibility between subdivisions or from those subdivisions to nearby destinations or attractions. The overall goal of this study was to create a Master Plan to identify and prioritize potential connections for walking and biking accommodations in the city of Alabaster.

The installation of effective routes serving strategic locations within the city will increase pedestrian and bicycle connectivity throughout the city. The strategy to develop the City's walking and biking Master Plan included several steps:

- Identify where additional walking and biking accommodations are needed and/or desired
- Evaluate their constructability
- Determine an opinion of probable cost
- Prioritize locations for installation
- Identify available funding for installation

## Master Plan

The Master Plan identifies logical connections and routes for walking and biking accommodations that will most benefit users and can be implemented over time within the city limits of Alabaster. The Master Plan is comprised of existing facilities, planned facilities, and potential new facilities. With the development of the Master Plan, various types of walking and biking facilities were considered.

Development of the Master Plan included three overarching categories of walking and biking facilities. These facility categories, along with the associated facility type options, include:

- Pedestrian Only Facilities
  - Sidewalks
- Bicycle Only Facilities
  - Bike Lanes
  - Signed Bike Routes
- Combined Pedestrian and Bicycle Facilities
  - Shared Use Paths
  - Sidepaths
  - Recreational Trails
  - Paved Shoulders

For simplicity within this study, shared use paths and sidepaths will be referred to generally as multi-use paths, unless distinctions are necessary. Decisions regarding whether to install a shared use path or sidepath segment should be made at the City's discretion. Following full implementation of the Master Plan, local streets will see an approximate increase from 18% to 35% in roadway miles where pedestrians are served. Similarly, local streets will see an approximate increase from less than 1% to 13% in roadway miles where bicyclists are served. Off-street facility availability, such as shared use paths or trails, will nearly double, resulting in approximately 18 miles of shared use paths or trails following full implementation of the Master Plan.

## Constructability Review

An in-field constructability review was performed for each potential walking and biking accommodation segment. This review evaluated the existing travel lane widths, the roadway shoulder type and condition, the presence of utilities, potential grading difficulties, and property impacts. From the in-field review, the identified potential accommodation segments were placed in three installation categories: easy, medium, and difficult.

## **Planning-Level Opinions of Probable Cost**

Planning-level opinions of probable cost were prepared for various improvement types. These opinions of probable cost include assumptions for construction, right-of-way, utility relocation, and preliminary engineering costs. The constructability rating (easy, moderate, difficult) was based on the facility type of interest and the perceived impacts as noted during the constructability field review. Many variables can affect both the feasibility and the actual cost of construction at a given location, including the presence of utilities, potential grading difficulties, storm drainage considerations, and property impacts. Cost estimates per linear mile and per foot are included.

## **Prioritization Procedure**

For purposes of this study, a detailed prioritization procedure with selected projects was not performed. However, the City of Alabaster should consider factors when deciding how to prioritize projects. These general factors include projects which:

- Close gaps in the existing walking and biking network.
- Connect to the existing walking and biking network to lengthen and expand the system.
- Address specific safety concerns for pedestrians and cyclists.
- Provide connection to destinations such as schools, parks, and commercial areas.
- Boost the City's economic development and enhance the City's brand of being a "safe, healthy, and wholesome environment for family living".

To review the City's request of a destination-based plan, criteria for prioritizing potential projects were selected from the Federal Highway Administration's (FHWA) *Pedestrian Safety Guide and Countermeasure Selection System* and from FHWA's *How to Develop a Pedestrian Safety Action Plan* according to the main needs of the Alabaster community. Additional concerns for potential sidewalk and path segments included identifying locations where the most vulnerable road users may be served, as well as how to best serve the youngest and oldest populations, which are often the most vulnerable. The Master Plan was also evaluated to determine areas where needs overlap, so that more residents and types of users could be served by the improvements.

## **Funding Sources**

Costs associated with the design and construction of the proposed walking and biking facilities could exceed the City's current available resources. The Funding Sources section discusses federal, state, and local funding sources that are available to aid in design and construction.

## **Next Steps**

If the City chooses to move forward with implementing any of the proposed sidewalks or trails and would like to pursue Federal CMAQ or TAP funding, the next step would be to request inclusion of a project in RPCGB's Transportation Improvement Plan (TIP). Projects that utilize the APPLE program provide local governments the opportunity to request funding between TIP cycles. The preparation of this feasibility study can be used in the application for funds from the RPCGB for future improvements.

Once Federal funds are in place for the project, an environmental document will need to be prepared. The environmental document must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, the design would be undertaken, and construction would follow. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.

Should the City elect to use local funds, the timing, scheduling, and implementation of the installation would be at their discretion.

## 2 Introduction

### Purpose of the Feasibility Study

The study was initiated by the City of Alabaster through the Advanced Planning, Programming, and Logical Engineering (APPLE) program developed by the Regional Planning Commission of Greater Birmingham (RPCGB). The City requested professional planning assistance in creating a Master Plan for walking and biking accommodations, including a review of existing and potential sidewalk, bike lane, and trail locations. This review also included an evaluation of the feasibility of installation for the proposed walking and biking facilities contained in the Master Plan.

The study area includes all roadways located in the City of Alabaster. Under existing conditions, sidewalks are limited predominately to newer subdivisions scattered through the city, offering very little accessibility between subdivisions or from those subdivisions to nearby destinations or attractions. The overall goal of this study was to create a Master Plan to identify and prioritize potential connections for walking and biking accommodations in the city of Alabaster.

The installation of effective routes serving strategic locations within the city will increase pedestrian and bicycle connectivity throughout the city. The strategy to develop the City's walking and biking Master Plan included several steps:

- Identify where additional walking and biking accommodations are needed and/or desired
- Evaluate their constructability
- Determine an opinion of probable cost
- Prioritize locations for installation
- Identify available funding for installation

A location map highlighting the study area for this project is shown in Figure 1.



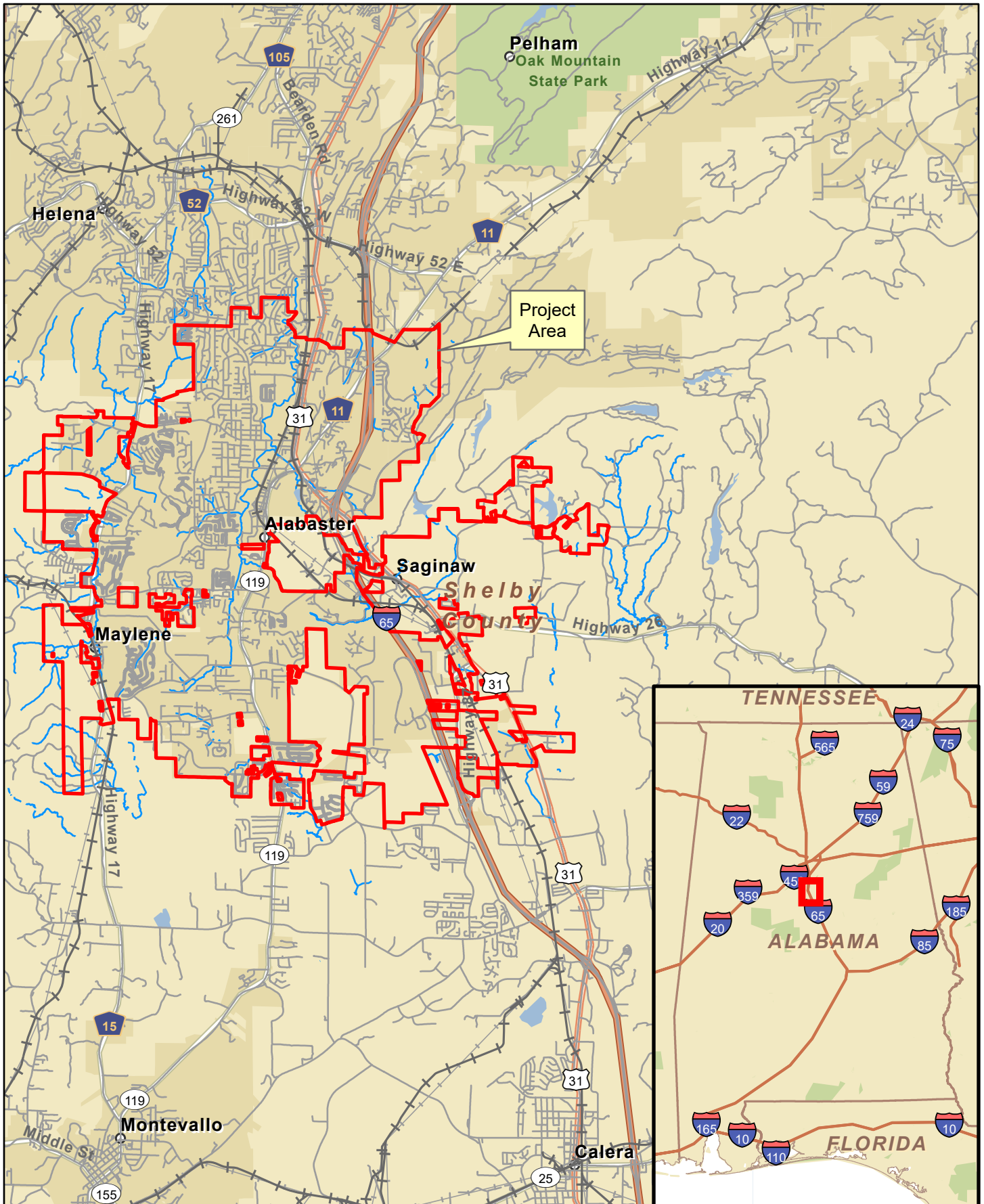


Figure 1: Location Map

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL

P:\2021\210045\SasGisData\Alabaster\Trail.aprx



**SAIN**  
ASSOCIATES



NOT TO SCALE

## Study Approach

The study was performed using a two-stage process. Stage one included an evaluation of the existing conditions and an evaluation of potential walking and biking accommodation locations. Stage 2 included prioritizing potential walking and biking segments for the associated future projects.

For stage one, a base map was prepared using aerial images and available GIS data. A field review was also performed as part of stage one. This field review consisted of confirming the presence of existing sidewalks, bike lanes, and trails.

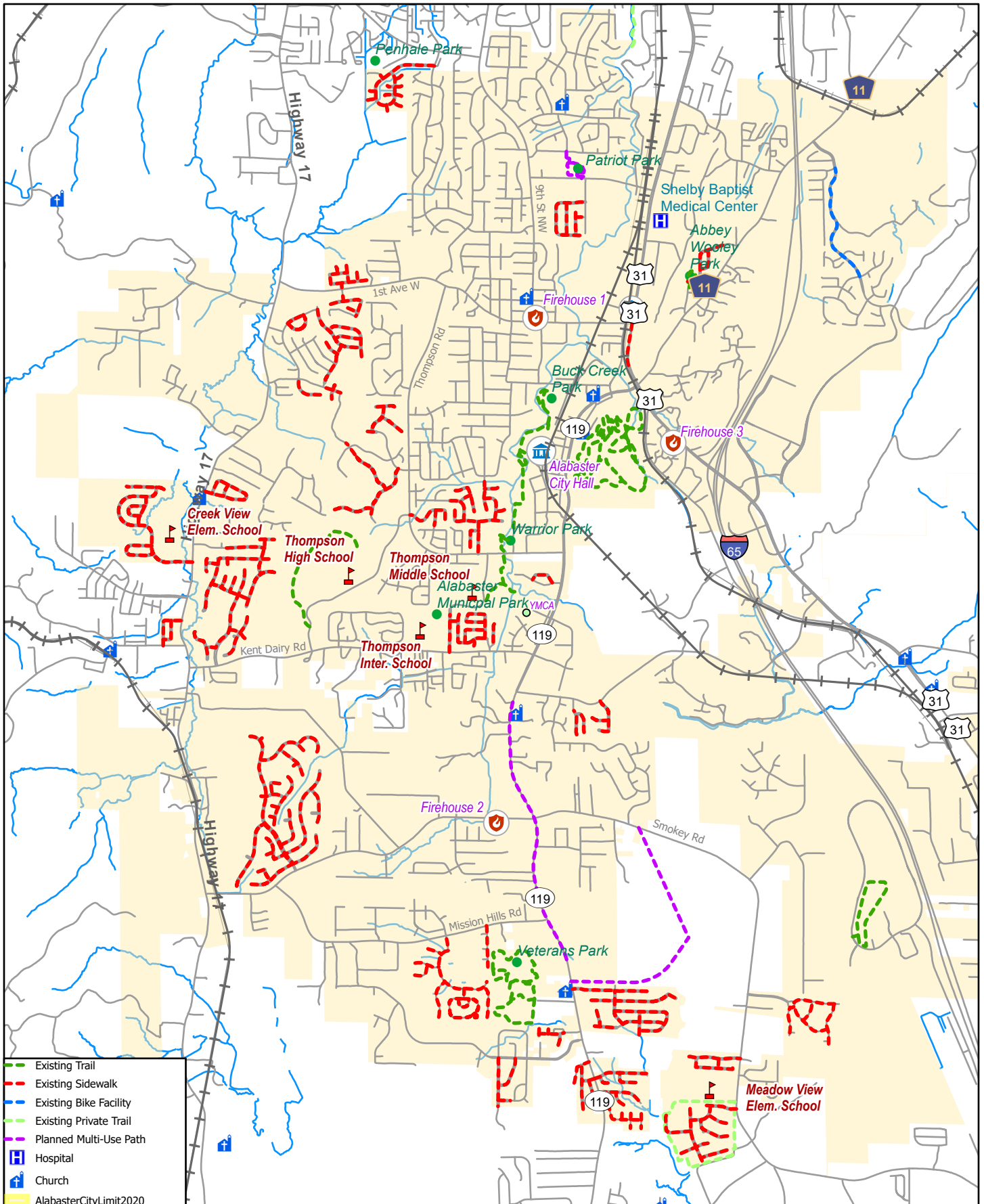
For stage two, areas were identified where potential walking and biking facility installation is most needed, based on a variety of factors. An in-field constructability review of these potential installations was performed. This constructability review consisted of analyzing the study area, taking inventory, and investigating what impacts future installation would have to the adjacent areas.

## 3 Existing Conditions

The existing sidewalk system is generally confined to isolated, newer neighborhoods scattered across the city. Very little pedestrian or bicycle connections are available from these neighborhoods to other areas. The Buck Creek Trail is the primary existing trail system in the area. This trail is currently a gravel trail located in the central region of Alabaster and connecting Buck Creek Park, Warrior Park, and Thompson Middle School, though a project is currently planned which will include the paving of the Buck Creek Trail. Public trails are also present at the Siluria Hills development, Veterans Park, Abbey Wooley Park, and Corporate Woods Drive. The only bicycle facilities present under existing conditions are bike lanes located along Weatherly Club Road.

Multi-use paths/trails are currently planned along a few other routes in the city of Alabaster. This includes a path along SR-119 from CR-12 to CR-26, which is to be constructed along with a planned roadway widening project for the segment. Another planned multi-use path/trail is to be installed along with the construction of a new subdivision development between SR-119 and Smokey Road. Additionally, a multi-use path/trail is expected to be constructed as a part of the Patriot Park development.

A map highlighting the existing pedestrian, trail, and bike facilities is shown in Figure 2.



P:\2021\210045\SasGisData\Alabaster\Trail.aprx

Figure 2: Existing Facilities Map

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL

## Existing Documents

### **Alabaster Forward: Comprehensive Plan (2016)**

The City's Comprehensive Plan contains high-level objectives and policy goals regarding the City's vision and outlook for a 25-year horizon in 2040. The Comprehensive Plan addresses expected population growth, demographic changes, economic growth and development, infrastructure and community services, and quality of life preferences. The Plan also identifies strategic target areas within the city regarding proposed future annexation areas, gateway locations, healthy and active living resources, neighborhood commercial target areas, and priority redevelopment areas.

### **ALDOT Statewide Bicycle and Pedestrian Plan (2017)**

The purpose of the Alabama Statewide Bicycle and Pedestrian Plan is to establish a vision that supports walking and bicycling as modes of transportation within the state and help guide investment in bicycle and pedestrian facilities that maximize limited available funding. The plan was developed by the Alabama Department of Transportation (ALDOT) and stakeholders to provide guidelines for safe bicycle and pedestrian facilities. The plan promotes walking and bicycling as safe, comfortable, and convenient modes of transportation in all communities across the state for people of all ages and abilities.

The ALDOT Bicycle and Pedestrian Plan (2017) does not recommend specific locations for pedestrian facilities, but it does provide recommendations for bicycle facilities in the form of "bicycle corridors" and "bicycle routes."

---

*Bicycle Corridor – Broadly defined linear areas connecting destination intended to identify future bicycle route development.*

---

Source: ALDOT Bicycle and Pedestrian Plan (2017)

The ALDOT Bicycle and Pedestrian Plan further breaks down the bicycle corridors into "priority" corridors and "vision" corridors. The priority corridors are represented by a circular area centered on cities and towns across Alabama, while the vision corridors connect cities. The corridor from Birmingham to Montevallo, which includes Alabaster, is shown in the Plan as a priority corridor. Vision corridor connections in the Birmingham to Montevallo corridor area include Tuscaloosa, Marion, Montgomery, and Anniston.

---

*Bicycle Route – A facility designated with a unique route intended to reach specific destinations and should include wayfinding and destination information.*

---

Source: ALDOT Bicycle and Pedestrian Plan (2017)

There are no specific bicycle routes identified within the ALDOT Bicycle and Pedestrian plan for the Alabaster area. However, the area's bicycle corridor designation is intended to recommend bicycle route development. The Master Plan identifies recommended routes and facilities along the state and local roads within Alabaster, but any facilities recommended on state routes merely represent potential bicycle and pedestrian routes to explore in conjunction with ALDOT. Two state routes include segments located within the Alabaster city limits. These state route corridors include SR-3 (US-31) and SR-119 (US-29). The Master Plan recommends installation of walking and biking facilities along segments of each these state routes.

The Statewide Plan offers guidance on recommended bicycle and pedestrian facility dimensions for roadways with various typical sections and posted speed limits. These design guidelines are shown in Tables 4-1 and 4-2 of the Statewide Plan.

### **Shelby County Bicycle and Pedestrian Plan (2018)**

The purpose of the Shelby County Bicycle and Pedestrian Plan is to aid the County in future planning considerations and decisions in recommending and implementing improvements to increase safe mobility for cyclists and pedestrians. The Shelby County Bicycle and Pedestrian Plan evaluated existing accommodation availability and conditions, as well as identifying routes for future accommodation needs. The Shelby County Bicycle and Pedestrian Plan referenced the following routes in Alabaster as routes where pedestrian and bicycle accommodation needs are present:

- SR-3 (US-31)
- SR-119
- Kent Dairy Road
- CR-17
- CR-11
- 9<sup>th</sup> Street SW
- 1<sup>st</sup> Avenue W
- Thompson Road
- Industrial Road
- Butler Road

## **4 Environmental Features**

A search of documents, databases, a field review, and compilation of GIS data was performed to analyze existing conditions and identify environmental issues. This section further discusses the gathered data.

### **Threatened and Endangered Species**

A search using the US Fish and Wildlife Service's IPaC Information for Planning and Consultation database revealed a list of known or expected threatened or endangered species located within the study area. According to this list, there are various threatened or endangered species potentially located within the city limits of Alabaster which could be impacted by activities in the study area. These include three bat species, two fish species, nine clam species, three snail species, and four flowering plant species. Several of these species have final critical habitats, though the study area is outside of the final critical habitats. The list of species can be found in Appendix A. Based on this information a Threatened and Endangered Species survey would be required should the County opt to utilize federal monies to fund improvement projects within this area. A Threatened and Endangered Species survey will also be required if any kind of US Army Corps of Engineers (USACE) permitting is needed.

The presence of any of these species does not prevent the City from moving forward with a project but it may have an impact on timing and cost. Should the City elect to use Federal funding for the design or construction, additional coordination with USFWS will be required and the presence of certain species could impact construction scheduling.

