



# **City of Red Bank Community Mobility Plan**

**TECHNICAL MEMORANDUM: FINAL REPORT**



# TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>INTRODUCTION .....</b>                             | <b>6</b>  |
| <b>PROJECT VISION AND GOALS.....</b>                  | <b>6</b>  |
| <b>EXISTING CONDITIONS.....</b>                       | <b>7</b>  |
| <b>I. POPULATION AND GROWTH TRENDS.....</b>           | <b>7</b>  |
| <b>II. ROADWAY CHARACTERISTICS.....</b>               | <b>7</b>  |
| <b>III. TRAFFIC.....</b>                              | <b>9</b>  |
| <b>IV. SAFETY.....</b>                                | <b>11</b> |
| <b>IV. PUBLIC TRANSIT.....</b>                        | <b>17</b> |
| <b>V. FREIGHT.....</b>                                | <b>18</b> |
| <b>VI. ACTIVE TRANSPORTATION.....</b>                 | <b>18</b> |
| <b>VII. OTHER PROJECTS IN RED BANK.....</b>           | <b>20</b> |
| <b>ONLINE PUBLIC SURVEY RESULTS .....</b>             | <b>21</b> |
| <b>I. DEMOGRAPHICS.....</b>                           | <b>21</b> |
| <b>II. TRANSPORTATION TRENDS.....</b>                 | <b>22</b> |
| <b>III. IDENTIFIED IMPROVEMENTS.....</b>              | <b>24</b> |
| <b>IV. MAP POINTS.....</b>                            | <b>24</b> |
| <b>PUBLIC INFORMATION OPEN HOUSE .....</b>            | <b>28</b> |
| <b>PUBLIC MEETING .....</b>                           | <b>29</b> |
| <b>NEEDS ASSESSMENT .....</b>                         | <b>30</b> |
| <b>I. COMMON ISSUES AND POTENTIAL SOLUTIONS .....</b> | <b>30</b> |
| ACCESS MANAGEMENT .....                               | 30        |
| CONTINUOUS PEDESTRIAN INFRASTRUCTURE.....             | 30        |
| BICYCLE INFRASTRUCTURE.....                           | 31        |



|   |                              |
|---|------------------------------|
| PEDESTRIAN CROSSINGS .....  | 33                           |
| ADA ACCESSIBILITY .....   | 34                           |
| PARKING MANAGEMENT .....  | 34                           |
| SAFETY AND SPEEDING .....   | 35                           |
| <b>II. FOCUS AREAS.....</b>   | <b>37</b>                    |
| DAYTON BOULEVARD AT SIGNAL MOUNTAIN ROAD .....                          | ERROR! BOOKMARK NOT DEFINED. |
| DAYTON BOULEVARD AT NEWBERRY STREET .....                               | ERROR! BOOKMARK NOT DEFINED. |
| DAYTON BOULEVARD AT MORRISON SPRINGS ROAD/ASHLAND TERRACE.....          | ERROR! BOOKMARK NOT DEFINED. |
| DAYTON BOULEVARD AT BROWNTOWN ROAD .....                                | ERROR! BOOKMARK NOT DEFINED. |
| <b>BEST PRACTICES FOR IMPROVEMENTS.....</b>                             | <b>43</b>                    |
| <b>RECOMMENDATIONS.....</b>   | <b>46</b>                    |
| <b>I. GENERAL RECOMMENDATIONS.....</b>                                  | <b>46</b>                    |
| TRAFFIC COUNT COLLECTION .....  | 46                           |
| WAYFINDING OPPORTUNITIES .....  | 46                           |
| SIDEWALK CONTINUITY AND CROSSINGS .....                                 | 47                           |
| PUBLIC TRANSPORTATION .....   | 47                           |
| CONSISTENCY WITH RED BANK’S LAND USE PLAN .....                         | 49                           |
| <b>FOCUS AREA RECOMMENDATIONS.....</b>                                  | <b>50</b>                    |
| DAYTON BOULEVARD AT SIGNAL MOUNTAIN ROAD.....                           | 51                           |
| DAYTON BOULEVARD AT NEWBERRY STREET .....                               | 53                           |
| DAYTON BOULEVARD AT MORRISON SPRINGS ROAD/ASHLAND TERRACE.....          | 55                           |
| DAYTON BOULEVARD AT BROWNTOWN ROAD .....                                | 57                           |
| <b>POTENTIAL FUNDING OPPORTUNITIES .....</b>                            | <b>59</b>                    |
| <b>NEXT STEPS.....</b>  | <b>62</b>                    |
| <b>APPENDIX A: REGIONAL TRAFFIC CONDITIONS DURING PEAK PERIODS.....</b> | <b>63</b>                    |
| <b>APPENDIX B: PROPOSED BICYCLE BOULEVARD. ....</b>                     | <b>65</b>                    |
| <b>APPENDIX C: COST ESTIMATES.....</b>                                  | <b>66</b>                    |



## TABLE OF FIGURES

|   |    |
|---|----|
| Figure 1: Roadway Classification .....  | 8  |
| Figure 2: Annual Average Daily Traffic .....                                  | 10 |
| Figure 3: Signal Mountain Road Intersection.....                              | 11 |
| Figure 4: Morrison Springs Road Intersection .....                            | 12 |
| Figure 5: Newberry Street Intersection .....                                  | 12 |
| Figure 6: Browntown Road Intersection.....                                    | 13 |
| Figure 7: Existing Crash Analysis (2017-2021).....                            | 14 |
| Figure 8: Injury Crash Analysis (2017-2021).....                              | 15 |
| Figure 9: Crashes along Corridor (2018-2022) .....                            | 16 |
| Figure 10: Crashes along Corridor (2018-2022).....                            | 16 |
| Figure 11: Type of Crash (2018-2022).....                                     | 17 |
| Figure 12: Type of Crash (2018-2022).....                                     | 17 |
| Figure 13: Existing Conditions .....  | 19 |
| Figure 14: Projects within Red Bank.....                                      | 20 |
| Figure 15: Percent of Surveyed Who are Red Bank Residents.....                | 21 |
| Figure 16: Respondents Age Distribution .....                                 | 22 |
| Figure 17: Race make up of Survey Responders.....                             | 22 |
| Figure 18: What is your primary mode of transportation? .....                 | 23 |
| Figure 19: How important is walking/biking along Dayton Boulevard? .....      | 23 |
| Figure 20: What prevents you from walking or biking on Dayton Boulevard?..... | 24 |
| Figure 21: Survey Points of Interest.....                                     | 26 |
| Figure 22: Survey Identified Needs.....                                       | 27 |
| Figure 23: Pictures from Red Bank's Annual Jubilee .....                      | 28 |
| Figure 24: Pictures from July 15th, Public Meeting.....                       | 29 |
| Figure 25: Dayton Boulevard at Newberry Street - Sidewalk Abruptly Ends ..... | 30 |
| Figure 26: Proposed Bicycle Boulevard.....                                    | 32 |
| Figure 27: Lack of Crosswalks in Intersection .....                           | 33 |
| Figure 28: Lack of Crosswalks in Several Directions .....                     | 33 |
| Figure 29: Crossing Not at Signalized Intersection.....                       | 34 |
| Figure 30: Speed Limits of Major Roads in Red Bank .....                      | 36 |
| Figure 31: Project Study Areas.....   | 38 |
| Figure 32: Lack of Access Management.....                                     | 40 |
| Figure 33: Sidewalk Abruptly Ends .....                                       | 41 |
| Figure 34: Not ADA Compliant .....  | 42 |





*City of Red Bank Community Mobility Plan*

Figure 35: Parking Management Issues.....43

Figure 36: Browntown Road Intersection .....43

Figure 37: Road Diet.....44

Figure 38: Signal Improvement .....44

Figure 39: Access Management .....45

Figure 40: Bicycle and Pedestrian Infrastructure.....45

Figure 41: Zero Car Households.....48

Figure 42: Population Under the Poverty Level .....49

Figure 43: Improvements at Signal Mountain Road .....52

Figure 44: Improvements at Newberry Street.....54

Figure 45: Improvements at Morrison Springs Road/Ashland Terrace .....56

Figure 46: Improvements at Browntown Road .....58

Figure 47: Potential Funding Sources.....59

## INTRODUCTION

This plan will address transportation infrastructure and mobility improvements for four focus areas along Dayton Boulevard in Red Bank, Tennessee, located in Hamilton County. This report covers existing conditions along Dayton Boulevard, public engagement, needs assessment, and recommendations. The existing conditions assessment covers roadway characteristics, traffic counts and future growth trends, safety analysis, freight activity, and existing active transportation infrastructure. The public engagement covers online public survey data, a public information open house at the Red Bank Jubilee, and a public meeting at the Red Bank Community Center where the draft recommendations were presented. The needs assessment outlines mobility issues identified by the project team along Dayton Boulevard with emphasis on four key focus areas and emerging themes from public feedback. Concluding this comprehensive analysis are the recommendations for Dayton Boulevard and its corresponding four focus areas.

## PROJECT VISION AND GOALS

During the initial stages of developing this Community Mobility Plan, the project team worked with the steering committee in Red Bank to create a guiding vision and set of goals for the plan that aligned with the City's grant proposal. The vision is as follows:

Red Bank's transportation network enhances the City's unique character by safely interconnecting our residents, employees and visitors to open spaces, neighborhoods, jobs, Red Bank's downtown and the surrounding region through investments that improve roadway flow, and are walkable, bikeable, transit supportive and sustainable.

The vision is supported by a set of five community goals laid out in the Tennessee Department of Transportation (TDOT) Urban Transportation Planning Grant application that help shape and steer the plan's development. The project goals are:

1. Identify deficiencies in the transportation network, including all modes of transportation.
2. Identify improvements that can be implemented that will improve safety, accessibility, and connectivity for all users.
3. Identify transformative projects that will improve the Central Business District.
4. Create a framework for updating the Red Bank Land Use Plan.
5. Identify funding and implementation strategies.





## EXISTING CONDITIONS

### I. POPULATION AND GROWTH TRENDS

As of 2020, the population in Red Bank, TN was 11,899, which was a 2.9% increase from the 2010 population. Like Hamilton County and the region, Red Bank's population is expected to grow with an estimated population of 12,200<sup>1</sup> residents by 2030.

In Red Bank, there are several new areas of development that will add to the number of people walking, biking, and driving along Dayton Boulevard. At the north end of the study corridor, Hartman Hills is a new development of 71 rent-to-own luxury homes built on 26 acres that are nearing completion. In February of 2023, Rise Developers were approved by the Red Bank City Commission to develop a 200-plus unit apartment complex and a 7,000 square foot retail building at 2101 and 2119 Dayton Boulevard<sup>2</sup>. Finally, at the southern end of the corridor, a development is proposed on 8.29 acres of land abutting properties along Strawberry Lane, Lullwater Road, Lynda Circle and Alden Avenue. This is in the early stages of development but was recommended for approval by the municipal planning commission with conditions relating to steep slopes. The next step will be for the landowners, Watchman Investments and Cameron Holding, to ask the Commission to rezone the property involved from R-1 Single family residential, to R-TZ Townhome / Zero Lot Line Single Family<sup>3</sup>. Despite this future growth within Red Bank, increasing roadway capacity on Dayton Boulevard is not the primary focus of this community mobility plan (CMP). As referenced above, the focus of this CMP is to create a multimodal transportation network that facilitates a safer environment for vehicles, bicyclist and pedestrian along Dayton Boulevard.

### II. ROADWAY CHARACTERISTICS

This section reviews the condition of the roadway network, starting with the functional classification of Dayton Boulevard, number of travel lanes, and speed limit within the project area.

Dayton Boulevard runs north-south parallel to Highway-27 from the southern border of Red Bank to the Thrasher Pike north of the city. Within the City of Red Bank, Dayton Boulevard is a four-lane minor arterial road. The speed limit for Dayton Boulevard within the project area is 40 miles per hour (MPH). Memorial Drive, East Newberry Street, Morrison Springs Road, Ashland Terrace, and Gadd Road are also minor arterials. Classified two-lane major collectors intersecting the study area include Martin Road, Culver Street, Lamar Avenue, and Appian Drive. The study area focuses on a roughly five mile stretch of Dayton Boulevard. Within the study area, there are seven intersections along Dayton Boulevard that have traffic signals. Along the corridor, there are 19 crosswalks.