### **Prime and Unique Farmlands**

The National Environmental Policy Act (NEPA) requires that a project area be evaluated to determine the presence of prime and unique farmlands. Mapping produced via the United States Department of Agriculture's (USDA) Web Soil Survey shows the study area as well as areas of prime farmland and farmland of statewide importance.

A search of the Natural Resources Conservation Service's (NRCS) Web Soil Survey reveals that there are prime farmlands largely located in three narrow, north-south running segments of the study area. These include the CR-17 corridor, the SR-119 corridor, and just east of the I-65 corridor. Due to the size of the study area, various soil types are present in the area, but the most common soil types include the complex soil types, with silt loams also commonly present. All areas with the complex soil types are rated as not prime farmland. Mapping, along with additional soil types and information, generated by the Web Soil Survey website is provided in Appendix A.

## **Historic and Archaeological Properties**

The National Register of Historic Places (NRHP) does not list any historic properties within the study area; however, sites are listed in the Alabama Register of Landmarks and Heritage (ARLH) database, including the Benton Family Cemetery, Cedar Grove Cemetery, David Lindsay Historic Site Cemetery, McLaughlin Farm, and Buck Creek Water Tower and Jail locations.

Benton Family Cemetery, Cedar Grove Cemetery, David Lindsay Historic Site Cemetery, and McLaughlin Farm are each located along segments of roadway where improvement options have been identified.

Should the City move forward with obtaining Federal monies for the installation of improvements, it is recommended that a Phase 1 cultural resources study be performed. This study would be able to identify and document any historic properties, as well as identify any known or unknown archaeological sites. The Alabama Historic Commission would also have to concur with the findings in the cultural resources study. If local funds are used, a phase 1 cultural resources study is not required.

## **Wetlands and Floodplains**

A search using the US Fish and Wildlife Service's National Wetlands inventory database revealed the location of wetlands within the study area. Beyond the classification of lakes and freshwater ponds, which are located sporadically throughout the study area, two other types of wetlands were also noted within the study area. These include Freshwater Forested/Shrub Wetlands and Freshwater Emergent Wetlands. These are generally located along the CR-17 corridor, along Buck Creek, and on the southern end of the study area, between SR-119 and Smokey Road and also on both sides of I-65. Likewise, the areas with the greatest potential of wetlands impact based on the improvements listed in the Master Plan included in this report are along CR-17 and Buck Creek. Impacts would also be expected for the wetlands areas located between SR-119 and Smokey Road, where a large development is already planned.

Wetlands delineation will be required for a federal project and for USACE permitting. Appendix A provides a map obtained from the U.S. Fish and Wildlife Service National Wetlands Inventory database.

## Environmental Justice

Environmental Justice is a component of the National Environmental Policy Act (NEPA) that seeks to ensure that all socio-economic groups share in the benefits and burdens of Federal transportation projects. Two areas of environmental justice that frequently become a concern are areas with a high minority population or areas where the majority of the inhabitants are members of low-income households.

Table 1 provides a very brief overview of the socioeconomic demographics of the study area as shown in 2019 American Community Survey (ACS), a statistical survey by the U.S. Census Bureau. The minority populations and the percentage of families living below the poverty level in the study area are above those seen for Shelby County as a whole. Installation of additional walking and biking accommodations will benefit these communities. In economically disadvantaged locales, car ownership is less prevalent; therefore, walking and biking accommodations are more likely to provide safer, more necessary transportation options for citizens residing in these areas.

**Table 1: Socioeconomic Overview**

<b>Socioeconomic Overview</b>	<b>City of Alabaster</b>	<b>Shelby County</b>
<b>Population Total</b>	33,635	217,702
<b>White</b>	73.3%	82.5%
<b>African American</b>	14.5%	13.3%
<b>Hispanic</b>	9.9%	5.8%
<b>% Families Living Below Poverty Level</b>	9.1%	6.2%



## 5 Master Plan

### The Approach

Following conversations with the City of Alabaster and RPCGB, a general approach was agreed upon in formulating the proposed Master Plan. It was determined that the Master Plan process would build upon the existing Buck Creek Trail, which connects Buck Creek Park and Warrior Park. From this existing trail, a trail trunk route would be formed, extending north and south through the city. Connections would then be implemented from this trunk route to the east and west, offering accessibility to various locations of interest throughout the city, including schools, parks, City attractions, medical facilities, large population centers, shopping centers, etc.

Existing plans conducted within the region were also reviewed to ensure cohesion between recommendations. Plans consulted which included relevant recommendations within the city of Alabaster included the Alabaster Forward: Comprehensive Plan (2016), the ALDOT Statewide Bicycle and Pedestrian Plan (2017), and the Shelby County Bicycle and Pedestrian Plan (2018). In addition to these existing plans, previously planned projects within the city were also noted from the Alabama Statewide Transportation Improvement Program (STIP).

Considerations noted within Alabaster's Comprehensive Plan which were used in the formulation of the Master Plan included its discussion concerning the City's desire to provide infrastructure to meet both current and future accessibility needs, including creating greater access to healthy and active living resources, neighborhood commercial target areas, and priority redevelopment areas. The Comprehensive Plan identified the following existing healthy and active living resources:

- US-31 Medical Mile
- Buck Creek Trail
- Alabaster YMCA
- Alabaster Senior Center
- Places of Worship
- Shelby Baptist Medical Center

The City's Comprehensive Plan also identified a few currently undeveloped areas as potential neighborhood commercial target areas. These target areas were selected based on their ability to potentially give commercial access within walking distance to residents in currently underserved areas. The identified target areas included areas near the following intersections:

- CR-17 at 1<sup>st</sup> Avenue W
- CR-66 (Industrial Road) at CR-95 (9<sup>th</sup> Street SW)
- CR-11 (Simmsville Road) near the northeast city limits
- CR-12 (Butler Road) near CR-80 (Mission Hills Road)

The City's Comprehensive Plan also identified priority redevelopment areas for the future. The identified future redevelopment areas included the following regions of the city:

- US-31 Medical Mile
- Siluria Mill

These desires of the City, reflected in the Comprehensive Plan, were taken into account in the consideration of how to connect various portions of the city to the central north-south running trunk trail.

### **New Walking and Biking Accommodation Locations**

The Master Plan identifies logical connections and routes for walking and biking accommodations that will most benefit users and can be implemented over time within the city limits of Alabaster. The Master Plan is comprised of existing facilities, planned facilities, and potential new facilities. With the development of the Master Plan, various types of walking and biking facilities were considered.

The final selection of routes and recommendations were determined through the following process:

- Met with project stakeholders on March 30, 2021 to determine the study approach, as well as to identify both current and future desires and needs within the city
- Used city-wide mapping to identify logical walking and biking connections within the city limits and create a Draft Master Plan
- Field-verified the feasibility of construction of the identified walking and biking connections
- Met with project stakeholders on August 12, 2021 to discuss the identified potential connections and facility types reflected in the Draft Master Plan
- Presented the Draft Master Plan to the Alabaster City Council at a work session on October 7, 2021
- Updated the Draft Master Plan after receiving final comments from the City Council

Development of the Master Plan included three overarching categories of walking and biking facilities. The Master Plan includes the following facility types:

- Pedestrian Only Facilities
  - Sidewalks
    - Sidewalks are walkways reserved for pedestrian use along a roadway. They are typically paved and physically separated from the roadway by a curb or buffer area.
- Bicycle Only Facilities
  - Bike Lanes
    - Bike lanes are segments of the roadway designated for bicycle use. They are located adjacent to the vehicle travel lanes and are identified by striping, pavement markings, and signage. Bike lanes may either include a buffer zone or be located immediately adjacent to the vehicle travel lane.
  - Uphill Bike Lanes
    - Uphill bike lanes are bike lanes found only on the side of the roadway where traffic is proceeding uphill.
      - Within the Master Plan, one segment of uphill bike lanes is shown. Along this roadway, cyclists will typically travel within the vehicle lanes, but due to this segment of the roadway consisting of steep uphill climbs and a difficult constructability rating, these uphill bike lanes will allow cyclists to avoid the normal travel lanes while going uphill. Cyclists may re-enter the travel lanes on the downhill slope.
  - Signed Bike Routes
    - Signed bike routes are low-speed roadways, designated using signage, which are intended to allow the use of the roadway to be shared between both motor vehicles and bicycles simultaneously.
- Combined Pedestrian and Bicycle Facilities
  - Shared Use Paths
    - Shared use paths are paved facilities reserved for both pedestrians and cyclists which are physically separated from any vehicular roadway.
  - Sidepaths
    - Sidepaths are paved facilities reserved for both pedestrians and cyclists which are located parallel and adjacent to a vehicular roadway.
  - Recreational Trails
    - Recreational trails are similar to shared use paths but can either be paved or unpaved.
  - Paved Shoulders

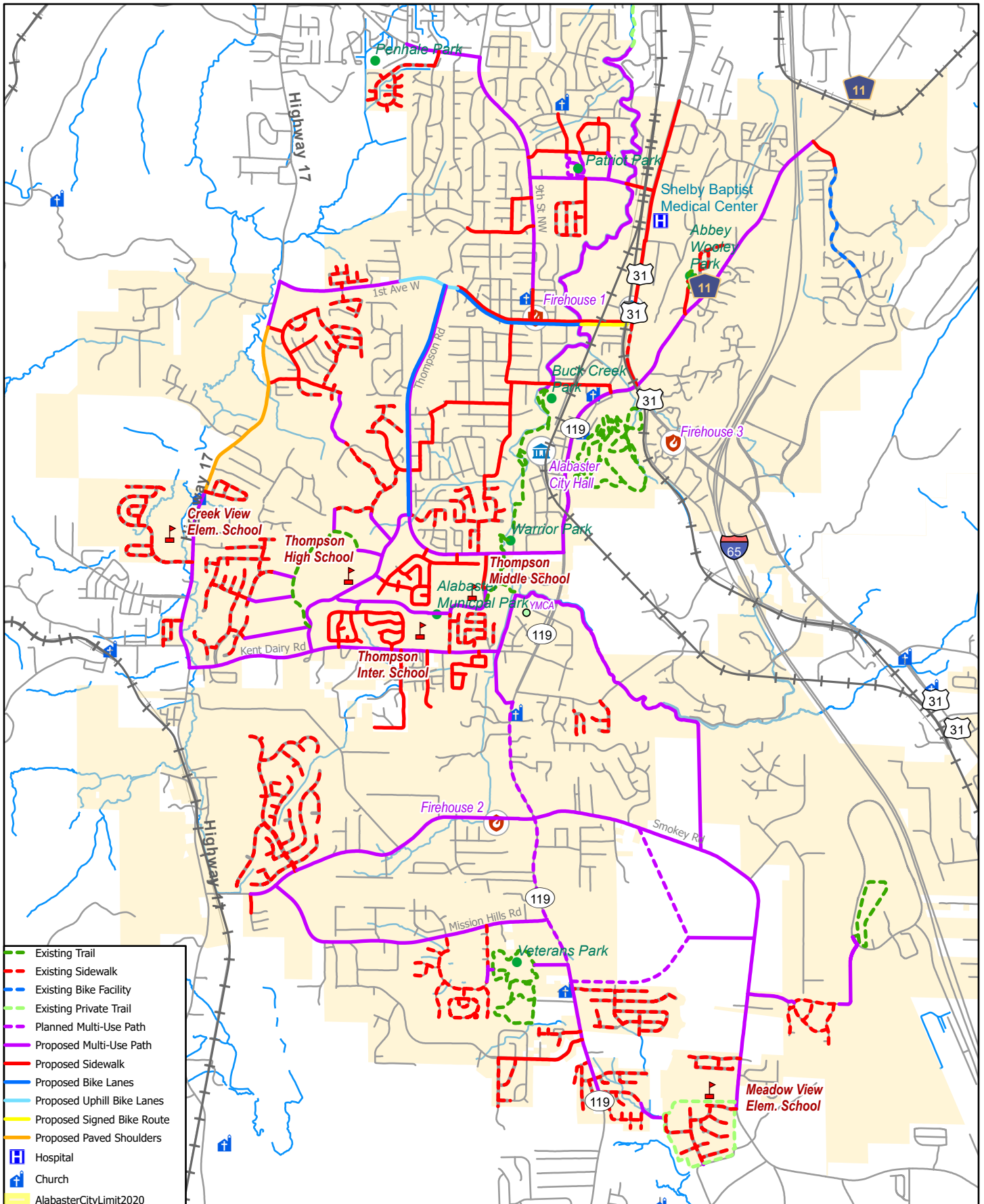
- Paved shoulders are the minimum option for providing designated space for pedestrians and cyclists. Paved shoulders are not as safe a facility as paths or sidewalks, due to a lack of physical separation from traffic.

Additional detail for each of the facility types shown on the Master Plan is shown in Appendix B. The Master Plan is shown on Figure 3.

For simplicity within this study, shared use paths and sidepaths will be referred to generally as multi-use paths, unless distinctions are necessary. The Master Plan notes many segments where installation of a multi-use path is recommended. These shared use paths and sidepaths are wide enough to serve both pedestrians and cyclists. The primary difference between the types of path are the shared-use paths are physically separated from roadways, while sidepaths run parallel to and immediately adjacent to roadways. Decisions regarding whether to install a shared use path or sidepath segment should be made at the City's discretion.

It is generally considered that a majority of pedestrian traffic occurs through pedestrian trips originating within an outer limit of 0.25 to 0.5 miles of the intended destination. For the Master Plan, connections were generally sought to be included within a half-mile radius of the noted priority destinations.

One recommended route shown on the Master Plan was approved during the development of this study by the Birmingham Metropolitan Planning Organization (MPO) and is to be funded using funds obtained through the Transportation Alternatives Program (TAP). This route is located in a high-priority area of central Alabaster, connecting the area's schools and parks. These connections are accomplished by using sidewalk and multi-use path segments along Warrior Drive, beginning at Thompson Road, giving access to Thompson Middle School, Thompson Intermediate School, and Alabaster Municipal Park, and then extending to Thompson High School. This route also connects to existing sidewalks and trails, giving access from the schools to Warrior Park, Buck Creek Park, and the Alabaster YMCA.



P:\2021\210045\SasGisData\Alabaster\Trail.aprx



Figure 3: Master Plan

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL

Approximate total miles of local (not interstates or state routes) roadways with pedestrian or bicycle facilities under existing and future (full build-out) conditions are shown in Table 2. The percentages reflect the approximate percentage of local roadways with facilities available for use under existing conditions and after full implementation of the Master Plan improvements.

**Table 2: Facility Availability**

<b>Facility Type</b>	<b>Existing (miles)</b>	<b>Master Plan (miles)</b>
<b>Sidewalks</b>	34.3 (18%)	47.5 (24%)
<b>Bike Facilities</b>	0.8 (<1%)	3.9 (2%)
<b>Sidepaths</b>	-	20.6 (11%)
<b>Shared-Use Paths/Off-Road Trails</b>	9.4	18.0

Following full implementation of the Master Plan, local streets will see an approximate increase from 18% to 35% in roadway miles where pedestrians are served. Similarly, local streets will see an approximate increase from less than 1% to 13% in roadway miles where bicyclists are served. Off-street facility availability, such as shared-use paths or trails, will nearly double, resulting in approximately 18 miles of shared-use paths or trails following full implementation of the Master Plan.

Sain Associates presented a draft Master Plan to the Alabaster City Council at a work session on October 7, 2021. The City Council provided feedback to Sain Associates, stating where the members felt additional walking and biking accommodations should be included on the Master Plan. Table 3 shows the comments received from the City Council and the response from Sain Associates in updating the Master Plan.

An additional desire that was identified during meetings with the City was for the Master Plan to include options for connecting to neighboring cities. Alabaster is bordered by Helena and Pelham to the north and Montevallo to the south.

For the northern connections, an option for connecting to Helena includes using the proposed 9<sup>th</sup> Street SW multi-use path to reach Old Town Helena. An option for connecting to Pelham is using the proposed multi-use path extension of the Buck Creek Trail to follow Buck Creek to connect with the planned Greenway Trail. An Alabaster-Helena-Pelham connection map is shown in Appendix C.

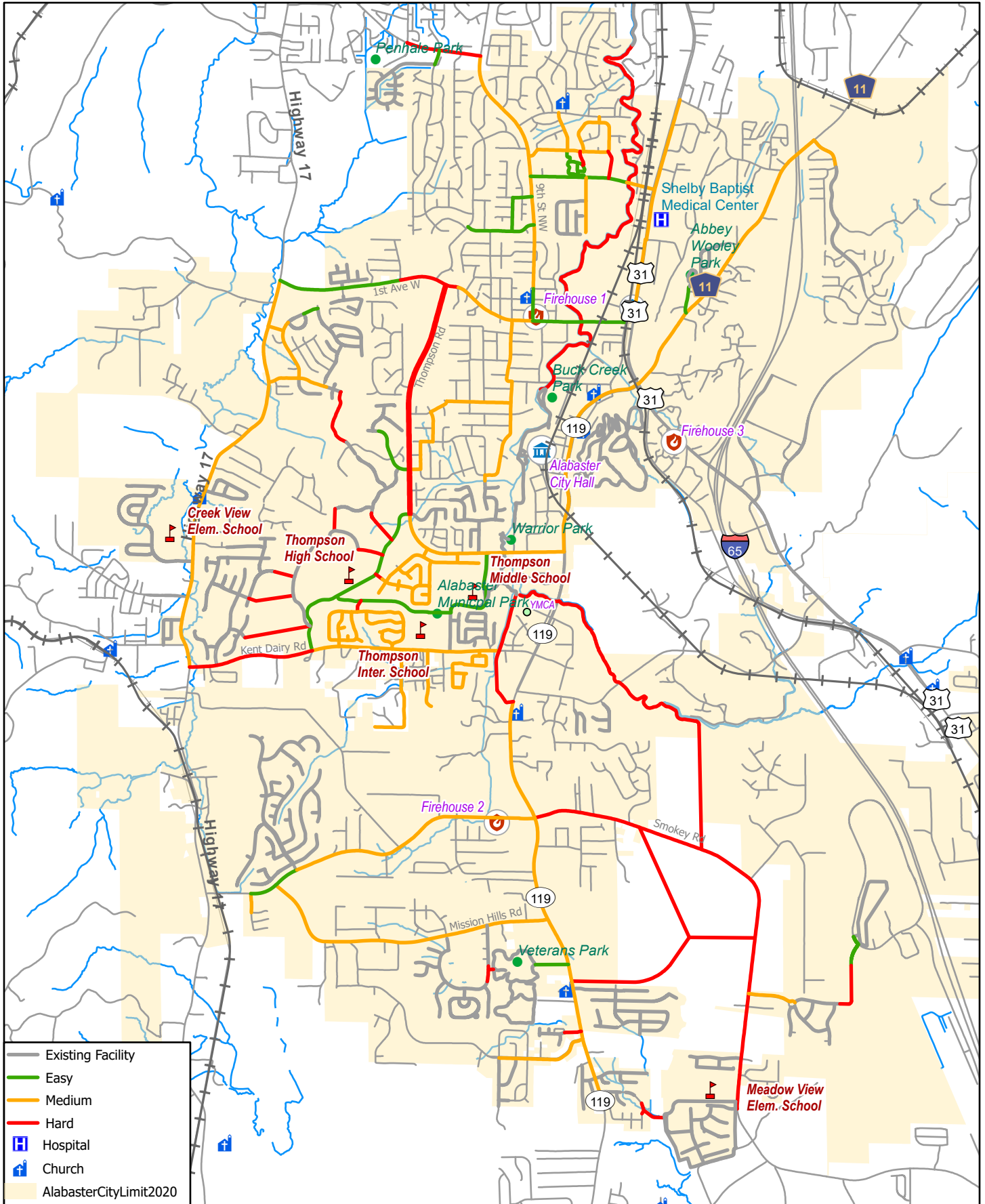
For the southern connection, an option for connecting to Montevallo is to use a multi-use path to connect at the existing Ebenezer Swamp Trail, along Stagecoach Road. An Alabaster-Montevallo connection map is shown in Appendix D.