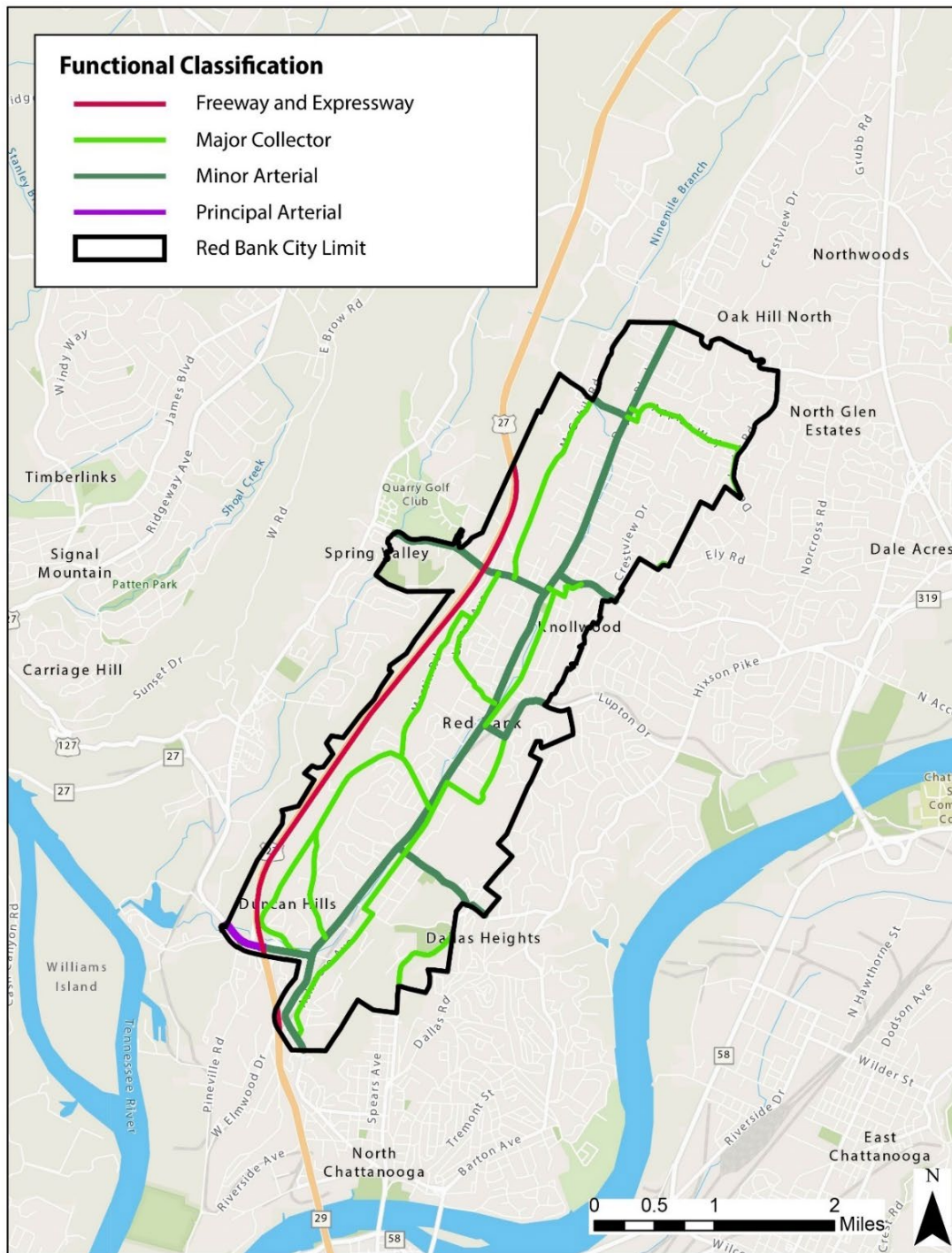
---

<sup>1</sup> <https://worldpopulationreview.com/us-cities/red-bank-tn-population>

<sup>2</sup> <https://www.wdef.com/new-apartments-and-retail-buildings-to-be-developed-in-red-bank/>

<sup>3</sup> <https://www.chattanooga.com/2023/5/6/468610/Large-New-Development-In-Red-Bank.aspx>

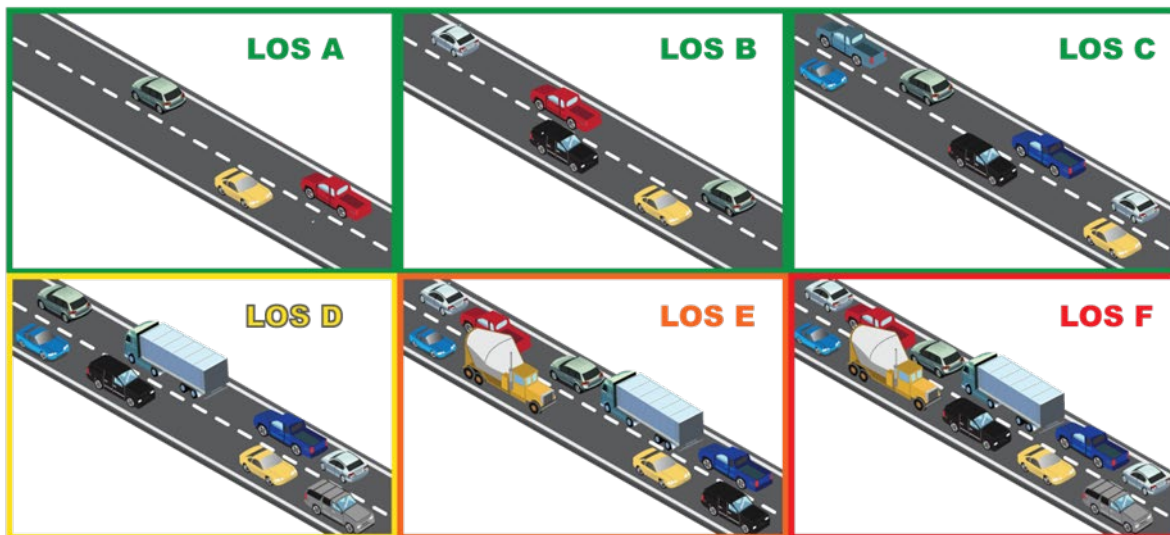
Figure 1: Roadway Classification<sup>4</sup>



<sup>4</sup> TDOT

### III. TRAFFIC

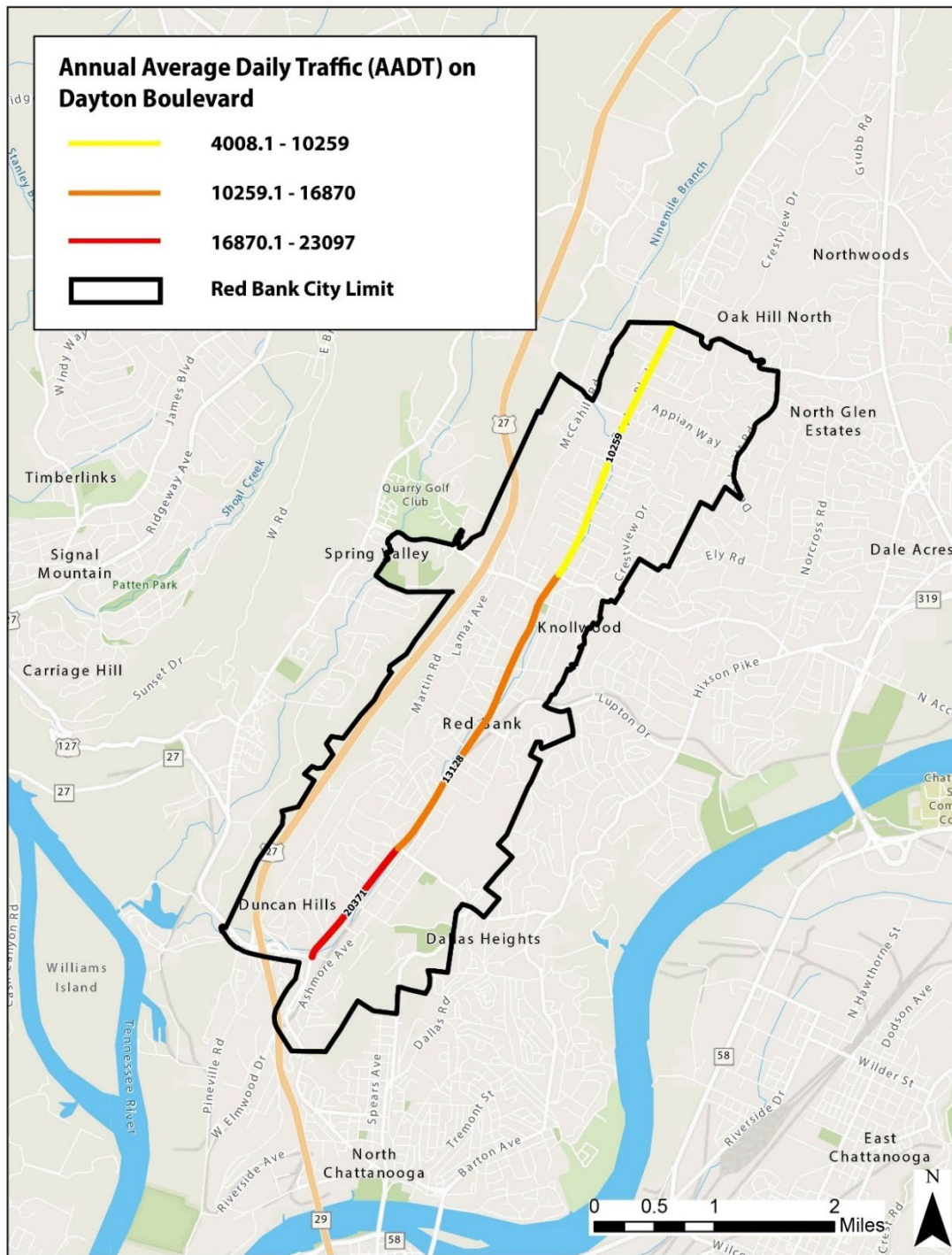
Traffic count data was reviewed from the TDOT Transportation Data Management System. See the figure below for existing volume analysis along the corridor. In 2021, the average annual daily traffic (AADT) for the study area on Dayton Boulevard ranges from approximately 4,000 vehicles per day on the northern end of the corridor to 23,000 vehicles per day on the southern end of the corridor. Dayton Boulevard with an existing maximum daily traffic of 23,000 vehicles per day operates at a Level of Service (LOS) C or better. LOS is a term used to qualitatively describe the operating conditions of a roadway based on factors such as speed, travel time, delay, and safety. LOS is designated with a letter, with A representing the best operating conditions and F representing the worst.



Typical traffic trends on the corridor were also observed for AM and PM peak periods from Google (Appendix A). No congestion was observed on the corridor during AM peak period. During PM peak, moderate congestion was observed at intersections of Morrison Springs Road and Ashland Terrace. This could be attributed to vehicles having to stop at these signalized intersections. Overall, majority of the corridor operates at low to no congestion during both peak periods.



Figure 2: Annual Average Daily Traffic<sup>5</sup>



## IV. SAFETY

Many of the concerns regarding safety in the study area are surrounding intersections along the Dayton Boulevard corridor. The images below show the four focus area intersections of Signal Mountain Road, Morrison Springs Road/Ashland Terrace, Newberry Street, and Browntown Road (Figures 3-6) as they are currently constructed. These intersections were identified as needing safety improvements in the grant proposal submitted by the city, as well as through community feedback and crash data analysis.

Of the 812 crashes that occurred along the corridor within the 2017-2021 timeframe, 129 (16 percent) involved serious or minor injuries. Of the crashes that resulted in injuries, they are concentrated at Signal Mountain Road, Morrison Springs Road, and Ashland Terrace, as seen in the heat map in Figure 7 below. Four bicycle/pedestrian related crashes occurred along Dayton Boulevard distributed throughout the entirety of the study corridor.