**Table 3: Alabaster City Council Comments**

<b>Comment Number</b>	<b>Concerns/Comments</b>	<b>Response</b>
1	Add a connection along Butler Road from SR-119 to the Fire Station.	A multi-use path was added to the Master Plan along Butler Road.
2	Add a connection extending from Wynlake Subdivision to the existing trail at Veterans Park.	A multi-use path was added to the Master Plan between North Wynlake Drive and the existing trail at Veterans Park.
3	Add a connection extending from the existing sidewalk along Winterhaven Drive to the proposed sidewalk at the 7 <sup>th</sup> Avenue SW/ 10 <sup>th</sup> Street SW intersection.	A sidewalk was added to the Master Plan between Winterhaven Drive and the 7 <sup>th</sup> Avenue SW/10 <sup>th</sup> Street SW intersection.
4	Add a sidewalk connection along 9 <sup>th</sup> Street SW between Whippoorwill Drive and Sundance, as well as along Industrial Road between 9 <sup>th</sup> Street SW and Patriot Park.	The proposed multi-use paths shown on the Master Plan will accommodate pedestrians along the specified segments of 9 <sup>th</sup> Street SW and Industrial Road.
5	Add an additional connection to the Patriot Park trail from Willow Creek Place, near the Willow Creek Court intersection.	A multi-use path was added to the Master Plan between Willow Creek Place and the planned trail at Patriot Park.
6	Add a connection from the southeast corner of Willow Creek Place to Industrial Road.	A multi-use path was added to the Master Plan between the southwest corner of Willow Creek Place and Industrial Road.
7	Add connections to Thompson High School via Water Hickory Drive, Scenic Lake Drive, Scarlet Oak Drive, Sterling Park Circle, Sterling Park Drive, Tropical Lane, and Kentwood Drive.	Multi-use paths were added to connect Thompson High School to Water Hickory Drive, Scenic Lake Drive, Scarlet Oak Drive, Sterling Park Circle, Sterling Park Drive, Tropical Lane, and Kentwood Drive.

### **Constructability Review**

Field reviews of the area were performed on July 6, 2021. During the field visit, a constructability review was performed for each potential walking and biking segment. This review evaluated the existing travel lane widths, the roadway shoulder type and condition, the presence of utilities, potential grading difficulties, and potential property impacts. From the in-field review, the potential walking and biking segments were placed in three installation categories: easy, medium, and difficult. A map showing the ease of installation for each of the identified segments for improvement is provided in Figure 4.



- Existing Facility
- Easy
- Medium
- Hard
- Hospital
- Church
- AlabasterCityLimit2020

Figure 4: Constructability Map

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL



### **Easy Installation**

Easy installation segments are defined as portions of roadway that would require minor grading, minor challenges with mailboxes, few impacts to properties and driveways, and less likelihood of impacts to utilities. The segment on Warrior Parkway from Kent Dairy Road to Thompson Road is an example of easy multi-use path constructability (see Table 3).




### **Medium Installation**

Medium installation segments are defined as portions of roadway that would experience moderate challenges during installation. These include moderate grading, substantial challenges with mailboxes, moderate property impacts, steeper driveways, and the presence of utilities. Most of the walking and biking segments proposed in the Master Plan are considered to be of medium difficulty for installation. The segment on Kent Dairy Road from Warrior Parkway to Buck Creek is an example of medium multi-use path constructability (see Table 3) considering its moderate grading challenges, driveway entrance treatments, potential utility relocation, and storm drainage structures that would require modification.

### **Difficult Installation**

Difficult installation segments are defined as portions of roadway that would experience major challenges during construction. These challenges include major grading, potential retaining walls, increased property impacts associated with tie slopes and driveways, and higher potential for utility impacts. The segment of Thompson Road from Warrior Drive to 1<sup>st</sup> Avenue W is an example of difficult multi-use path constructability (see Table 4) due to considerable grading challenges and potential utility relocation.

**Table 4: Constructability Rating Examples**

Constructability Rating	Example Location	Example Photo
<p><b>Easy</b></p>	<p>Warrior Pkwy, From Kent Dairy Rd to Thompson Rd</p>	
<p><b>Medium</b></p>	<p>Kent Dairy Rd, From Warrior Pkwy to Buck Creek</p>	
<p><b>Difficult</b></p>	<p>Thompson Rd, From Warrior Dr to 1<sup>st</sup> Ave W</p>	

## Planning-Level Opinions of Probable Cost

Planning-level opinions of probable cost were prepared for various improvement types. The estimates are based on the engineer's experiences and qualifications and represent the engineer's best judgement within the industry. The engineer does not guarantee that proposals, bids, or actual costs will not vary from the engineer's opinions of probable cost. The opinions of probable cost were estimated in 2021 dollars. For budgeting future year projects, these costs will need to be escalated to future year dollars.

These opinions of probable cost include assumptions for construction, right-of-way, utility relocation, and preliminary engineering costs. These cost estimates are based on a locally funded project scenario. If the City elects to pursue federal funds, additional costs will need to be considered, including ALDOT indirect costs and CE&I costs, which would add to these opinions of probable cost. The constructability rating (easy, moderate, difficult) was based on the facility type of interest and the perceived impacts as noted during the constructability field review. Many variables can affect both the feasibility and the actual cost of construction at a given location, including the presence of utilities, potential grading difficulties, storm drainage considerations, and property impacts. Cost estimates per linear mile and per foot are shown in Table 5.

**Table 5: Cost Estimates**

Facility Type	Constructability Rating	Total Cost per Mile	Total Cost per Foot
<b>Sidewalk (one side of road)</b>	Easy	\$967,000	\$185
	Moderate	\$1,702,000	\$325
	Difficult	\$3,309,000	\$630
<b>Separated Bike Lane (both sides of road)</b>	Easy	\$1,199,000	\$230
	Moderate	\$1,973,000	\$375
	Difficult	\$3,246,000	\$615
<b>Paved Shoulder (both sides of road)</b>	Easy	\$1,316,000	\$250
	Moderate	\$2,437,000	\$465
	Difficult	\$5,081,000	\$965
<b>Shared Use Path</b>	Moderate	\$1,743,000	\$335
	Difficult	\$2,329,000	\$445

## **Prioritization Procedure**

For purposes of this study, a detailed prioritization procedure with selected projects was not performed. However, the City of Alabaster should consider factors when deciding how to prioritize projects. These general factors include projects which:

- Close gaps in the existing walking and biking network.
- Connect to the existing walking and biking network to lengthen and expand the system.
- Address specific safety concerns for pedestrians and cyclists.
- Provide connection to destinations such as schools, parks, and commercial areas.
- Boost the City's economic development and enhance the City's brand of being a "safe, healthy, and wholesome environment for family living".

For the preparation of this plan, the City of Alabaster expressed a desire to expand their walking and biking system from the north-south backbone which includes the existing and planned accommodations along Highway 119, Buck Creek Trail, and Patriot Park. Additionally, the City desires to have connections to their high pedestrian activity centers.

To review the City's request of a destination-based plan, criteria for prioritizing potential projects were selected from the Federal Highway Administration's (FHWA) *Pedestrian Safety Guide and Countermeasure Selection System* and from FHWA's *How to Develop a Pedestrian Safety Action Plan* according to the main needs of the Alabaster community. Additional concerns for potential sidewalk and path segments included identifying locations where the most vulnerable road users may be served, as well as how to best serve the youngest and oldest populations, which are often the most vulnerable. The Master Plan was also evaluated to determine areas where needs overlap, so that more residents and types of users could be served by the improvements.

### ***Probable Use***

Travel demand was estimated based on the proximity to vulnerable road user trip generators. Priority was given for walking and biking accommodations within 0.25 to 0.5 miles from:

1. Schools: children are especially vulnerable
2. Parks: high pedestrian activity for leisure or fitness activities
3. Other generators: medical facilities, community centers, and places of worship

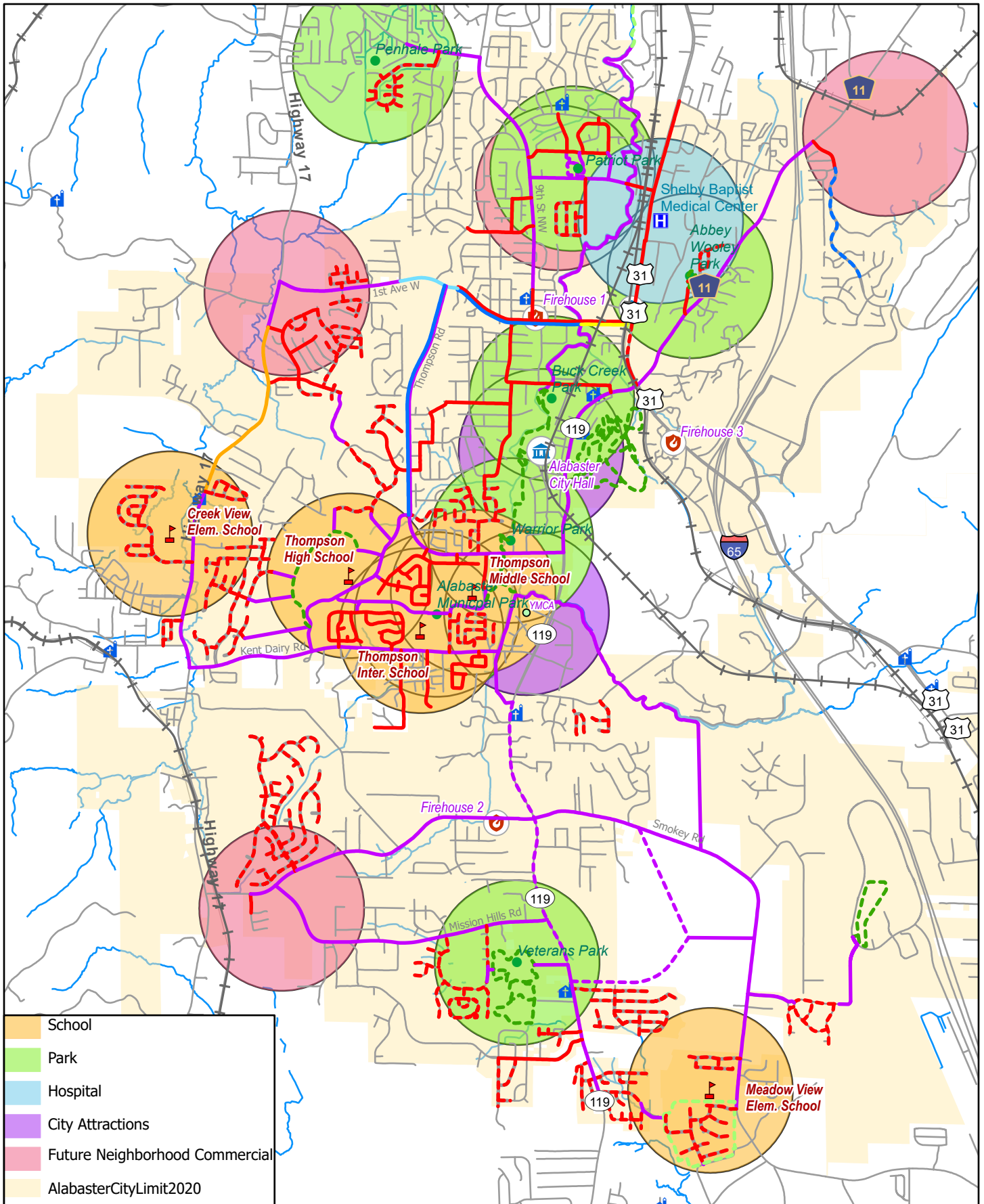
Figure 5 identifies many of the destinations cited above and includes 0.5-mile radius circles around the destinations. The 0.5-mile circles indicate the areas with the greatest likelihood of pedestrians and bikers to use accommodations to access each of the identified destinations.

### ***Effectiveness of Solution***

It is seen in Figure 5 that two regions of the city include clusters of destinations. The first area is the clear concentration of clusters along the Buck Creek Trail area extending from 1<sup>st</sup> Avenue W to Thompson High School. The second area includes the Shelby Baptist Medical Center and the planned Patriot Park.

Based on probable use, the following areas are noted as effective solutions and support the City's desire to enhance and connect to the north-south walking and biking accommodation backbone through the City:

1. The area between Thompson High School and SR-119, extending north toward 1<sup>st</sup> Avenue W
2. The Creek View Elementary School and Meadow View Elementary School areas
3. The areas near the remaining city parks
4. The areas near the Shelby Baptist Medical Center and the Medical Mile
5. Completion of a north-south running trunk route through the city which would allow east-west connections, as well as connections to neighboring cities
6. The future neighborhood commercial areas (once construction begins in these areas)



	School
	Park
	Hospital
	City Attractions
	Future Neighborhood Commercial
	AlabasterCityLimit2020

Figure 5: Prioritization Review

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL

P:\2021\210045\SasGISData\Alabaster\Trail.aprx



NOT TO SCALE

## 6 Accessibility

Per the Americans with Disabilities Act (ADA), facilities located within the public right-of-way must provide accessibility for all users including those with disabilities. The United States Access Board has developed proposed guidelines for pedestrian facilities in public rights-of-way. These guidelines are more commonly referred to as *Public Rights-Of-Way Accessibility Guidelines* or PROWAG. Per PROWAG, design, construction, and any alteration of pedestrian facilities within public rights-of-way, including local rights-of-way, must be made accessible for pedestrians with disabilities. Although PROWAG has not yet been officially adopted by the United States Department of Justice, it is the standard recognized by ALDOT. Once PROWAG is officially adopted it will be mandatory that the guidelines set forth by the United States Access Board be implemented into projects located within public rights-of-way.

## 7 Funding Sources

Costs associated with the design and construction of the proposed walking and biking facilities could exceed the City's current available resources. This section discusses federal, state, and local funding sources that are available to aid in design and construction. Federal programs are administered by the Alabama Department of Transportation. Table 6 details funding sources, the category of the source, and type of project for which the funding can be used.

**Table 6: Funding Options**

Funding Source	Category	Relevant Project Type	Match Type
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Federal	Pedestrian and bicycle facilities	80% Federal/ 20% City (Design and Construction)
Transportation Alternatives Program (TAP)	Federal	Pedestrian and bicycle facilities	80% Federal/ 20% City (Construction Only)
Highway Safety Improvement Program (HSIP)	Federal	Projects with the goal of reducing traffic crashes	90% Federal/ 10% City (Construction Only)
Surface Transportation Program (STP)	Federal	Pedestrian and bicycle facilities	80% Federal/ 20% City
Recreational Trails Program (RTP)	Federal	Recreational trails	80% Federal/ 20% City
Alabama Transportation Rehabilitation and Improvement Program-II	State	State roadways	Up to 100% State
Rebuild Alabama Act – Annual Grant Program	State	Public roadways	Up to 100% State (Construction Only)
City of Alabaster	Local	Provides connectivity with an estimated cost of \$100,000	N/A

## Federal Funding

CMAQ, TAP, HSIP, funding programs have been continued through the Fixing America's Surface Transportation Act (FAST Act). The Metropolitan Planning Organization (MPO) receives approximately \$10 Million of CMAQ funds and \$1.2 Million of TAP funds annually. These funds are then distributed amongst various municipalities and ALDOT. The members of the MPO vote to determine which projects receive funding. The CMAQ and TAP funding programs are further discussed below.

The Congestion Mitigation and Air Quality Improvement (CMAQ) Program's goal is to improve air quality. The installation of pedestrian and bicycle facilities is one-way CMAQ achieves this goal. Pedestrian and bicycle facilities have the potential to reduce vehicle emissions since they encourage walking and biking instead of motor vehicle transportation. CMAQ funding can be used for both design and construction of a project. With CMAQ funding, an 80/20 match is required meaning the Federal government provides 80% of the funding and the City would be responsible for the remaining 20% of funding. Since this report was prepared as part of the APPLE program, it can be used in conjunction with the application and will streamline the City's request for CMAQ funding. The downside to CMAQ funding is the time it adds to the overall project. Additional time is required to account for ALDOT and FHWA involvement including additional plan reviews and more stringent design and construction standards.

The Transportation Alternatives Program (TAP) is an 80% Federal/20% Local match program continued through the Fixing America's Surface Transportation (FAST) Act. TAP funding is available for projects defined as transportation alternatives. Example of transportation alternatives include the following scenarios:

- on- and off-road pedestrian and bicycle facilities,
- infrastructure projects for improving non-driver access to public transportation and enhance mobility,
- community improvement activities such as historic preservation and vegetation management,
- environmental mitigation related to stormwater and habitat connectivity,
- recreational trail projects,
- safe routes to school projects, and
- projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former divided highways.

TAP funding can be pursued through an application with ALDOT and the deadline for submittal is typically in the Spring. The total amount of federal participating funding for a project is capped at \$800,000 (\$640,000 federal/\$160,000 local match) and is applicable to construction and construction and engineering inspection. Although right-of-way



acquisition generally is not considered eligible for TAP funding, minimal right-of-way acquisition is occasionally allowed but only on a case-by-case basis. Engineering services and utility relocation are not eligible for TAP funding. The City would be responsible for funding these efforts. The previous TAP cycle's application and guidelines are can be found at the below link. The City can only receive TAP funding for one project at a time. Once a TAP project has been let to construction, then the City would be eligible to apply for TAP funding for another project.

<https://www.dot.state.al.us/ltweb/operations/index.html>

[https://www.fhwa.dot.gov/environment/transportation\\_alternatives/](https://www.fhwa.dot.gov/environment/transportation_alternatives/)

The Highway Safety Improvement Program (HSIP) is a 90/10 match Federal program that funds projects with the goal of reducing traffic crashes. ALDOT's Traffic and Safety Operations Section manages HSIP funds. Applications for HSIP funds must demonstrate a project's ability to reduce crashes to be approved for funding.

The Surface Transportation Program (STP), administered by ALDOT, requires an 80/20 match. The primary focus of the STP program is to provide flexible funding to the States and localities for their use in preserving and improving the conditions and performance of a roadway. Primarily, projects involving roadways that are functionally classified as local roads or rural minor collectors are not eligible for STP funding. For suitable roadways eligible activities include pedestrian and bicycle projects and projects to meet ADA compliance.

<https://www.fhwa.dot.gov/specialfunding/stp/160307.cfm>

The Recreational Trail Program (RTP) is a federal program that is administered by the Alabama Department of Economic and Community Affairs (ADECA). In previous cycles, the RTP has allowed varying maximum grant amounts based on the trail type (\$200,000 for non-motorized, single-use trails; \$400,000 for non-motorized, diverse-use trails). Applicable permissible uses include:

- development of urban trail linkages,
- development of trailside and trailhead facilities,
- acquisition of easement for trail use, and
- construction of new trails.

[https://www.fhwa.dot.gov/environment/recreational\\_trails/](https://www.fhwa.dot.gov/environment/recreational_trails/)

Ideal projects for FAST Act federal funding are those that require more detailed engineering design and involve increased right-of-way acquisition and utility relocation. Once funds are in place for a project an environmental document will need to be prepared. The environmental document must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, design would be finalized, followed by construction. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.

### **State Funding**

Alabama Transportation Rehabilitation and Improvement Program-II (ATRIP-II) was created in 2019 by the Rebuild Alabama Act and is administered by ALDOT. Eligible projects include transportation projects that improve any state-maintained highway system. Projects with a primary focus on local roads are not eligible. For ATRIP-II projects, ALDOT will perform the preliminary engineering as an eligible cost to the project. A project sponsor can request to perform the preliminary engineering; however, preliminary engineering performed by any entity other than ALDOT is not eligible for ATRIP-II funding. Right-of-way acquisition is an ATRIP-II eligible activity, but utility relocation is not. The maximum funding amount allowed per project for fiscal year 2022 was set at \$2 million.

The Rebuild Alabama Act authorizes the ALDOT Annual Grant Program, a \$10 million fund, for which cities and counties may apply. Additionally, the Program provides the opportunity for cities and counties to partner with the State on larger projects where adequate local funding may not be available. There is not a specified or required match for local governments but any funds that local governments can leverage to team with ALDOT to fund a project could play a role in the decision-making process. Up to \$250,000 per project can be awarded from this fund, and funds must be used for construction or a federal match when construction is imminent.

### **Local Funding**

The City has the option to fund the design and construction of their preferred alternative using only local funds. Choosing this route allows the project design and construction to have shorter timelines and the potential for reduced project costs since fewer plan reviews would be required and City guidelines will govern the project design. It is also possible that the City could team with another local municipality to share the cost burden.

## 8 Stakeholder Input

A study kick-off meeting was held with stakeholders on March 30, 2021 at the Alabaster City Hall. The purpose of this meeting was to discuss the goals of the study and review the necessary next steps. Representatives from the City of Alabaster and RPCGB were present. During this meeting, an overview of the APPLE program and the project were provided.

Following the development of the Draft Master Plan which showed potential walking and biking facility locations, as well as a constructability review with field observations, a Draft Master Plan review meeting was held on August 12, 2021 at Alabaster City Hall. Again, representatives from the City of Alabaster and RPCGB were present. The stakeholders provided comments on the Draft Master Plan and next steps in the finalization of the plan were discussed. The City asked that the Draft Master Plan be presented at a future Alabaster City Council Work Session for additional review by the Council members.

A City Council Work Session was attended on October 7, 2021, where the revised Draft Master Plan was presented, and other various project updates were provided. The Council was given time to review the Plan and offer feedback. The Council's comments were implemented into the updated Master Plan.

## 9 Next Steps

If the City chooses to move forward with implementing any of the proposed sidewalks or trails and would like to pursue Federal CMAQ or TAP funding, the next step would be to request inclusion of a project in RPCGB's Transportation Improvement Plan (TIP). Projects that utilize the APPLE program provide local governments the opportunity to request funding between TIP cycles. The preparation of this feasibility study can be used in the application for funds from the RPCGB for future improvements.

Once Federal funds are in place for the project, an environmental document will need to be prepared. The environmental document must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, the design would be undertaken, and construction would follow. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.

Should the City elect to use local funds, the timing, scheduling, and implementation of the installation would be at their discretion.

## **Appendix A – Environmental Features**

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Shelby County, Alabama



## Local office

Alabama Ecological Services Field Office

☎ (251) 441-5181

📠 (251) 441-6222

1208 B Main Street

Daphne, AL 36526-4419

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME

STATUS

Gray Bat *Myotis grisescens* Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/6329>

Indiana Bat *Myotis sodalis* Endangered

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/5949>

Northern Long-eared Bat *Myotis septentrionalis* Threatened

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9045>

## Fishes

NAME

STATUS

Cahaba Shiner *Notropis cahabae* Endangered

Wherever found

There is **proposed** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/650>

Goldline Darter *Percina aurolineata* Threatened

Wherever found

There is **proposed** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/7005>

## Clams

NAME

STATUS

Alabama Moccasinshell *Medionidus acutissimus* Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/7287>

Finelined Pocketbook *Lampsilis altilis* Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/1393>

Orangenacre Mucket <i>Lampsilis perovalis</i>	Threatened
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/1980">https://ecos.fws.gov/ecp/species/1980</a>	
Ovate Clubshell <i>Pleurobema perovatum</i>	Endangered
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/5430">https://ecos.fws.gov/ecp/species/5430</a>	
Southern Acornshell <i>Epioblasma othcaloogensis</i>	Endangered
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/8469">https://ecos.fws.gov/ecp/species/8469</a>	
Southern Clubshell <i>Pleurobema decisum</i>	Endangered
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/6113">https://ecos.fws.gov/ecp/species/6113</a>	
Southern Pigtoe <i>Pleurobema georgianum</i>	Endangered
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/1520">https://ecos.fws.gov/ecp/species/1520</a>	
Triangular Kidneyshell <i>Ptychobranthus greenii</i>	Endangered
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/4396">https://ecos.fws.gov/ecp/species/4396</a>	
Upland Combshell <i>Epioblasma metastriata</i>	Endangered
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/317">https://ecos.fws.gov/ecp/species/317</a>	

## Snails

NAME

STATUS



<b>Cylindrical Lioplax (snail)</b> <i>Lioplax cyclostomaformis</i>	Endangered
Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2337">https://ecos.fws.gov/ecp/species/2337</a>	
<b>Flat Pebblesnail</b> <i>Lepyrium showalteri</i>	Endangered
Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2338">https://ecos.fws.gov/ecp/species/2338</a>	
<b>Round Rocksnail</b> <i>Leptoxis ampla</i>	Threatened
Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/470">https://ecos.fws.gov/ecp/species/470</a>	

## Flowering Plants

NAME	STATUS
<b>Gentian Pinkroot</b> <i>Spigelia gentianoides</i>	Endangered
Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/4583">https://ecos.fws.gov/ecp/species/4583</a>	
<b>Georgia Rockcress</b> <i>Arabis georgiana</i>	Threatened
Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/4535">https://ecos.fws.gov/ecp/species/4535</a>	
<b>Mohr's Barbara's Buttons</b> <i>Marshallia mohrii</i>	Threatened
Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/7610">https://ecos.fws.gov/ecp/species/7610</a>	
<b>Tennessee Yellow-eyed Grass</b> <i>Xyris tennesseensis</i>	Endangered
Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/6010">https://ecos.fws.gov/ecp/species/6010</a>	

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE.

"BREEDS ELSEWHERE" INDICATES  
THAT THE BIRD DOES NOT LIKELY  
BREED IN YOUR PROJECT AREA.)

<p><b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a></p>	Breeds Sep 1 to Aug 31
<p><b>Bobolink</b> <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 20 to Jul 31
<p><b>Canada Warbler</b> <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 20 to Aug 10
<p><b>Eastern Whip-poor-will</b> <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Aug 20
<p><b>Kentucky Warbler</b> <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Apr 20 to Aug 20
<p><b>Prairie Warbler</b> <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Jul 31
<p><b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Sep 10
<p><b>Rusty Blackbird</b> <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p><b>Wood Thrush</b> <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Aug 31
<p><b>Yellow-bellied Sapsucker</b> <i>sphyrapicus varius</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/8792">https://ecos.fws.gov/ecp/species/8792</a></p>	Breeds May 10 to Jul 15

# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

## Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

## Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

## Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

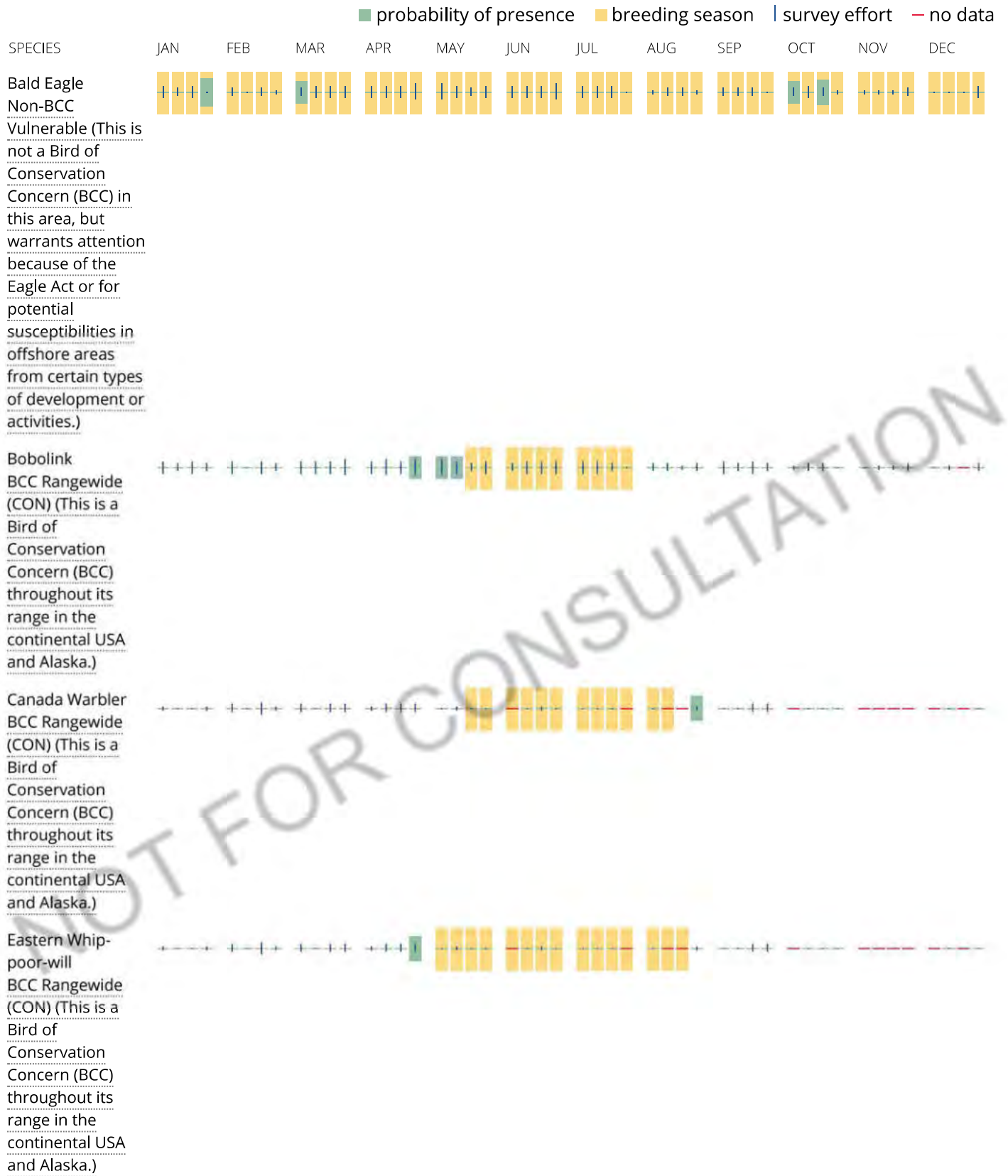
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

## No Data (—)

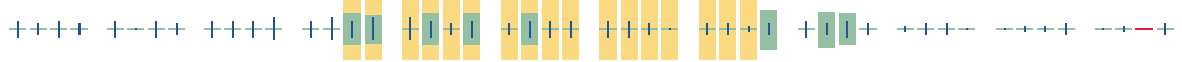
A week is marked as having no data if there were no survey events for that week.

## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Kentucky Warbler  
 BCC Rangewide  
 (CON) (This is a  
 Bird of  
 Conservation  
 Concern (BCC)  
 throughout its  
 range in the  
 continental USA  
 and Alaska.)



Prairie Warbler  
 BCC Rangewide  
 (CON) (This is a  
 Bird of  
 Conservation  
 Concern (BCC)  
 throughout its  
 range in the  
 continental USA  
 and Alaska.)



Red-headed  
 Woodpecker  
 BCC Rangewide  
 (CON) (This is a  
 Bird of  
 Conservation  
 Concern (BCC)  
 throughout its  
 range in the  
 continental USA  
 and Alaska.)



Rusty Blackbird  
 BCC Rangewide  
 (CON) (This is a  
 Bird of  
 Conservation  
 Concern (BCC)  
 throughout its  
 range in the  
 continental USA  
 and Alaska.)



Wood Thrush  
 BCC Rangewide  
 (CON) (This is a  
 Bird of  
 Conservation  
 Concern (BCC)  
 throughout its  
 range in the  
 continental USA  
 and Alaska.)



Yellow-bellied  
Sapsucker



BCC - BCR (This is a  
Bird of  
Conservation  
Concern (BCC) only  
in particular Bird  
Conservation  
Regions (BCRs) in  
the continental  
USA)

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

## What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

## Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

## What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

## Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.



# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

## Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

### FRESHWATER EMERGENT WETLAND

[PEM1A](#)

[PEM1/SS1F](#)

[PEM1C](#)

[PEM1F](#)

### FRESHWATER FORESTED/SHRUB WETLAND

[PFO1A](#)

[PFO1C](#)

[PFO1F](#)

[PSS1F](#)

[PFO1/EM1A](#)

[PSS/EM1F](#)

[PFO1Fh](#)

[PFO1/UBF](#)

## FRESHWATER POND

[PUBHh](#)[PUBHx](#)[PUBF](#)[PUBH](#)[PUBFx](#)[PABHx](#)

## RIVERINE

[R2UBH](#)[R4SBC](#)[R5UBH](#)[R5UBFx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

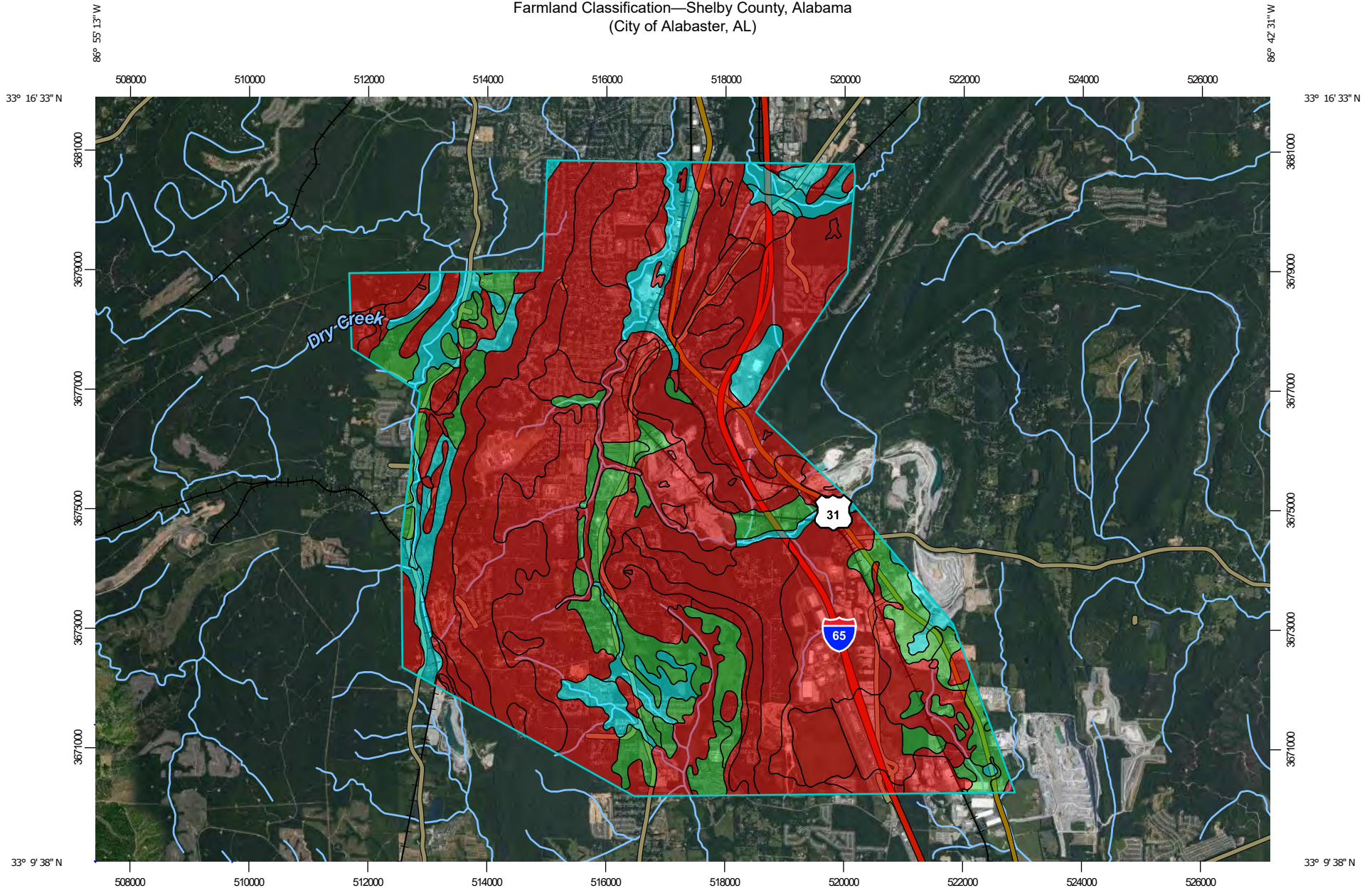
**Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

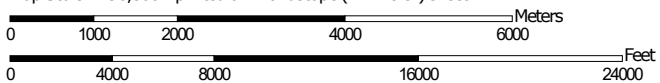
**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Farmland Classification—Shelby County, Alabama  
(City of Alabaster, AL)



Map Scale: 1:90,300 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84



Farmland Classification—Shelby County, Alabama  
(City of Alabaster, AL)









**MAP LEGEND**








**Area of Interest (AOI)**






 Area of Interest (AOI)








**Soils**



**Soil Rating Polygons**

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season









-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of statewide importance, if drained
-  Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated

-  Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated and drained
-  Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
-  Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60



































-  Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough
-  Farmland of statewide importance, if thawed
-  Farmland of local importance
-  Farmland of local importance, if irrigated

-  Farmland of unique importance
-  Not rated or not available
















**Soil Rating Lines**

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Farmland Classification—Shelby County, Alabama  
(City of Alabaster, AL)

	Prime farmland if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium		Farmland of unique importance		Prime farmland if subsoiled, completely removing the root inhibiting soil layer
	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if irrigated and drained		Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season		<b>Soil Rating Points</b> Not prime farmland		Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
	Prime farmland if irrigated and reclaimed of excess salts and sodium		Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season		Prime farmland if drained		Prime farmland if irrigated and reclaimed of excess salts and sodium
	Farmland of statewide importance		Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if warm enough		Prime farmland if protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance
	Farmland of statewide importance, if drained		Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if thawed		Prime farmland if irrigated		Farmland of statewide importance, if drained
	Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season				Farmland of local importance		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
	Farmland of statewide importance, if irrigated				Farmland of local importance, if irrigated		Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated

Farmland Classification—Shelby County, Alabama  
(City of Alabaster, AL)

	Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium		Farmland of unique importance	The soil surveys that comprise your AOI were mapped at 1:24,000.
	Farmland of statewide importance, if irrigated and drained		Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season		Not rated or not available	
	Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season	<b>Water Features</b>		Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)
	Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if warm enough	<b>Transportation</b>		
	Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if thawed	<b>Background</b>		Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.
			Farmland of local importance	 Aerial Photography		
			Farmland of local importance, if irrigated	 Streams and Canals		This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
				 Rails		
				 Interstate Highways		Soil Survey Area: Shelby County, Alabama Survey Area Data: Version 13, May 28, 2020
				 US Routes		
				 Major Roads		Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.
				 Local Roads		
						Date(s) aerial images were photographed: Apr 29, 2019—May 8, 2019
						The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnB	Allen loam, 2 to 6 percent slopes	All areas are prime farmland	155.1	0.8%
AnC	Allen loam, 6 to 10 percent slopes	Farmland of statewide importance	130.1	0.7%
AqC	Allen-Quitman-Urban land complex, 0 to 10 percent slopes	Not prime farmland	398.6	2.1%
BmF	Bodine-Minvale complex, 25 to 45 percent slopes	Not prime farmland	1,931.2	10.1%
CS	Choccolocco-Sterrett association, frequently flooded	Farmland of statewide importance	421.5	2.2%
DeB2	Dewey clay loam, 2 to 6 percent slopes, eroded	All areas are prime farmland	159.9	0.8%
DeC2	Dewey clay loam, 6 to 10 percent slopes, eroded	Farmland of statewide importance	6.4	0.0%
DtC	Dewey-Tupelo-Urban land complex, 0 to 8 percent slopes	Not prime farmland	357.3	1.9%
DuB	Decatur silt loam, 2 to 6 percent slopes	All areas are prime farmland	274.6	1.4%
DuC	Decatur silt loam, 6 to 10 percent slopes	Not prime farmland	71.8	0.4%
EtB	Etowah silt loam, 2 to 6 percent slopes	All areas are prime farmland	1,862.4	9.7%
EtC	Etowah silt loam, 6 to 10 percent slopes	Farmland of statewide importance	274.0	1.4%
MfD	Minvale-Fullerton complex, 6 to 15 percent slopes	Not prime farmland	3,934.4	20.5%
MfE	Minvale-Fullerton, complex, 15 to 35 percent slopes	Not prime farmland	2,455.9	12.8%
MuE	Minvale-Fullerton-Urban land complex, 6 to 25 percent slopes	Not prime farmland	1,089.9	5.7%
NaC	Nauvoo loam, 2 to 8 percent slopes	Not prime farmland	160.4	0.8%
NaE	Nauvoo loam, 15 to 35 percent slopes	Not prime farmland	153.5	0.8%