Figure 3: Signal Mountain Road Intersection<sup>6</sup>



---

<sup>5</sup> <https://www.tn.gov/tdot/long-range-planning-home/longrange-road-inventory/longrange-road-inventory-traffic.html>

<sup>6</sup> Photo Source: KB Photography



## City of Red Bank Community Mobility Plan

Figure 4: Morrison Springs Road Intersection<sup>7</sup>



Figure 5: Newberry Street Intersection<sup>8</sup>



<sup>7</sup> Photo Source: KB Photography

<sup>8</sup> Photo Source: KB Photography



Figure 6: Browntown Road Intersection<sup>9</sup>

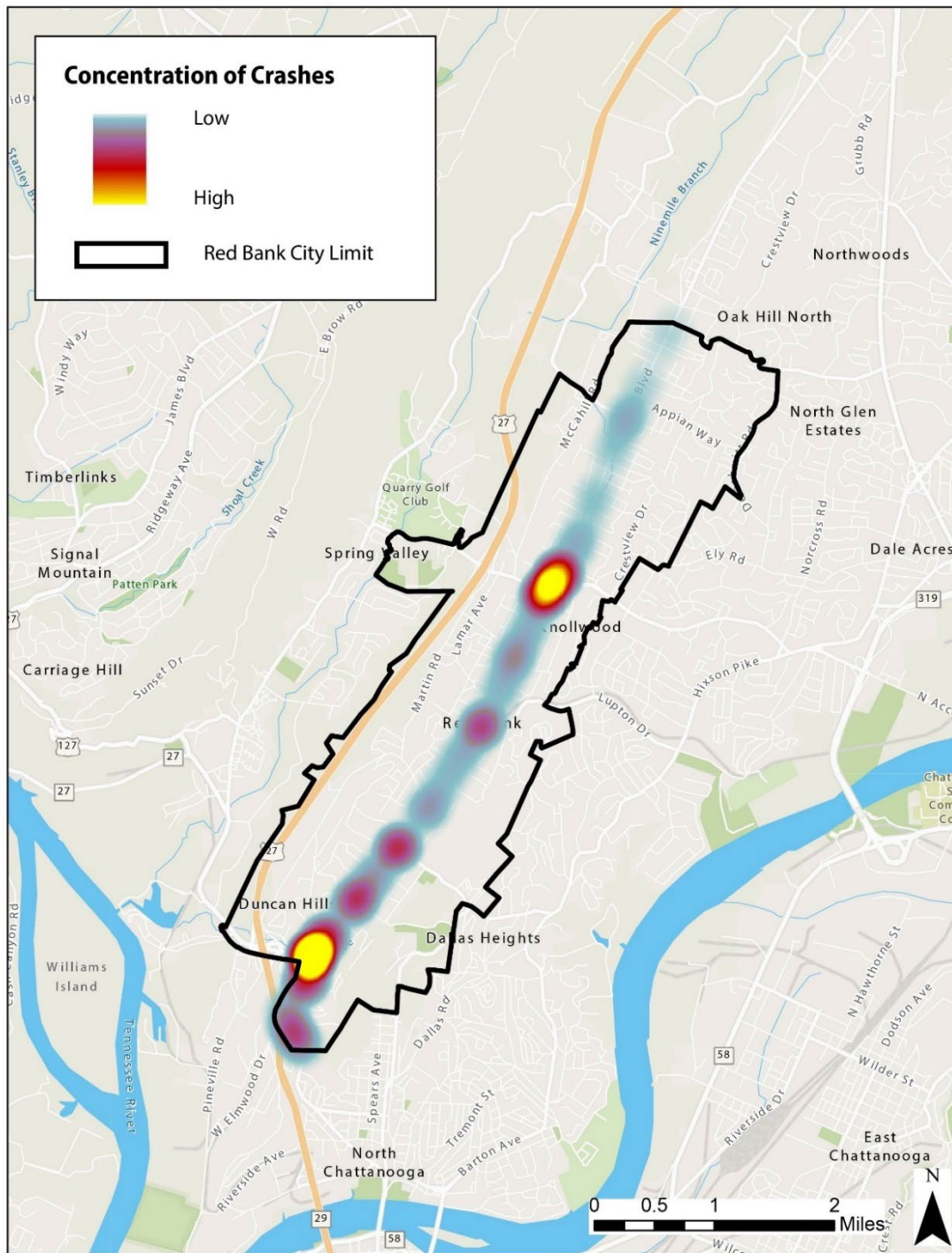


Specific safety improvements for all four areas are outlined and discussed in detail below in the recommendations section.

---

<sup>9</sup> Photo Source: KB Photography

Figure 7: Existing Crash Analysis (2017-2021)<sup>10</sup>



<sup>10</sup> <https://www.tn.gov/safety/stats/crashdata.html>



A map of Red Bank City, Tennessee, illustrating the concentration of injury crashes. The city's boundary is outlined in black. A legend in the top-left corner shows a color gradient from blue (Low) to red (High), indicating crash density. Major roads like US-27 and TN-58 are shown as orange lines. The Tennessee River flows along the southern and eastern edges. Various neighborhoods such as Knollywood, Spring Valley, and North Chattanooga are labeled. A scale bar at the bottom right indicates distances up to 2 miles, accompanied by a north arrow.

15

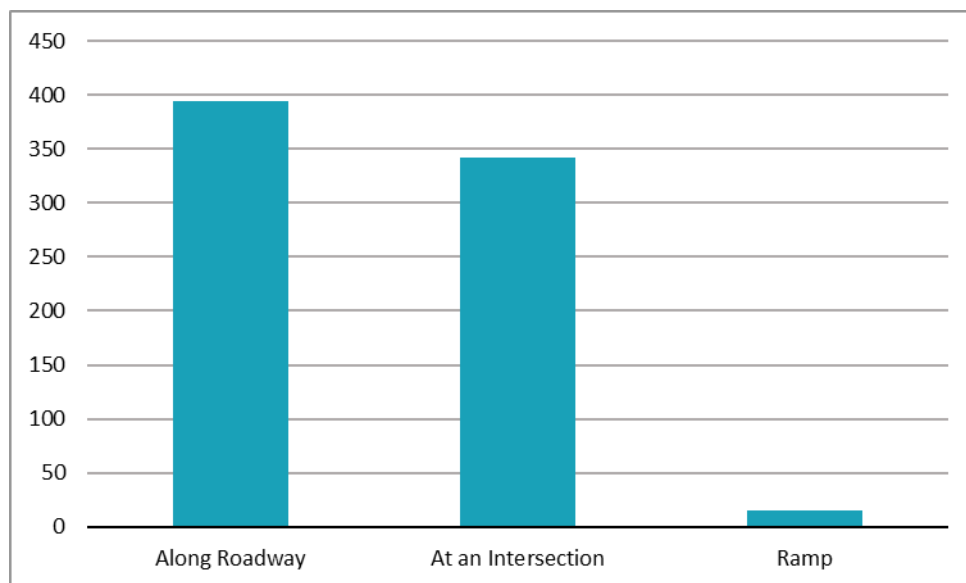
Figure 9 shows the injury related crashes throughout the corridor from 2017-2021.