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NcD	Nauvoo-Sunlight complex, 8 to 15 percent slopes	Not prime farmland	42.6	0.2%
NcE	Nauvoo-Sunlight complex, 15 to 25 percent slopes	Not prime farmland	149.0	0.8%
NMS	Nella-Mountainburg association, steep	Not prime farmland	17.9	0.1%
Pt	Pits	Not prime farmland	445.1	2.3%
QuB	Quitman loam, 0 to 4 percent slopes	All areas are prime farmland	165.0	0.9%
St	Sterrett silt loam	Farmland of statewide importance	282.0	1.5%
ToD	Townley silt loam, 4 to 12 percent slopes	Farmland of statewide importance	236.3	1.2%
ToE	Townley silt loam, 12 to 18 percent slopes	Not prime farmland	54.5	0.3%
TsE	Townley-Sunlight complex, 12 to 35 percent slopes	Not prime farmland	1,203.4	6.3%
TtE	Townley-Urban land complex, 4 to 25 percent slopes	Not prime farmland	743.2	3.9%
Tu	Tupelo loam, frequently flooded	Not prime farmland	1,278.7	6.7%
Tx	Tupelo-Dewey complex	Farmland of statewide importance	644.4	3.4%
W	Water	Not prime farmland	92.2	0.5%
<b>Totals for Area of Interest</b>			<b>19,191.9</b>	<b>100.0%</b>

## Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

## Rating Options

*Aggregation Method:* No Aggregation Necessary

*Tie-break Rule:* Lower



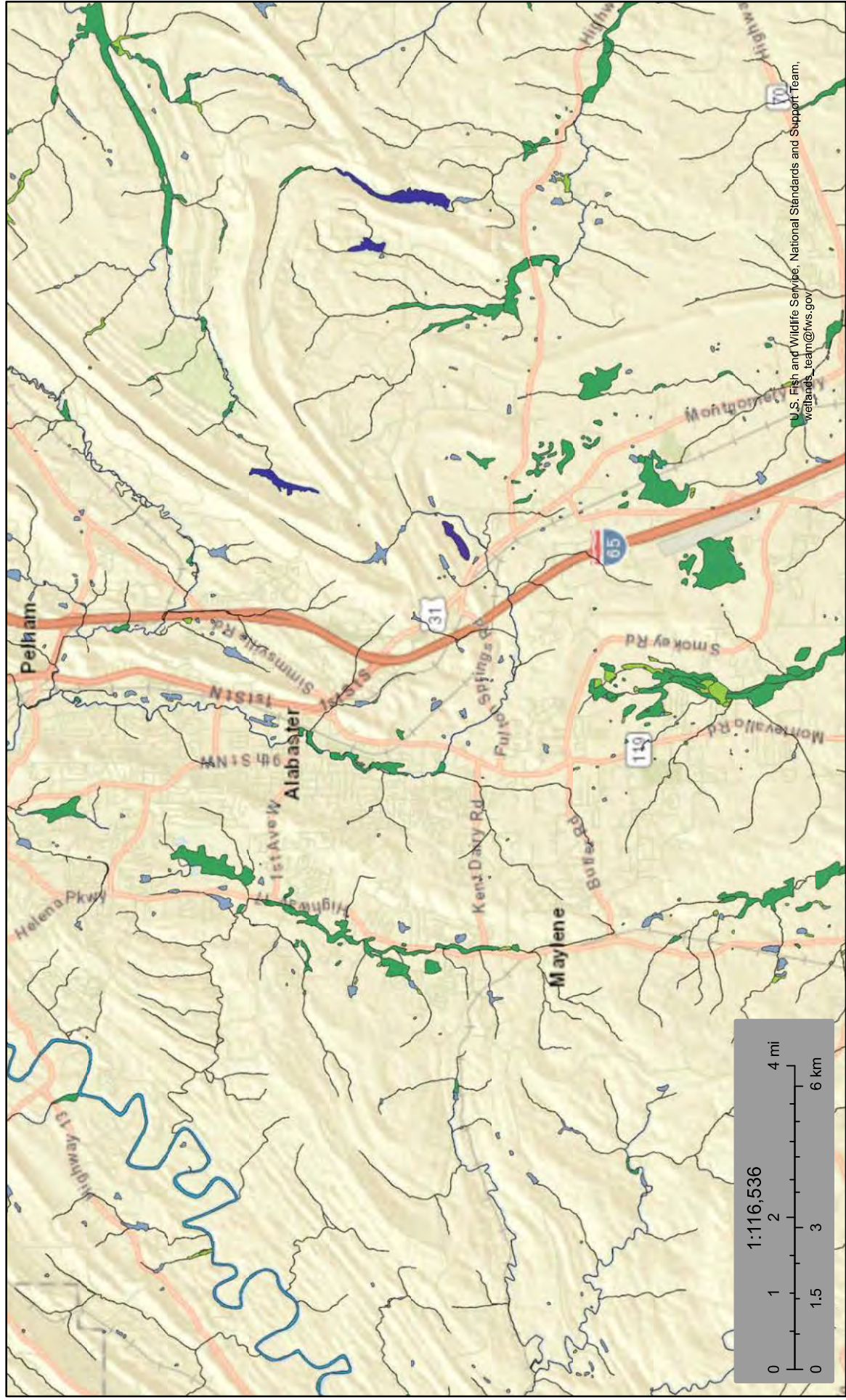




U.S. Fish and Wildlife Service

# National Wetlands Inventory

## City of Alabaster - Wetlands Map



July 26, 2021

### Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The U.S. Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

## **Appendix B – Toolbox**

## Road Diet Guidance

**Road diets** present an economical method of adding bicycle and pedestrian facilities by restriping existing pavement or adding streetscape infrastructure to reduce vehicular travel lanes and re-purpose the space. Examples of facilities and safety improvements that could be created by a road diet include, but are not limited to, the following:

- Bicycle lanes
- Sidewalks
- Center turn lane
- Landscaped median
- Pedestrian refuge islands
- Parking
- Bulb-outs

Not every four- or five-lane roadway is a suitable candidate for a road diet; however, most of these facilities can be retrofitted rather economically. With this in mind, creating multimodal streets within the town's core should follow the general principles and design criteria below:

- Target Travel Speed: 25 MPH
- Sidewalk Width: 6 feet preferred, 5 feet allowable
- Number of Through Lanes: 2 Lanes
- Lane Width: 10-11 feet
- Parallel On-Street parking Width: 7-8 feet (optional)
- Bike Facility Lane Width: 4-7 feet

## What is a Road Diet?

A **road diet** is generally defined as a reduction of excess roadway capacity to a more compact vehicular facility footprint for the purpose of creating a more complete street.

The most common type of road diet involves a four-lane to three-lane reduction. By meeting certain thresholds of traffic volume, this particular road diet converts a four-lane undivided section of roadway to a safer and more complete street. The resulting three-lane segment allows for bicycle lanes, parking, sidewalks, a center turn lane, and pedestrian refuge islands.



Source: FHWA (Small Town and Rural Multimodal Networks Guide)

Higher-speed facilities can also benefit from road diets; however, there is a need for additional buffer width to separate vehicles from vulnerable road users such as pedestrians and cyclists. Buffered bicycle lanes utilize a striped width of one and one-half (1.5) to four (4) feet between vehicular travel lanes and bicycle lanes, while separated bicycle facilities require a raised buffer or a bike lane on a different grade than the vehicular facility.

FHWA provides the following guidance on road diets for roads with varying ADTs:

- Less than 10,000 ADT: A great candidate for road diets in most instances. Capacity will most likely not be affected.
- 10,000 – 15,000 ADT: A good candidate for road diets in many instances. Agencies should conduct intersection analyses and consider signal retiming in conjunction with implementation.
- 15,000 – 20,000 ADT: A good candidate for road diets in some instances; however, capacity may be affected depending on conditions. Agencies should conduct a corridor analysis.
- Greater than 20,000 ADT: Agencies should complete a feasibility study to determine whether the location is a good candidate. Some agencies have had success with road diets at higher traffic volumes.

## Complete Streets Policy

Complete streets policies across the nation vary in depth and responsibility for the adopting local government. For the purposes of this study, the toolbox breaks down two local examples within the state of Alabama. The City of Huntsville has adopted a Complete Streets policy, and the City of Birmingham has passed a resolution in support of Complete Streets.

*“Complete streets are streets that are designed, constructed, and operated with consideration to both use and context. They are sized appropriately to their surroundings, and they safely accommodate all modes appropriate to their role in the broader transportation network. Pedestrians, bicyclists, cars, transit, and freight are all taken into account during design, and are integrated as appropriate during implementation.”*

City of Huntsville Complete Streets Policy

The City of Huntsville notes seven parts to their policy.

1. Purpose of Complete Streets
2. Vision
3. Goals
4. Scope and Applicability
5. Implementation Plan
6. Best Practices and Design Guidelines
7. Performance Measures and Reporting

Every city has different needs and unique circumstances to account for, and the City of Alabaster is no different. Local policy that works for the City of Huntsville may not work for Alabaster. Figure B-1 breaks down each part of Huntsville's complete streets policy into helpful questions for the City to ask while drafting any potential complete streets policy. This list is not all-inclusive, but asking these questions while also considering complete streets policies from other locales would lead the City of Alabaster in the direction of crafting its own complete streets policy.

### Purpose of Complete Streets

- What are the benefits of complete streets?
- What initiated the desire for complete streets in the City of Alabaster?

### Vision

- Describe what it looks like for Alabaster to possess a full network of complete streets.

### Goals

- What policy-related steps are necessary to achieve the vision for complete streets?

### Scope and Applicability

- What roadways are governed by the complete streets policy? Are there exceptions?
- What reach will the policy have in each step of the project life cycle?

### Implementation

- What is the process by which complete streets projects are programmed and funded?
- How will complete streets projects be prioritized?
- What improvement strategies are viable for each mode of transportation?

### Best Practices and Design Guidelines

- What design standards should be adopted to serve as the blueprints for complete streets?
- What organizational involvement is necessary to accomplish a review process?

### Performance Measures and Reporting

- What data is necessary to measure progress towards policy goals?
- How will the proper data be collected?

**Figure B-1: Complete Streets Policy Outline (adapted from Huntsville, AL)**

The City of Birmingham has not adopted a complete streets policy into law; however, the city council has passed a resolution in favor of complete streets in hopes of drafting a policy for future adoption.

*"The City of Birmingham shall, to the maximum extent practical, scope, plan, design, construct, operate, and maintain all City streets to provide a comprehensive and integrated network of facilities for people of all ages and abilities traveling by foot, bicycle, automobile, public transportation, and commercial vehicle.*

*Such improvement shall be consistent with and supportive of the local community, and that early consideration shall be given to any project's land use and transportation context."*

City of Birmingham Complete Streets Resolution

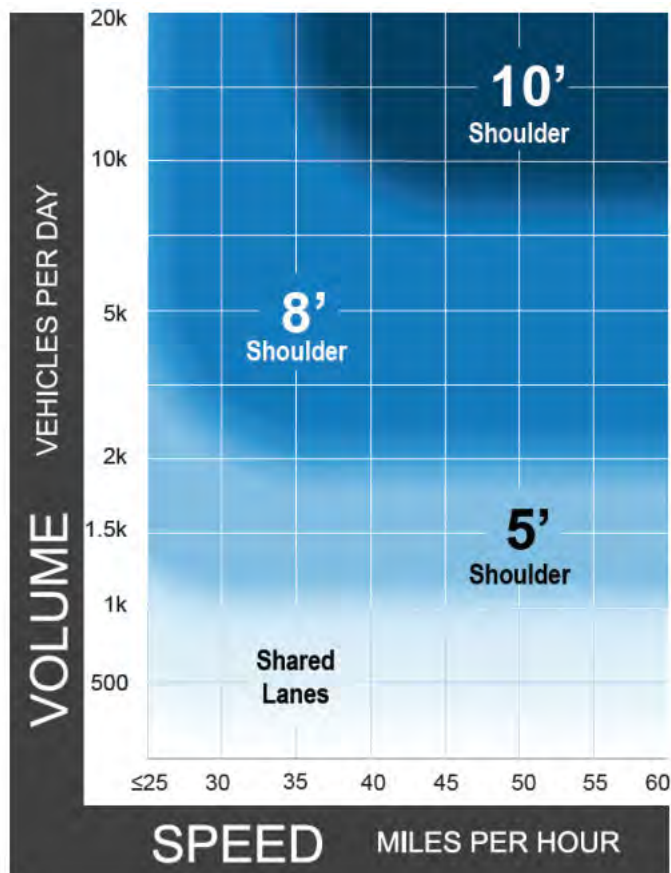
The City of Birmingham's resolution also contains other elements related to the implementation, enforcement, and design standards related to achieving Complete Streets.

- Statements outlining the benefits that Complete Streets can bring about regarding economic development, road user safety, equality and inclusion, and health and wellness.
- Disclaimers regarding the context in which Complete Streets are achievable. Land use, density, and cost should be considered.
- Design standards to adhere to when planning Complete Streets.
  - AASHTO's *A Guide for Achieving Flexibility in Highway Design*
  - ITE's *Designing Walkable Urban Thoroughfares: A Context-Sensitive Approach*
  - *Pedestrian Right-of-Way Accessible Guidelines (PROWAG)* from the Architectural and Transportation Barriers Compliance Board
  - NACTO's *Urban Bikeway Design Guide*
- Encouragement to communicate openly and effectively with local, regional, and state officials.
- Encouragement for City officials to adopt and implement policies and practices to support Complete Streets

## New Construction and Installation of Bicycle Facilities

There are a number of reliable resources outlining proper guidance for building new bicycle facilities. There are two guides that may be especially relevant for the City: The FHWA's *Bikeway Selection Guide* discusses how facilities should be chosen offers straightforward guidance on what roadway characteristics are more conducive to each bicycle facility type. Additionally, the FHWA's *Small Town and Rural Multimodal Networks* provides a less urban-centric outlook on bicycle facilities. Smaller cities face different challenges than larger cities regarding the implementation and network connectivity of bicycle networks.

Different facility types are recommended for rural roadways than urban streets. Figure B-2 contains a chart from the *Bikeway Selection Guide* (FHWA) concerning applicable facilities for rural roadways given daily vehicular volume and posted speed limit, while Figure B-3 shows the applicable bicycle facilities for urban streets given the same vehicular volume and speed metrics.



Preferred widths for paved shoulders intended for bicycle traffic depend on traffic volumes and vehicle speeds. Low speed, low volume roadways have less of a need for additional shoulder width. Roadways carrying less than 1,000 vehicles per day generally do not need paved shoulders due to the frequency of passing opportunity if a cyclist is encountered.

Paved shoulders are preferred in rural locales and long-distance routes due to their minimal maintenance burden compared to standard, buffered, or separated bicycle lanes.

Figure B-2 displays a helpful graph from the FHWA *Bikeway Selection Guide* that offers a systematic approach to choosing facilities.

Figure B-2: Preferred Shoulder Widths for Rural Roadways (Source: FHWA)



On urban streets, there is rarely enough space to implement sufficient paved shoulders; therefore, other strategies are necessary to accommodate bicycle traffic.

Low-speed, low-volume urban streets are typically best for shared lanes or bicycle boulevards, while increased traffic volume and vehicle speeds necessitate various levels of exclusive bicycle facilities from bike lanes to shared use paths.

Figure B-3 displays a graph from the FHWA *Bikeway Selection Guide* to assist in systematically choosing urban facility types.

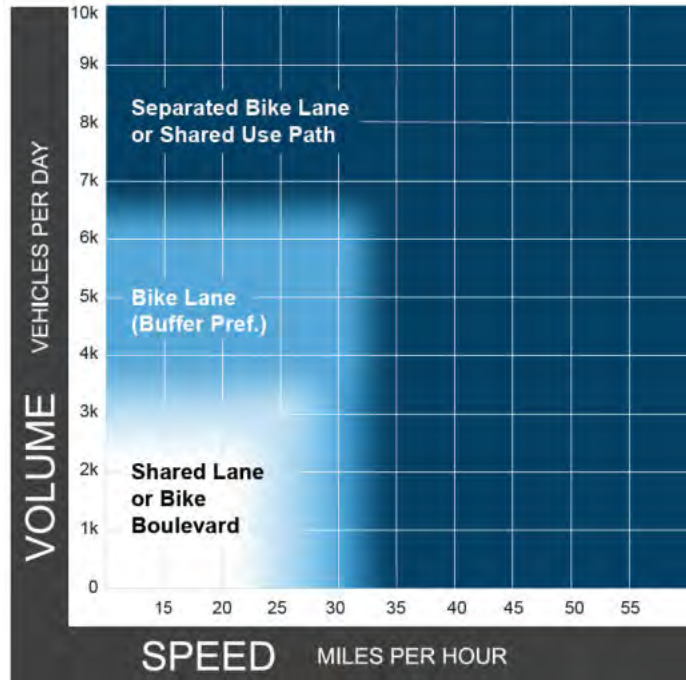


Figure B-3: Preferred Bikeway for Urban, Suburban, and Rural Town Streets (Source: FHWA)

If the preferred bikeway is not feasible for installation on the roadway, evaluate a parallel route for a low-stress alternative bicycle route. For example, Pepperell Parkway and 2<sup>nd</sup> Avenue are high-volume roadways with minimal room for widening. In this urban grid context, looking to parallel streets for bicycle accommodations is a cost-effective, less intrusive project.

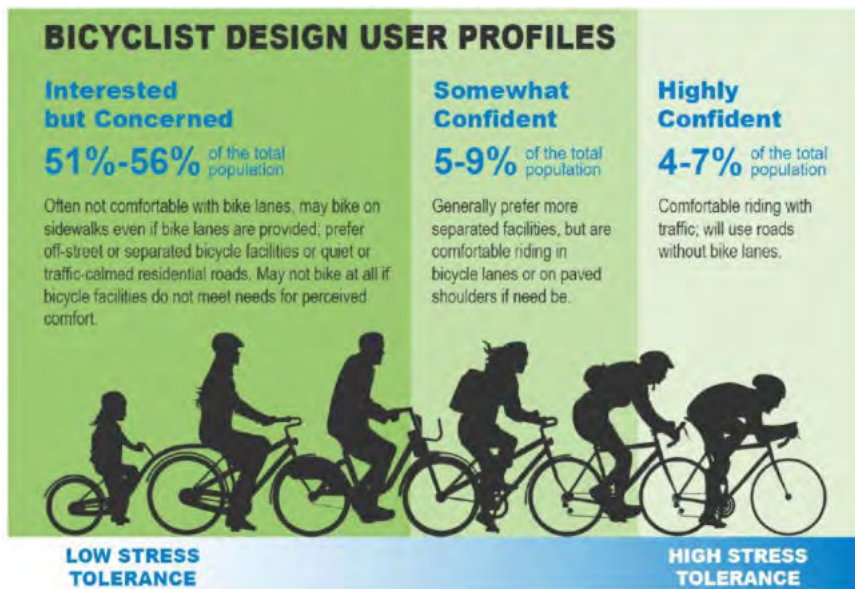


Figure B-4: Cyclist User Profiles (Source: FHWA)

When designing bicycle facilities, the process should account for the targeted user group. In most cases, all rider types should be considered.