Most of the crashes along the corridor occurred at signalized intersections. The top three intersections with the highest number of crashes were: Dayton Boulevard at Signal Mountain Road (168), Dayton Boulevard at Morrison Springs Road (60), and Dayton Boulevard at Ashland Terrace (57). Of the 751 crashes, 394 (52.5%) occurred at intersections, 342 (45.5%) along the roadway, and 15 (2%) at highway entrance or exit ramps (Figure 9 and 10 below).

Figure 9: Crashes along Corridor (2018-2022)

| Crashes along Corridor (2018-2022) |                   |             |
|------------------------------------|-------------------|-------------|
| Crash Locations                    | Number of Crashes | Percentage  |
| At Intersections                   | 394               | 52.5%       |
| Along Roadway                      | 342               | 45.5%       |
| Ramp                               | 15                | 2%          |
| <b>Total</b>                       | <b>751</b>        | <b>100%</b> |

Figure 10: Crashes along Corridor (2018-2022)

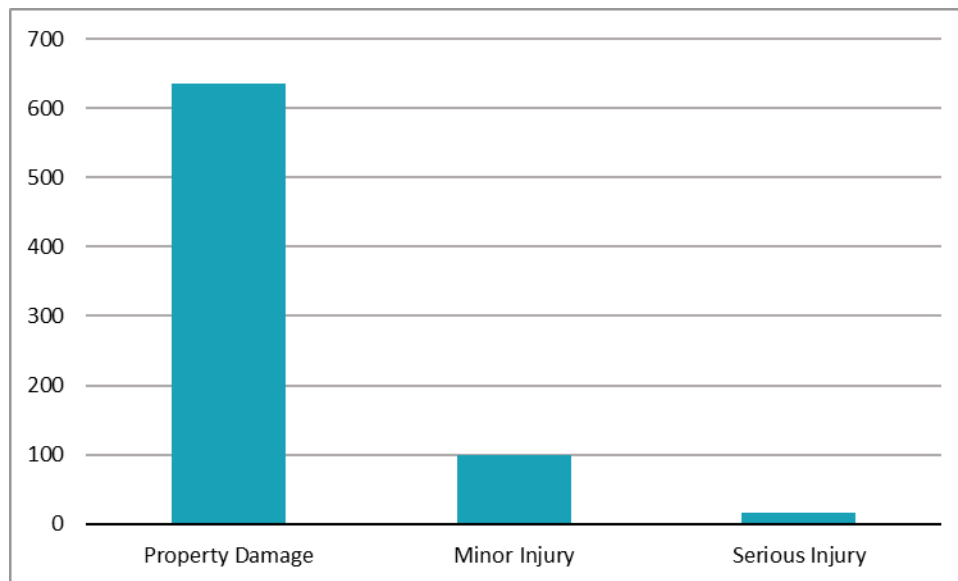


Figures 11 and 12 on the next page show the types of crashes along the corridor. Of the 751 crashes, 636 (84.7%) were reported as Property Damage, 99 (13.2%) were reported as Minor Injury, and 16 (2.1%) were reported as Serious Injury.

Figure 11: Type of Crash (2018-2022)

| Type of Crash (2018-2022) |                   |             |
|---------------------------|-------------------|-------------|
| Type of Crash             | Number of Crashes | Percentage  |
| Property Damage           | 636               | 84.7%       |
| Minor Injury              | 99                | 13.2%       |
| Serious Injury            | 16                | 2.1%        |
| <b>Total</b>              | <b>751</b>        | <b>100%</b> |

Figure 12: Type of Crash (2018-2022)



## IV. PUBLIC TRANSIT

Red Bank does not have any fixed-route public transportation services that are currently in operation within the City of Red Bank. However, the Chattanooga Area Regional Transportation Authority (CARTA) provides fixed-route bus services in the City of Chattanooga, and complimentary ADA Paratransit service throughout the greater metropolitan Chattanooga area. CARTA currently operates 14 fixed routes (including three shuttle routes), ADA Paratransit services, and on-demand service that operates within and around the Cromwell, East Brainerd, Eastdale, and North Brainerd communities. As noted in CARTA's Letter of Support for the City of Red Bank's TPG application, a route through Red Bank could be especially beneficial due to their location along a major commuter corridor and proximity to employment centers in downtown Chattanooga. A commuter corridor is a specific route or transportation pathway that connects residential areas, often suburbs or outlying regions, to major employment centers, business



districts, or urban areas. Commuter corridors are designed to facilitate the daily transportation needs of individuals who live outside of the primary economic hub but need to travel there regularly for work or other activities.

## **V. FREIGHT**

Because Dayton Boulevard runs parallel to Highway-27 (US 27) (preferred freight corridor for the Chattanooga metro area), it is used as an alternative route for Highway-27 traffic when there are roadway improvements or an incident causing a shutdown on the highway. Hence, freight traffic can vary along Dayton Boulevard. Red Bank is also directly north of Chattanooga; therefore, commuters and freight drivers use Dayton Boulevard as a route into Chattanooga from cities and suburbs to the north. Within Red Bank, commercial retailers like Food City and Ace Hardware are served by Dayton Boulevard.

## **VI. ACTIVE TRANSPORTATION**

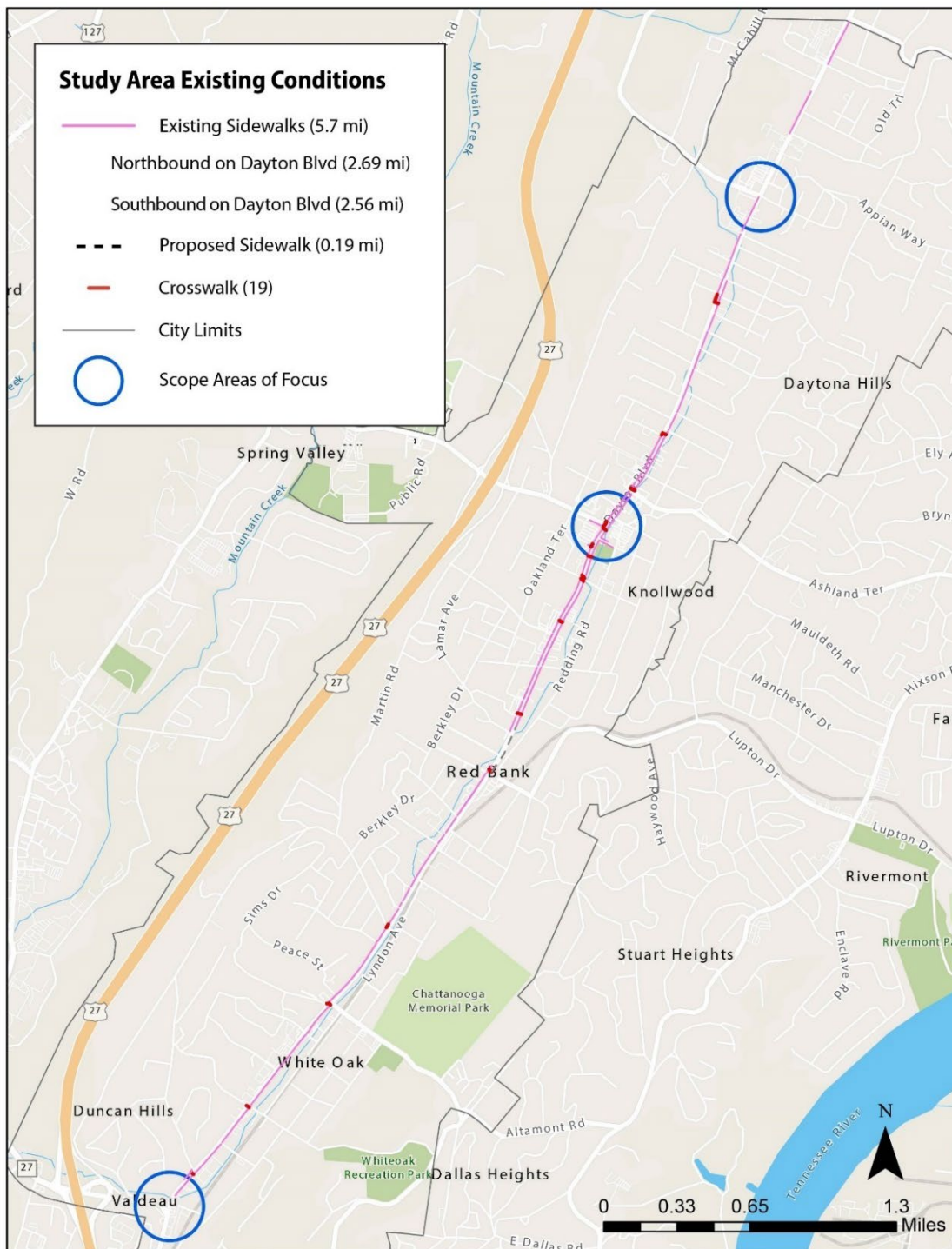
Existing bicycle and pedestrian infrastructure within the study area includes sidewalks that run along Dayton Boulevard, as well as crosswalks. There are 5.7 miles of sidewalk in the immediate study area, with 2.69 miles running northbound and 2.65 miles running southbound. There is one gap in sidewalk infrastructure for 0.19 miles just north of the Newberry Street intersection, but the City of Red Bank is working to fill this gap with proposed sidewalks<sup>12</sup>. There are 19 crosswalks along Dayton Boulevard, 14 of which are signalized. Only one intersection has crosswalks going in two directions at Morrison Springs Road and Dayton Boulevard. There are currently no bike routes along Dayton Boulevard, but there is a proposed Bike Boulevard that would run parallel to Dayton Boulevard for 6.34 miles (Appendix B). This Bike Boulevard is part of the larger North Shore Greenway, which is a 14.4-mile multi-phase greenway that would connect Renaissance Park to Red Bank without vehicle traffic or tunnels. The map below shows the inventory of active transportation infrastructure within the study area corridor, with the project areas of focus highlighted.

---

<sup>12</sup> <https://www.chattanooga.com/2020/9/16/415272/Red-Bank-Receives-2-Grants-New.aspx>



Figure 13: Existing Conditions





## VII. OTHER PROJECTS IN RED BANK

Red Bank is currently working on implementing several other projects throughout the City of Red Bank. The figure below shows the ongoing projects that are in process in the City of Red Bank.

Figure 14: Projects within Red Bank<sup>13</sup>

| Project Number/Name                         | TIP ID    | Scope of Work  | Phase        | Status |
|---|-----------|--|--------------|--------|
| Dayton Boulevard Resurfacing                | 130155.00 | Resurfacing of Dayton Boulevard from Browntown Road to Gadd Road   | Design       | Active |
| Red Bank 2014-2017 3R Grouping              | 130774.00 | The upgrade and retrofit of sidewalk ramps to comply with ADA/PROWAG standards.  | Design       | Active |
| Red Bank Intersection Improvements Grouping | RBINTER   | Signalization upgrades, loop detection, cabinets, LED lights, and pedestrian signals, mast arms/poles, and miscellaneous traffic control equipment on functionally classified streets. | Construction | Active |
| Bicycle Boulevard                           | N/A       | Creation of a bike lane running parallel to Dayton Boulevard running 2.2 miles   | Design       | Active |

These projects when constructed along with the implementation of recommendations (Technical Memo Number Two) from this Community Mobility Plan will make the Dayton Boulevard corridor safer for all users.