Figure B-4, which is found in the FHWA Small Town and Rural Multimodal Networks guide, discusses user profiles and their desired facility accommodations.

The FHWA's *Small Town and Rural Multimodal Networks* (2016) publication is a fantastic resource for the City to utilize when considering what facility to implement. This guide aggregates standards from adopted industry guidance and translates it to a feasible, practical set of best practices for small cities such as Alabaster. Not all bicycle and pedestrian facilities are appropriate for every roadway, and context is key in determining which facility type is the best fit for the roadway conditions, network role, and space available. The realm of bicycle and pedestrian facility planning and design is a rapidly evolving practice, and the latest standards and publications should be reviewed in the future as more data becomes available from these modes of transportation.

The following figures (B-5 – B-10) offer a brief synopsis of each facility type recommended as a part of the Master Plan. Each figure contains facts and guidance from the *Small Town and Rural Multimodal Networks* publication as it relates to each facility.

These figures are not all-encompassing for every situation. This information is aggregated here for convenience and should be used as a reference in conjunction with all appropriate design standards.



\* - Includes Uphill Bike Lanes

Figure B-5: Bicycle Lane Guidance

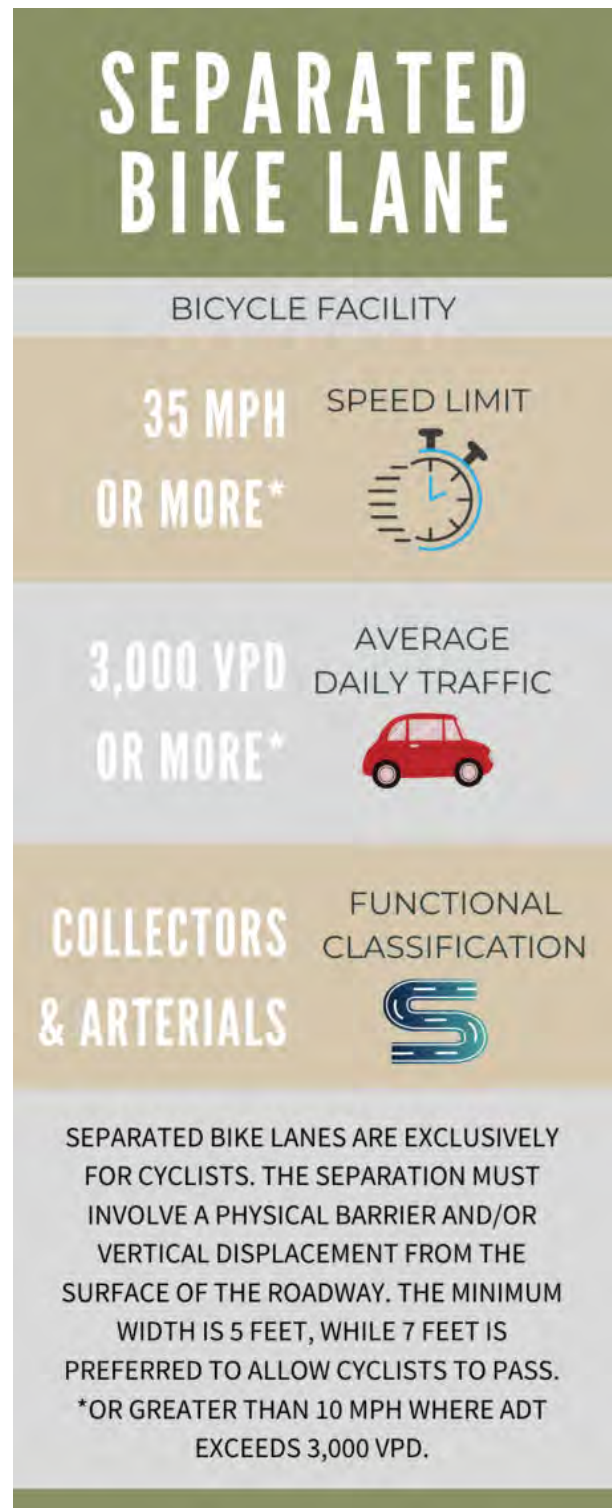


Figure B-6: Separated Bike Lane Guidance

Sidepaths and Shared Use Paths are generally referred to as Multi-Use Paths on the Master Plan

# SIDEPATH

BICYCLE & PEDESTRIAN FACILITY

45 MPH  
OR MORE\*

SPEED LIMIT



4,000 VPD  
OR MORE\*

AVERAGE  
DAILY TRAFFIC



ARTERIALS

FUNCTIONAL  
CLASSIFICATION



A WIDTH OF 10' IS PREFERRED, WHILE 8' FEET IS THE MINIMUM REQUIRED WIDTH. SIDEPATHS DIFFER FROM SHARED USE PATHS IN THAT THEY ARE ALWAYS PARALLEL AND IMMEDIATELY ADJACENT TO A ROADWAY. \*A SIDEPATH MAY BE PREFERRED TO OTHER FACILITY TYPES IF SPEEDS EXCEED 40 MPH OR IF AVERAGE DAILY TRAFFIC EXCEEDS 4,000 VEHICLES PER DAY (VPD).

Figure B-7: Sidepath Guidance

# SHARED USE PATH

BICYCLE & PEDESTRIAN FACILITY



PHYSICALLY SEPARATED FACILITY FROM ROADWAYS CONTAINING VEHICLE TRAFFIC. DESIGNED FOR CYCLISTS AND PEDESTRIANS OF ALL COMFORT LEVELS.

MIN. RECOMMENDED WIDTH: 10 TO 12 FEET. A 2 FEET WIDE GRADED SHOULDER IS RECOMMENDED ON EACH SIDE OF THE PATH, WITH AN ADDITIONAL TWO FEET OF CLEARANCE FROM EDGE OF SHOULDER.



SIGNAGE AND PAVEMENT MARKINGS ARE NOT REQUIRED ON SHARED USE PATHS, BUT YELLOW CENTERLINE STRIPING OR 'BICYCLES YIELD TO PEDS' SIGNS AT PATH ENTRANCES ARE OPTIONAL.

THOUGH SHARED USE PATHS ARE SEPARATE FACILITIES, THEY MAY INTERSECT ROADWAYS. ENHANCED CROSSING TREATMENTS SUCH AS MARKED CROSSWALKS AND/OR ENHANCED SIGNAGE ARE RECOMMENDED AT THESE LOCATIONS DEPENDING ON THE ROADWAY CONDITIONS.



Figure B-8: Shared Use Path Guidance



Figure B-9: Sidewalk Guidance



Figure B-10: Paved Shoulder Guidance

## Pedestrian Facilities at Intersections

### Crosswalk Enhancements

Marked Crosswalks give direction to pedestrians and create an expectation of pedestrians in the area for drivers. Not all crosswalks should be marked, but doing so can serve as a traffic calming countermeasure and increase pedestrian safety where additional mitigation is deemed necessary by an engineering study.

The Manual on Uniform Traffic Control Devices (MUTCD) should be consulted in conjunction with the development of any signing or pavement marking plan to ensure compliance with industry standards. Inconsistent or inadequate signage is quite common and often undermines the intended purpose of increased safety for all roadway users.

Within the state of Alabama, the continental crosswalk design is preferred along state routes at the time of this study, but the City may opt for their own design on local streets. Additional guidance regarding pavement markings, colors, and crosswalk designs can be found in the MUTCD.

Cost (FHWA PedSafe): \$600 to \$5,700

Figure B-11 shows an example of crossing enhancements such as pavement markings, additional signage, and lighting.



Figure B-11: Example of Crosswalk Enhancements (Source: PEDSAFE)

## Curb Extensions or “Bulb-Outs”

Curb extensions, or “bulb-outs,” at intersections increase the visibility of pedestrians for motorists and vice versa. This countermeasure also decreases crosswalk width for pedestrians, which reduces the amount of time pedestrians spend crossing the traveled way. At signalized intersections, this can lead to reduced pedestrian intervals as well.

Cost (FHWA PedSafe): \$2,000 to \$20,000

Figure B-12 shows an example of curb extensions within the context of sight distance from the perspective of the driver and the pedestrian.



**Figure B-12: Example of Curb Extensions (Source: PEDSAFE)**

## Crossing Islands

Crossing islands, or pedestrian refuge islands, can accomplish similar results as curb extensions. Crossing islands at intersections allows pedestrians to focus on one direction of the roadway at a time instead of both directions. Crossing islands also create flexibility within signal timings for implementation of a leading pedestrian interval or a multi-phase crossing. The crossing island should be a minimum of four (4) feet wide, while eight (8) feet is preferable. The cost depends on the design of the island and the existing roadway configuration.

Cost (FHWA PedSafe): \$2,140 to \$41,710

Figure B-13 shows an example of a crossing island within a heavy urban environment. Crossing islands vary in size and intersection control required to properly utilize, but the concepts remain the same.



**Figure B-13: Example of Pedestrian Crossing Island (Source: PEDSAFE)**

## Lighting

Lighting allows for increased visibility of pedestrians at a specific location. Though signage is retroreflective and visible to drivers, it is often an incomplete treatment at a high-traffic crosswalk.

Cost (FHWA PedSafe): \$10,750 to \$42,000 per crosswalk

Figure B-14 displays the proper locations for lighting at a crosswalk.



**Figure B-14: Lighting at a Crosswalk (Source: PEDSAFE)**

## Parking Restrictions at Crossing Locations

Parked cars near intersections can block a driver's view of pedestrians waiting to cross at a crosswalk. Implementing parking restrictions within a certain distance of a crosswalk promotes safer conditions and improved sight lines for both motorists and pedestrians at the crosswalk. The distance should account for the speed of the roadway using sight triangles and braking distances from *A Policy on Geometric Design of Highways and Streets* (AASHTO 2011).

Cost (FHWA PedSafe): \$250 to \$20,000



Figure B-15 shows two examples of parking restrictions at crossing locations. On the left image, the municipality utilized colored curb paint to restrict parking, while signage is used to enforce the parking restrictions on the right image. It is important to note that signage and paint can serve as a temporary measure if curb extensions are not feasible due to space or cost.



**Figure B-15: Example of Parking Restrictions at Crossing Locations (Source: PEDSAFE)**

## **Bicycle Facilities at Intersections**

### **Dashed Lines and Colored Pavement**

Similarly to crosswalks signifying the expectation of pedestrians, enhanced pavement markings draw attention to bicycle facilities and notify drivers to expect bicycle activity. It is often impractical to install and maintain colored pavement throughout an entire bicycle network, but targeted use of colored pavement through intersections and conflict areas can increase safety for cyclists. Regardless of the presence of colored pavement, dashed lines should be striped through intersections where bicycle lanes are present.

Figure B-16 displays proper striping layouts for bicycle lanes traveling through intersections, along with recommended signage to call attention to potential cycling activity that may conflict with vehicular movements.

Intersection Crossing Markings



Added Right Turn-Only Lane



Figure B-16: Proper bicycle lane striping at a side street intersection (Source: FHWA)

### Adequate Bicycle Lane Width

Designing and constructing bicycle facilities with adequate lane widths is key to usage rates among cyclists of all comfort levels. If a bicycle lane is too narrow, novice riders will most likely avoid using the facility. The same is true for experienced riders if the bike lane or paved shoulder contains rumble strips that are mistakenly included in the calculated width of a facility.

The absolute minimum recommended width of a bicycle lane is four (4) feet, while six and one-half (6.5) feet is the preferred width to allow for passing maneuvers. Though not required, a buffer is always preferred between vehicular and bicycle traffic. A typical buffer is installed using standard white line striping, but other buffers can be utilized such as bollards, reboundable delineators, planters, and other barrier types or vertical displacement techniques. Figure B-17 illustrates one example of a buffered bike lane with adequate width.

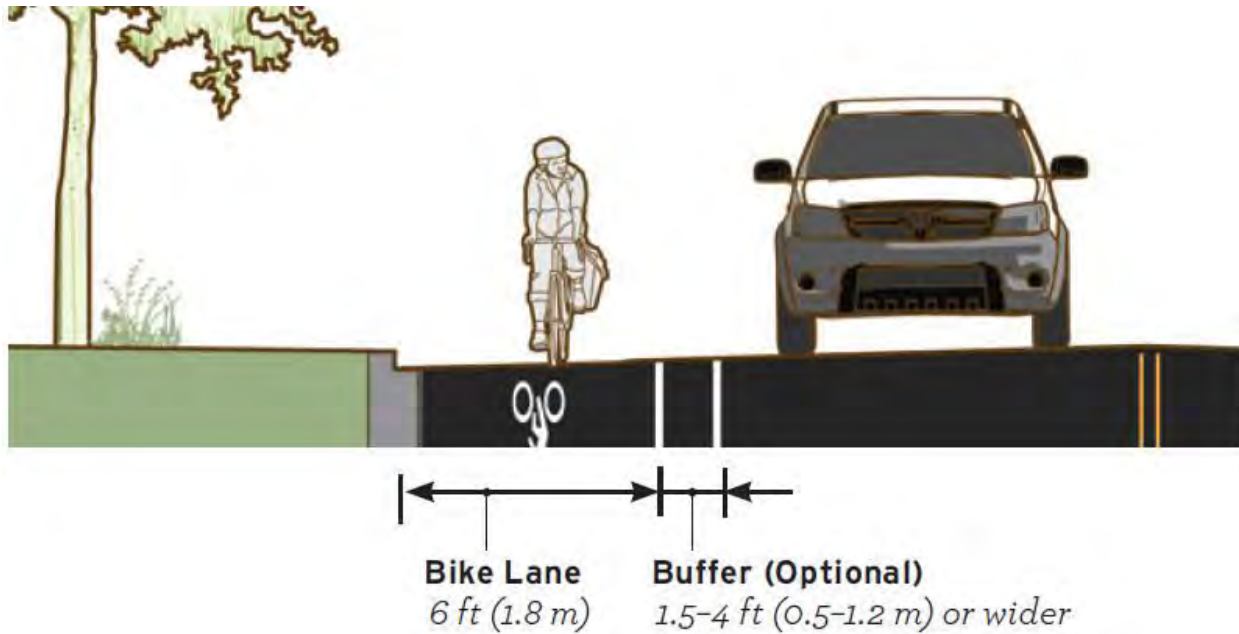


Figure B-17: Adequate Bicycle Lane Width Example (Source: FHWA)

## Bike Box

Bike boxes are a relatively new development in bicycle traffic operations; they assign an area for cyclists to queue ahead of vehicular traffic at a signalized intersection approach. On red a cyclist will stop within the bike box and wait for green, while vehicles queue behind the bike box until the cyclists clear the area. The bike box pavement area is painted green to alert drivers of cyclist presence and provide cyclists a visual instruction of where to queue. Additionally, bike boxes give operational priority to cyclists when the signal turns green to continue straight or turn either direction without conflict from vehicles traveling in the same direction.

The National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide* (2014) contains more complete guidance for bike box applications. Bike boxes cover the entire lane width (or multiple lanes in some cases) and are typically ten (10) to sixteen (16) feet deep. Supplemental signage and markings are beneficial, especially where bike boxes are uncommon.

Figure B-18 shows a plan view of a bike box at an intersection.



Figure B-18: Bike Box Example (Source: NACTO)

### Two-Stage Turn Queue Box

Another solution to the challenge of providing safer left turn or crossing mechanisms for cyclists is the application of a two-stage turn queue box. First, a cyclist approaches the intersection in the right turn lane or shared through/right turn lane. The cyclist then decelerates and stops within the queue box to wait for a green light on the side street. The cyclist then has priority over the side street through vehicles by virtue of its position and does not need to contend with vehicles in the same way as a traditional left turn.

Similar to a bike box, a designated area is painted green where cyclists are intended to queue. However, the difference with the two-stage turn queue box is that the box is positioned within the intersecting lane to allow left-turning cyclists the same benefit as a bike box for a perpendicular approach to a signalized intersection. A two-stage turn queue box should be installed ahead of the stop line but within the through lane or adjacent to the through lane. Additionally, this solution is practical for three- or four-leg intersections due to its easy installation and the fact that it typically does not require any ancillary improvements apart from minor restriping.

Figure B-19 contains a helpful diagram of a two-stage turn queue box application at an intersection.

The two-stage turn queue box is not widely used at the time of this study, but it can be found in Atlanta, Philadelphia, Portland (OR), New York, Chicago, and Salt Lake City. Again, the NACTO *Urban Bikeway Design Guide* is an excellent resource for further guidance on this method and other strategies for bicycle accommodations.



Figure B-19: Two-Stage Turn Queue Box Example (Source: NACTO)

## Mid-Block Crossings

An overarching theme of pedestrian facility planning and design is the fact that pedestrians tend to cross where it is most convenient, regardless of constructed improvements. When determining the need for a mid-block crossing, origin and destination should be heavily considered as they relate to pedestrian trip generation.

For example, if a community center is positioned directly across the street from a public park, pedestrians will most likely not travel very far out of the way to cross the street. They will do so where it is convenient. Many times, it is best to construct enhanced crossings at these locations. After it is determined where a crossing should be located, average daily traffic, number of travel lanes, and vehicle speeds are the most important factors in determining the appropriate type of crossing.

Figure B-20 shows a table from the FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* (2018) that outlines potential pedestrian crossing solutions given certain traffic and geometric conditions. Every situation is different, and engineering judgment should always be used in conjunction with any tables, charts, or diagrams.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	① 2 4 5 6	① 5 6 7 9	① 5 6 ⑦ ⑨	① 4 5 6	① 5 6 7 9	① 5 6 ⑦ ⑨	① 4 5 6 7 9	① 5 6 7 9	① 5 6 ⑨
3 lanes with raised median (1 lane in each direction)	① 2 3 4 5	① ③ 5 7 9	① ③ 5 ⑦ ⑨	① ③ 4 5 7 9	① ③ 5 ⑦ ⑨	① ③ 5 ⑦ ⑨	① ③ 4 5 7 9	① ③ 5 ⑦ ⑨	① ③ 5 ⑨
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	① 2 3 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 ⑨	① ③ 4 5 6 7 9	① ③ 5 6 ⑦ ⑨	① ③ 5 6 ⑨	① ③ 4 5 6 7 9	① ③ 5 6 ⑨	① ③ 5 6 ⑨
4+ lanes with raised median (2 or more lanes in each direction)	① ③ 5 7 8 9	① ③ 5 7 8 9	① ③ 5 8 ⑨	① ③ 5 7 8 9	① ③ 5 ⑦ 8 ⑨	① ③ 5 8 ⑨	① ③ 5 ⑦ 8 ⑨	① ③ 5 8 ⑨	① ③ 5 8 ⑨
4+ lanes w/o raised median (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 ⑥ 7 8 9	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ 7 8 9	① ③ 5 ⑥ ⑦ 8 ⑨	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ ⑦ 8 ⑨	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ 8 ⑨
<p>Given the set of conditions in a cell,</p> <p># Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.</p> <p>● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.</p> <p>○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*</p> <p>The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.</p>					<p>1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs</p> <p>2 Raised crosswalk</p> <p>3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line</p> <p>4 In-Street Pedestrian Crossing sign</p> <p>5 Curb extension</p> <p>6 Pedestrian refuge island</p> <p>7 Rectangular Rapid-Flashing Beacon (RRFB)**</p> <p>8 Road Diet</p> <p>9 Pedestrian Hybrid Beacon (PHB)**</p>				

Figure B-20: Pedestrian Safety Countermeasures by Roadway Conditions (Source: FHWA)

Figure B-20 describes a quantitative approach to improving safety. Figure B-21 has a similar goal to provide guidance for safety improvements at uncontrolled crossing locations; however, the guidance has a qualitative measurement to diagnose particular safety issues and choose a countermeasure that solves the issue. In practice, Figures B-20 and B-21 should be considered in tandem along with engineering judgment to design an appropriate crossing to enhance pedestrian safety.

Pedestrian Crash Countermeasure for Uncontrolled Crossings	Safety Issue Addressed				
	Conflicts at crossing locations	Excessive vehicle speed	Inadequate conspicuity/visibility	Drivers not yielding to pedestrians in crosswalks	Insufficient separation from traffic
Crosswalk visibility enhancement	🚶	🚶	🚶	🚶	🚶
High-visibility crosswalk markings*	🚶		🚶	🚶	
Parking restriction on crosswalk approach*	🚶		🚶	🚶	
Improved nighttime lighting*	🚶		🚶		
Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line*	🚶		🚶	🚶	🚶
In-Street Pedestrian Crossing sign*	🚶	🚶	🚶	🚶	
Curb extension*	🚶	🚶	🚶		🚶
Raised crosswalk	🚶	🚶	🚶	🚶	
Pedestrian refuge island	🚶	🚶	🚶		🚶
Pedestrian Hybrid Beacon	🚶	🚶	🚶	🚶	
Road Diet	🚶	🚶	🚶		🚶
Rectangular Rapid-Flashing Beacon	🚶		🚶	🚶	🚶

\*These countermeasures make up the STEP countermeasure "crosswalk visibility enhancements." Multiple countermeasures may be implemented at a location as part of crosswalk visibility enhancements.

Figure B-21: Safety Issues Addressed by Countermeasure (FHWA)

Additionally, it is important who may be using the crossing, especially if it is young children or a concentrated senior living population. These groups may require additional countermeasures beyond what is typically recommended. The relationship between impact speed and severity of pedestrian injury is shown on Figure B-22.



Vehicle speed has been shown to be related to pedestrian injury severity during collisions. By decreasing vehicle speeds with traffic calming elements, there is a renewed focus on reducing the severity of a collision or increasing the chance that a collision is avoided entirely. Figure B-22 displays study results on pedestrian crash severity and vehicle speed.

Figure B-22: Impact Speed versus Pedestrian Risk of Severe Injury (Source: AARP Study 2011)

Not all mid-block locations should be marked as a mid-block crossing. In general, a crosswalk should not be marked if one or more of the following conditions are present, per the FHWA Everyday Counts (EDC) Safe Transportation for Every Pedestrian (STEP) initiative:

- Vehicle speeds are greater than 40 MPH.
- A multilane road without a median carrying an average daily traffic volume greater than 12,000 vehicles per day.
- A multilane road with a median carrying an average daily traffic volume greater than 15,000 vehicles per day.
- Locations in close proximity to a signalized intersection.

Within the state of Alabama along the state route network, the preferred method for marking a crosswalk is the continental design. The continental design involves wide longitudinal bars, which increase the visibility of the crosswalk for drivers from that of lateral striped crosswalks. The City can use whichever method it prefers on local streets. However, it is important to remember the following concepts:

- Though aesthetically pleasing, textured crosswalks are difficult to maintain and suffer from fading, which lessens the distinction from regular roadway surfaces and decreases visibility for drivers. Additionally, textured crosswalks often create barriers to ADA-accessibility.
- Unorthodox colors used in crosswalks tend to be distracting for drivers, which creates additional safety issues.
- Consistency is important for roadway signage and pavement markings. Inconsistent and unmaintained pavement markings are less helpful for drivers and less safe for pedestrians.

If a crosswalk is marked, it should often be complemented with the appropriate signage. The Manual on Uniform Traffic Control Devices (MUTCD) should be consulted in conjunction with the development of any signing or pavement marking plan to ensure compliance with industry standards. Inconsistent or inadequate signage is quite common and often undermines the intended purpose of increased safety for all roadway users. Ensure that advanced yield lines are installed in conjunction with the crosswalk. Figure B-23 shows a few examples of signage that can be implemented at or prior to crosswalks.





Figure B-23: MUTCD Signage Options for Crosswalks

### Raised Crosswalk

Raised Crosswalks are another traffic calming countermeasure that force motorists to slow down when approaching a crosswalk. A raised crosswalk is essentially a speed table at least ten (10) feet in width that allows the front and rear wheels of a passenger vehicle to be on top of the table at the same time. This countermeasure is typically used at mid-block crossings, and cost is heavily dependent on the total roadway width.

Cost (FHWA PedSafe): \$25,000 to \$100,000

Figure B-24 displays an example of a raised crosswalk.



Figure B-24: Example of Raised Crosswalk in Alexandria, VA (Source: PEDSAFE)

## Crossing Island

Crossing islands, or pedestrian refuge islands open up the possibility for pedestrians to complete a two-stage crossing at a controlled or uncontrolled crossing location, which allows them to focus on one direction of the roadway at a time instead of both directions. Two-stage crossing is a safer maneuver than the typical one-stage crossing. The crossing island should be a minimum of four (4) feet wide, while eight (8) feet is preferable. The cost depends on the design of the island and the existing roadway configuration.

As with any mid-block crossing, this countermeasure should be accompanied by signage, pavement markings, and other active or passive control to increase the conspicuity of the crosswalk and its pedestrian users.

Cost (FHWA PedSafe): \$2,140 to \$41,710

Figure B-25 shows an example of a mid-block crossing that utilizes a pedestrian refuge island, a continental crosswalk design, and enhanced signage.



Figure B-25: Pedestrian Refuge Island Example (Source: PEDSAFE)

## Rectangular Rapid Flashing Beacon (RRFB)

The RRFB is a pedestrian-actuated warning sign with two rectangular yellow indicators to inform drivers that a pedestrian is crossing the roadway. Studies have shown that RRFB's are effective when speed limits are less than 40 MPH. This strategy has been granted interim approval by the FHWA, and any agency must receive permission before implementing this safety countermeasure.

Cost (FHWA PedSafe): \$4,500 to \$52,000

Figure B-26 displays an example of a rectangular rapid flashing beacon at a mid-block crossing.



**Figure B-26: Rectangular Rapid Flashing Beacon Example (Source: PEDSAFE)**

### **Pedestrian Hybrid Beacon (PHB)**

As vehicle speeds increase and traffic volumes increase, it becomes more necessary to implement vehicle control countermeasures at pedestrian crossing locations. The pedestrian hybrid beacon (PHB) is a pedestrian-actuated signal that gives vehicular traffic a red signal when activated and turns off after the allocated crossing time elapses until the next pedestrian actuation. A PHB is much more expensive than most countermeasures, yet it is still less costly than a signalized intersection while improving safety for pedestrians at a crossing location. One key consideration prior to installation is the proximity to any nearby signals. Signal progression could be significantly affected, especially if pedestrian volumes are high.

Cost (FHWA PedSafe): \$21,000 to \$128,000

Figure B-27 shows three diagrams that visually explain how a pedestrian hybrid beacon operates:

1. Top Left: Pedestrian Hybrid Beacon Layout Example.
2. Bottom Left: Pedestrian Hybrid Beacon Signal Head Display.
3. Right: Pedestrian Hybrid Beacon's corresponding Vehicular-Pedestrian Signal Head Progression.

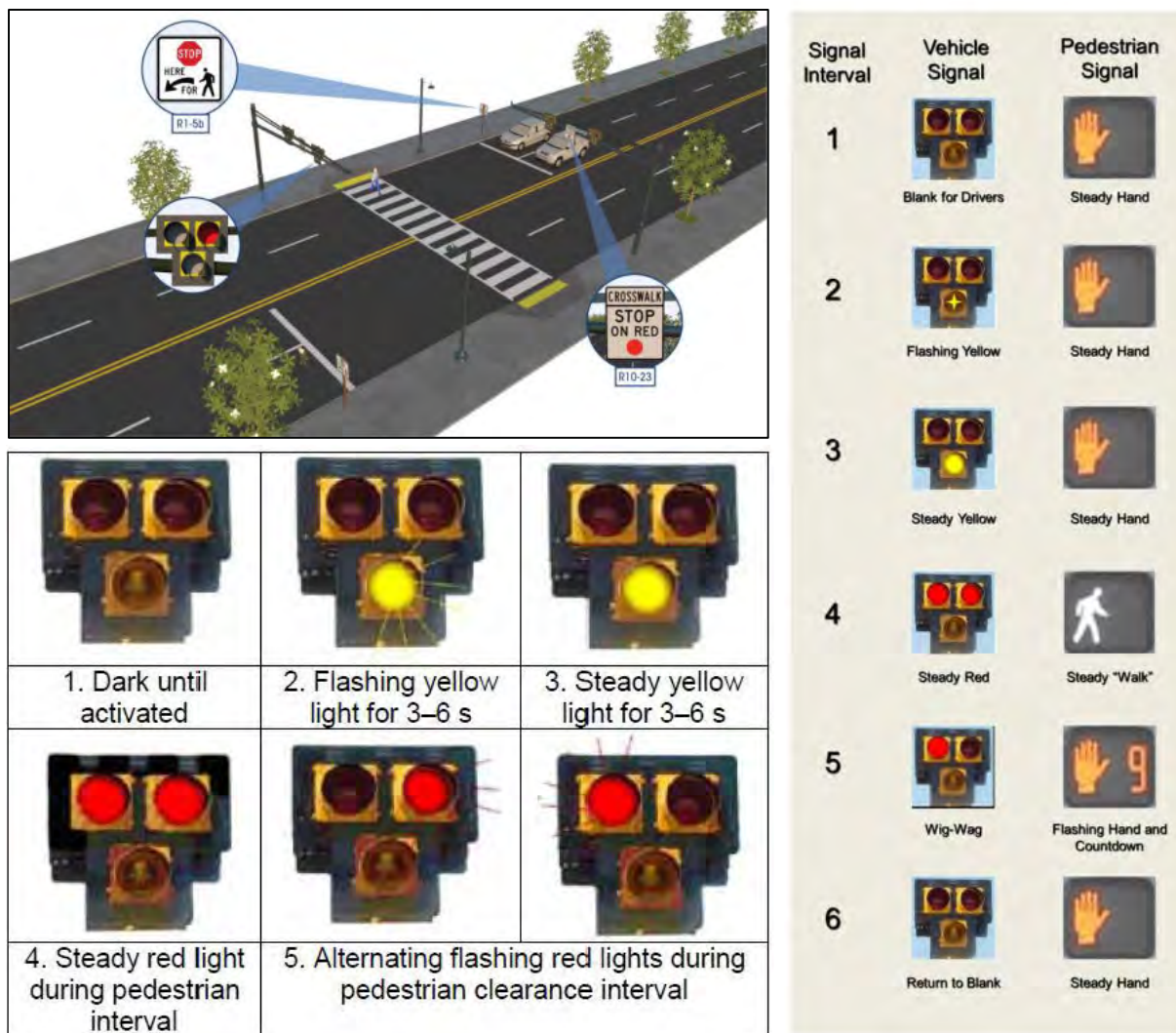


Figure B-27: Pedestrian Hybrid Beacon Layout, Display, and Operation Example (Source: PEDSAFE)

## Recommended Bicycle and Pedestrian Facility Requirements for Developers

New development and redevelopment of existing properties presents a prime opportunity to steadily increase the City's bicycle and pedestrian facility network. By requiring developers to install or to some degree consider bicycle and pedestrian modes of transportation, the City makes an actionable statement that cyclists and pedestrians are a priority. Many municipalities across the country have vehicular traffic-related requirements prior to development, but more and more state and local governments are leveraging the importance of bicycle and pedestrian travel to create a more equitable transportation network for all users.

The City's current Public Works Manual outlines generic sidewalk requirements for residential and collector streets. Bicycle paths are mentioned within the residential

guidance but not required. The following design standards are offered within the City's Public Works Manual for residential and collector street types:

- Residential
  - Sidewalks are recommended but not required. *"Sidewalks should ordinarily be provided along streets used for pedestrian access to schools, parks, shopping areas, and transit stops."*
  - Width: four (4) to six (6) feet.
  - Setback: Minimum six (6) feet from face of curb.
- Collector
  - Sidewalks are required. *"Sidewalks shall be placed along all collector streets where curb and gutter is also used."*
  - Width: four (4) to six (6) feet.
  - Setback: Minimum ten (10) feet from face of curb.

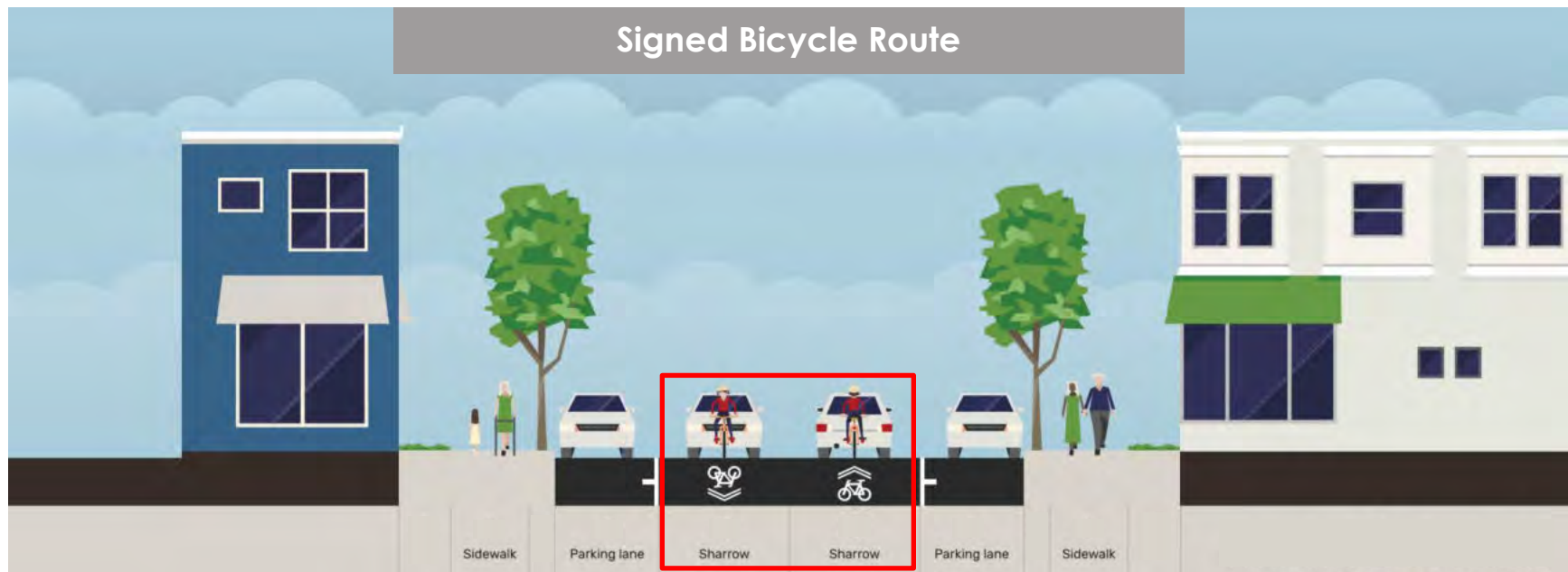
There are several strategies the City may choose to implement to expedite the expansion of the bicycle and pedestrian network, especially on local streets owned and maintained by the City itself:

- Require implementation of facilities outlined within the Master Plan upon development or redevelopment of parcels along roadways within the City. This can be scaled by land use or functional classification of each roadway.
- Establish a preferred sidewalk width of six (6) feet in all applications except for isolated segments where topography is deemed extreme, or tree preservation is preferred by the City. In these instances, the sidewalk width may be five (5) feet wide for a short distance.
- Reduce the minimum setback of sidewalks from the curb if a bicycle facility is installed along a roadway, whether internal or external to a development.
- Reduce minimum vehicular parking requirements, allowing for more space for bicycle parking, sidewalks, or bicycle facilities. This is especially the case in the City's urban core.
- Require bicycle parking within commercial or high-density residential developments.
- Adopt rear-parking and side-parking ordinances within commercial sites to promote bicycle and pedestrian safety and access.
- Adopt access management requirements per the ALDOT Access Management Manual. An excessive number of driveways along an arterial can be detrimental to bicycle and pedestrian safety. Each driveway also increases the cost for installing bicycle and pedestrian facilities due to curb ramps, grading, drainage, signage, and pavement markings.
- Pursue access management retrofit projects along densely developed arterials. These projects present an opportunity to install bicycle or pedestrian facilities in addition to the aesthetic benefit to the roadway that access management provides.

The Every Day Counts initiative established by the FHWA is a process that identifies underutilized innovations to shorten project delivery time, enhance roadway safety, reduce traffic congestion, and integrate automation. Within this initiative, the Safe Transportation for Every Pedestrian (STEP) countermeasures warrant consideration when developments have potential to generate pedestrian and bicycle trips. Most countermeasures are listed previously within this Toolbox, but several low-cost enhancements that development should install where applicable are as follows: rectangular rapid flashing beacon, leading pedestrian intervals (LPI), crosswalk visibility enhancements, raised crosswalks, pedestrian refuge islands, pedestrian hybrid beacons (PHB), and road diet or lane reallocation best practices. Each of these countermeasures have been studied in-depth and are actively promoted by several FHWA initiatives and programs.

## Typical Sections

The following figures show typical sections of the facilities mentioned within the Plan. The typical sections shown are not all-encompassing in terms of potential applications and merely present scalable options for facility implementation.

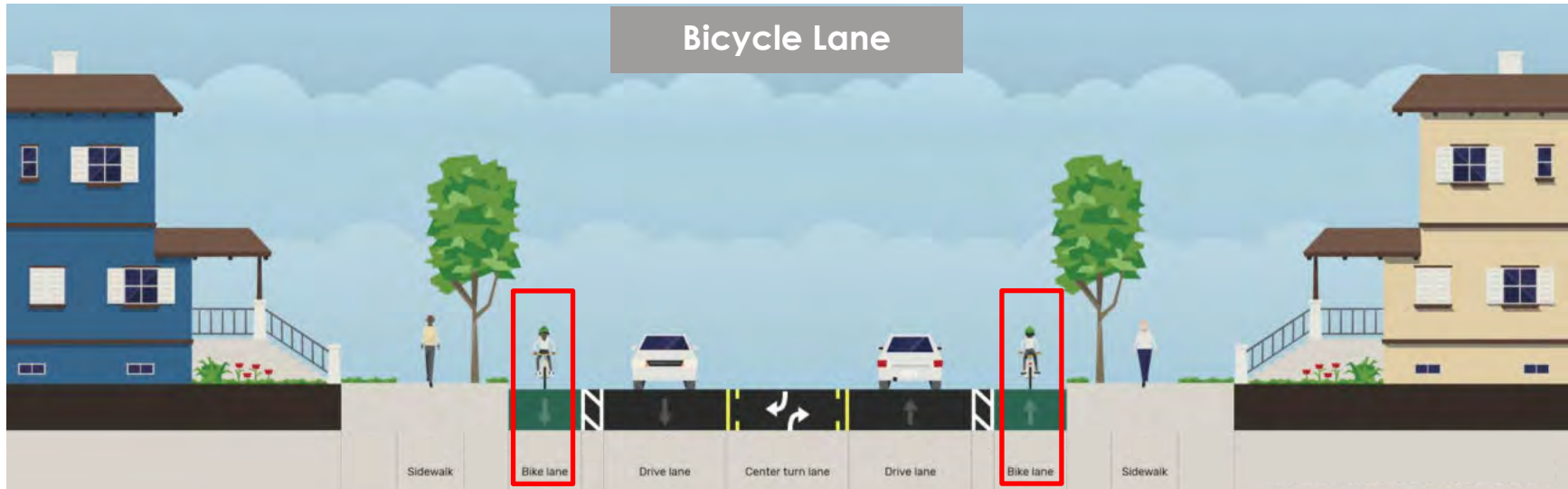


A *bicycle boulevard* or *signed bicycle route* represents a low-speed, shared street between motorists and cyclists. The typical section shown above represents one of many applications of this facility type.

This strategy is typically implemented on local streets with an average annual daily traffic (AADT) volume of less than 3,000 vehicles per day. Pairing this typical section with countermeasures such as speed pillows, chicanes, and pedestrian crossing enhancements is common practice.

Lane widths can vary, but a two-lane bicycle boulevard is typically less than 22 feet in width. This does not include optional sidewalk, parking, or facilities shown on the typical section above.

## Bicycle Lane



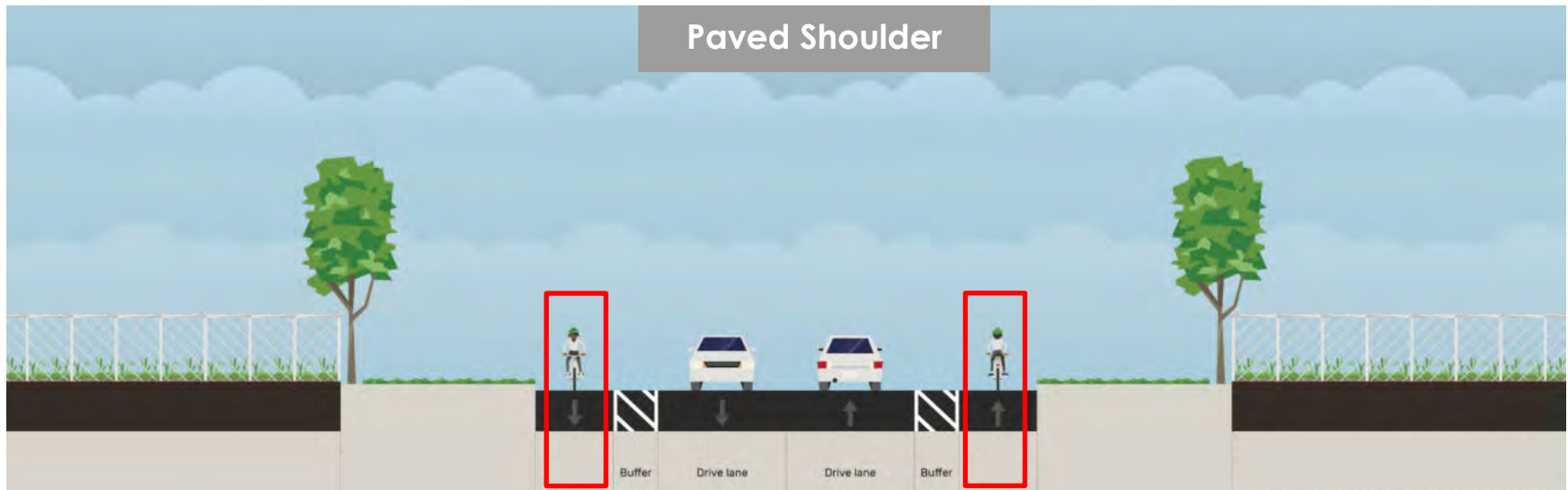
A *bicycle lane* is an exclusive lane reserved for cyclists along a roadway. The typical section shown above represents a *buffered bicycle lane*, which is one of many applications of this facility type.

This strategy is typically recommended on urban collectors or arterials with an average annual daily traffic (AADT) volume between than 3,000 and 9,000 vehicles per day.

Bicycle lane widths should be at least four (4) feet, while six and one-half (6.5) feet is the preferred width to allow for passing maneuvers. If a striped buffer is included, then the facility becomes a buffered bicycle lane. Buffer width can range from one and one-half (1.5) to four (4) feet depending on the roadway conditions such as speed limit, traffic volumes, and available space. As vehicle speeds increase, the need for a striped buffer or additional separation increases.



## Paved Shoulder

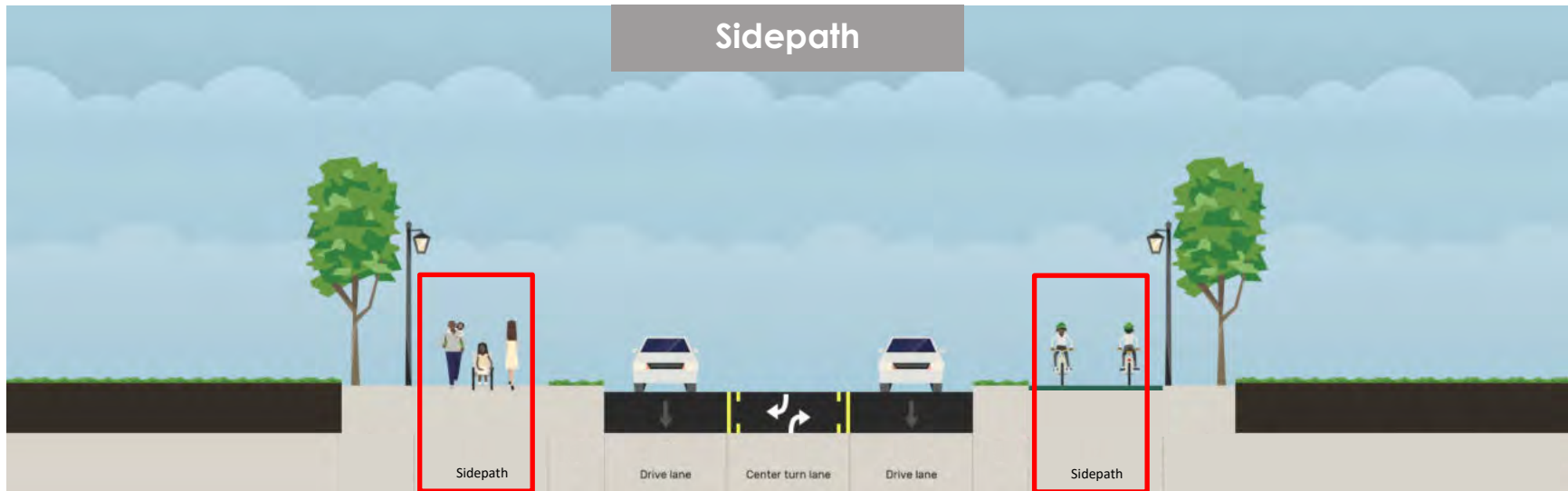


A *paved shoulder* is an extension of the roadway width not reserved for vehicular travel. The typical section shown above represents one of many applications of this facility type.

This strategy is typically recommended on rural collectors or arterials with an average annual daily traffic (AADT) volume less than 12,000 vehicles per day. Paved shoulders generally aid bicycle networks with long distance travel, but many applications exist within a local network as well.

The recommended width of a paved shoulder intended to serve cyclists should be at least five (5) to eight (8) feet depending on vehicle speeds. A striped buffer is always preferred but not required. Striped buffers for this facility type range from one and one-half (1.5) to four (4) feet depending on the roadway conditions such as speed limit, traffic volumes, and available space. As vehicle speeds increase, the need for a striped buffer or additional separation increases.

## Sidepath

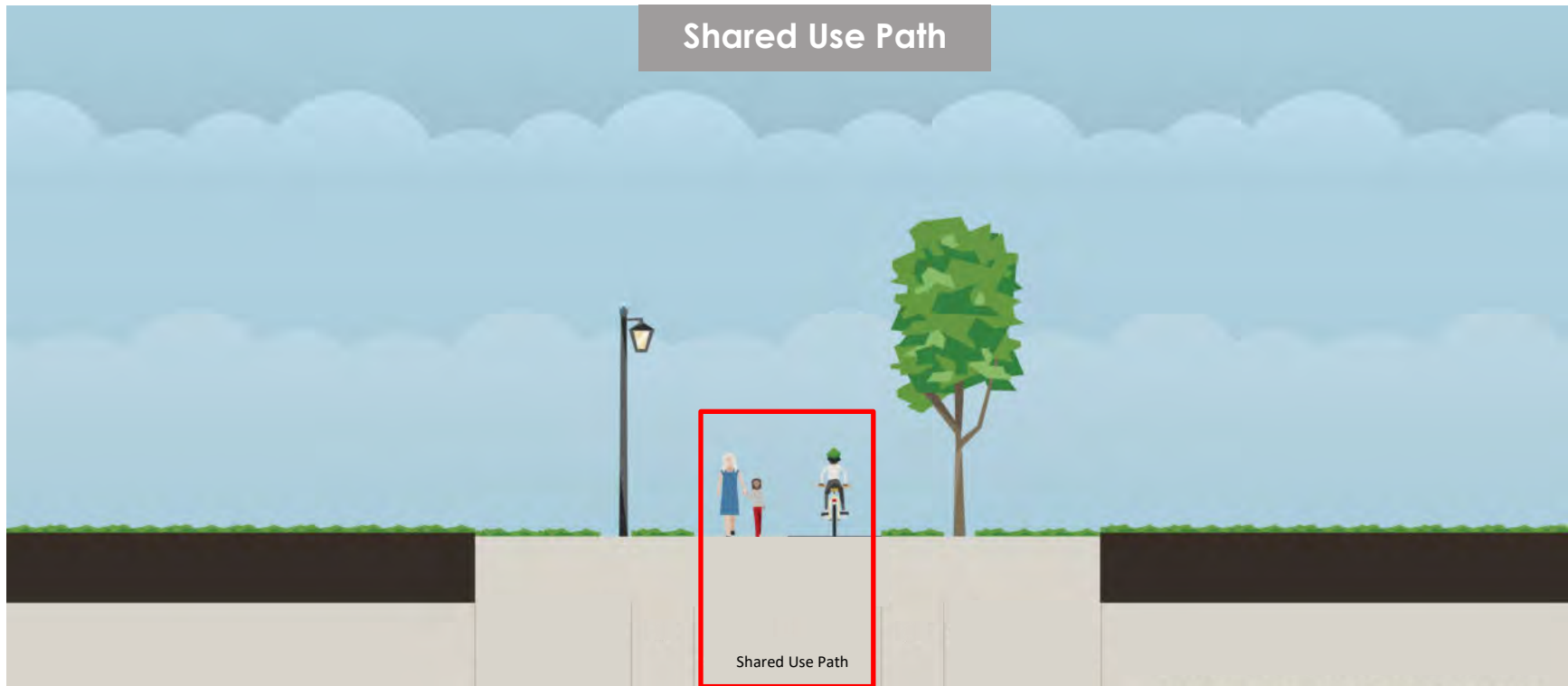


A *sidepath* is a facility reserved for pedestrians and cyclists located parallel and immediately adjacent to a roadway. The typical section shown above represents one of many applications of this facility type.

Sidepaths are recommended along urban or rural collectors and arterials with average annual daily traffic (AADT) volume exceeding 4,000 vehicles per day or vehicle speeds exceeding 40 MPH.

The recommended width of a sidepath is eight (8) to twelve (12) feet, while a minimum of five (5) feet of separation from the roadway to the sidepath must be maintained. As vehicle speeds and traffic volume increase, wider separation between the edge of the roadway and the sidepath becomes more preferable.

## Shared Use Path



A *shared use path* is a facility reserved for pedestrians and cyclists that is physically separate from any vehicular roadway. The typical section shown above represents one of many applications of this facility type.

Shared use paths serve as multimodal network connectors in urban or rural environments. In many cases, adequate space does not exist on a roadway for a pedestrian or bicycle facility.

The recommended width of a shared use path is ten (10) to twelve (12) feet. Signage and pavement markings are not required on shared use paths, but centerline striping and 'bicycles yield to peds' signs may be helpful if shared use paths are not common in the area. When intersecting a roadway, shared use paths should have adequate crossing enhancements per the Manual on Uniform Traffic Control Devices (MUTCD).

## Sidewalk

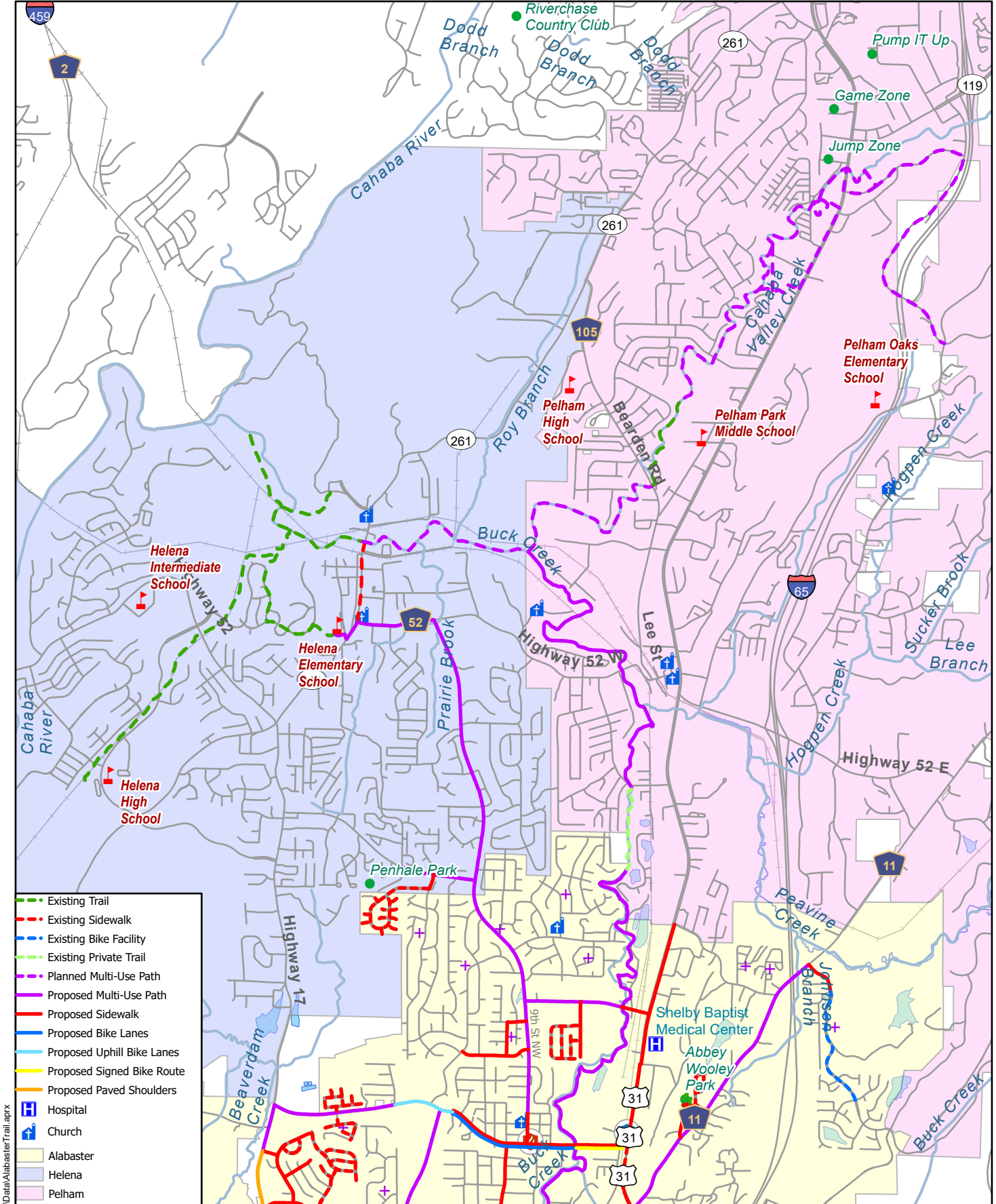


A *sidewalk* is a facility reserved for pedestrians along a roadway. The typical section shown above represents one of many applications of this facility type.

Sidewalks are recommended on all types of roadway where pedestrian activity is likely.

The recommended width of a sidewalk is six (6) feet, while a width of five (5) feet can be used in constrained sections. In cases of high pedestrian volumes, wider sidewalks eight (8) to ten (10) feet in width are preferred. As vehicle speeds and traffic volume increase, separation between the edge of the roadway and the sidewalk becomes more preferable.

## **Appendix C – Alabaster-Helena-Pelham Connection Map**



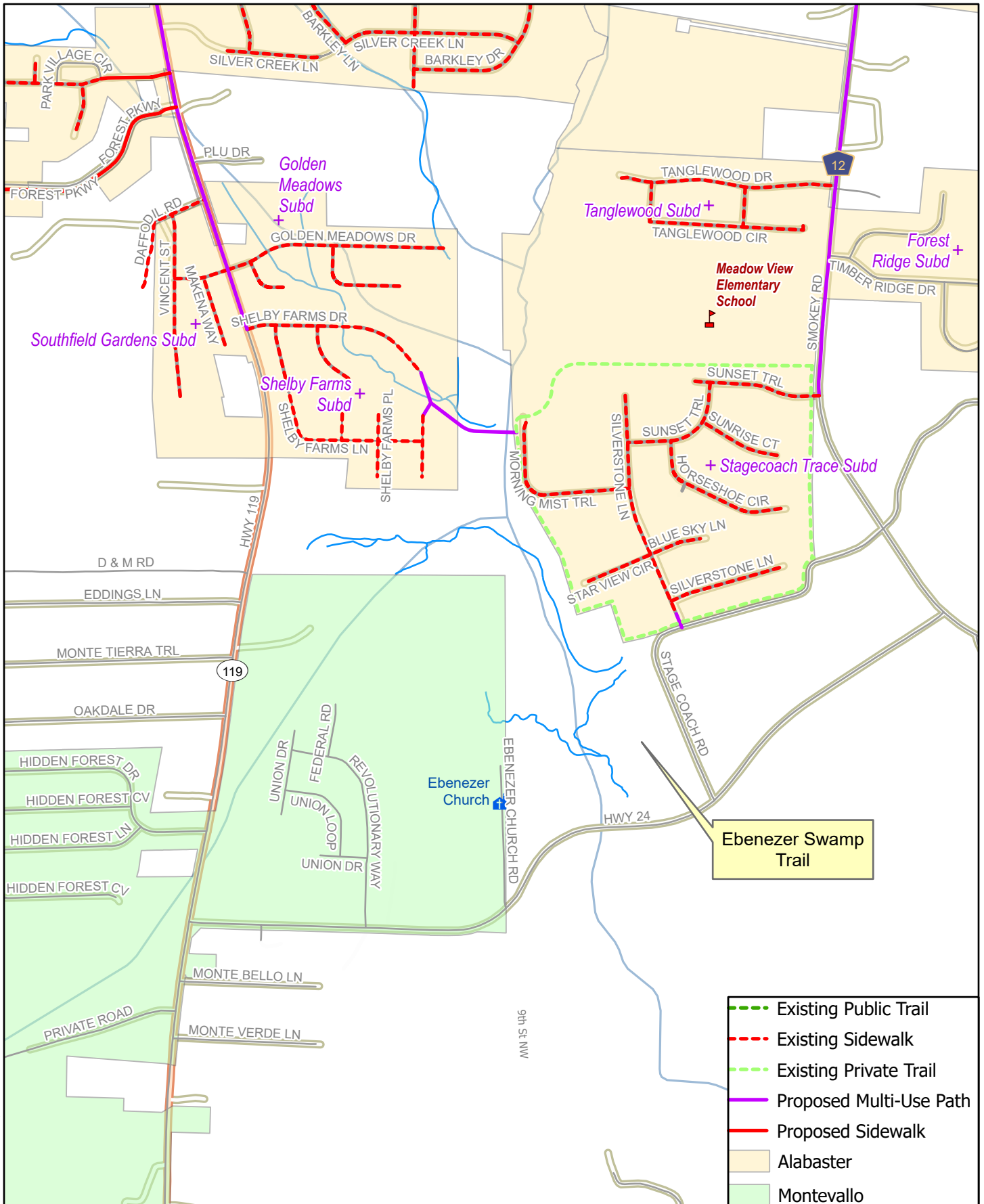
P:\2021\210045\SasGisData\Alabaster\Trail.aprx



### Alabaster-Pelham-Helena Connection Map

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL

## **Appendix D – Alabaster-Montevallo Connection Map**



- - - Existing Public Trail
- - - Existing Sidewalk
- - - Existing Private Trail
- Proposed Multi-Use Path
- Proposed Sidewalk
- Alabaster
- Montevallo

### Montevallo Connection Map

Alabaster Sidewalk and Trails APPLE Study  
Alabaster, AL



**SAIN**  
ASSOCIATES



NOT TO SCALE