<sup>13</sup> <https://chcrpa.org/tip-amendments-and-adjustments/>



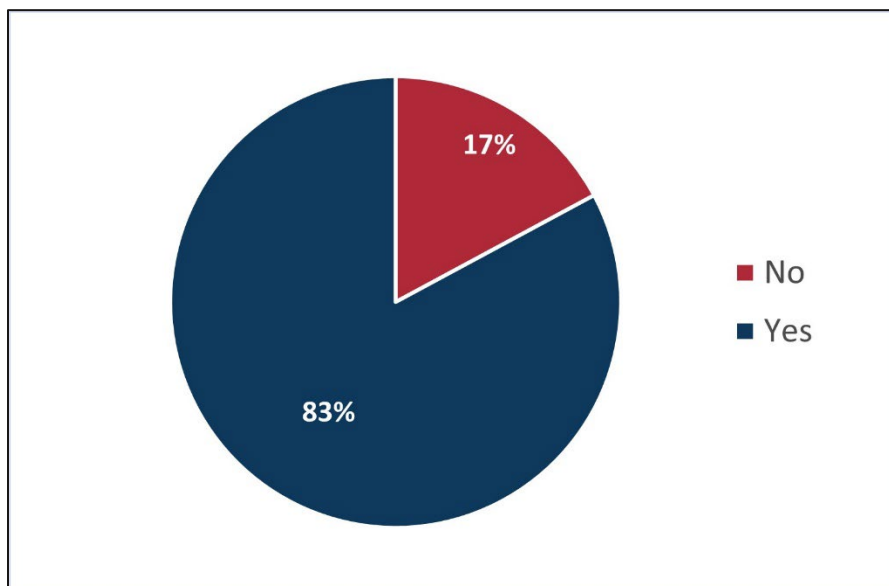
## ONLINE PUBLIC SURVEY RESULTS

As part of the public engagement effort for this project, an online public survey was made available to stakeholders and the public between December 9, 2022, through February 19, 2023. Users were asked a series of questions regarding basic demographic information, preferred transportation modes, reasons and obstacles for walking and biking, preferred improvements, and locations of needs and a mapping activity that show areas of interest/conflicts. Overall, there were 379 responses to the online survey. Throughout the project, there were multiple opportunities for public feedback. Below is a summary of the online survey results.

### I. DEMOGRAPHICS

Residents were asked basic demographic questions, such as age, race, zip code, and home street location in and around Red Bank. Of those surveyed, 83 percent of respondents live in Red Bank, as seen in Figure 15. The age of respondents closely resembled the composition of Red Bank according to the 2020 Census<sup>14</sup>. The survey was distributed at Red Bank High School, which helped the results capture the preferences of younger residents. 75% of survey responders identified as white, which is consistent with the demographic data from the US Census, which states 81% of all Red Bank residents identifies as white. Figure 17 below shows the racial makeup for all survey responders.

Figure 15: Percent of Surveyed Who are Red Bank Residents



<sup>14</sup> <https://www.census.gov/quickfacts/fact/table/redbankcitytennessee/INC110221>

Figure 16: Respondents Age Distribution

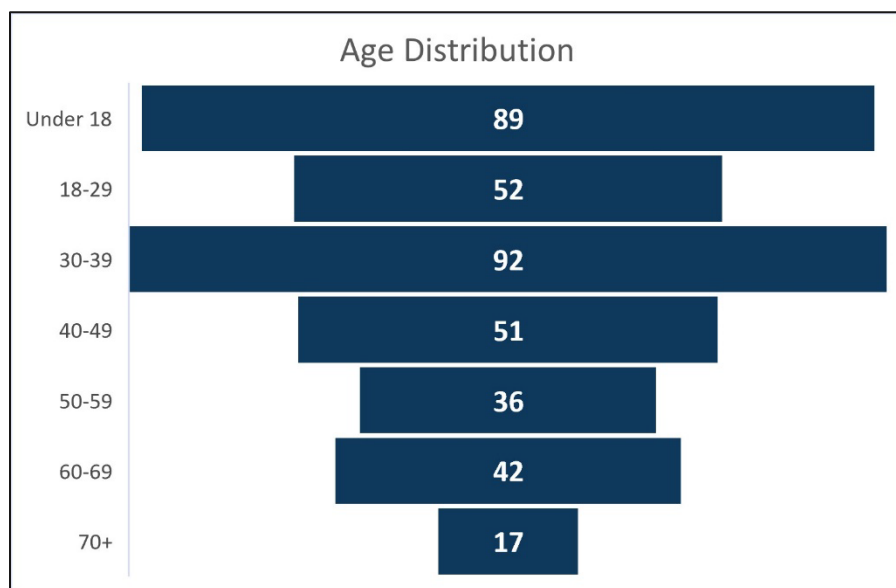
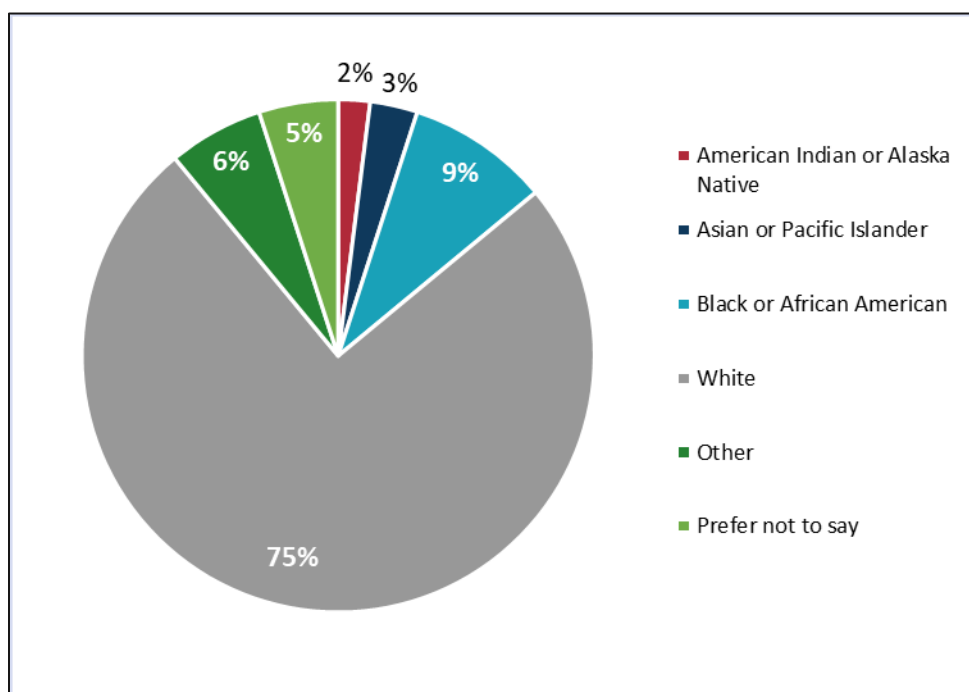


Figure 17: Race Make Up of Survey Responders

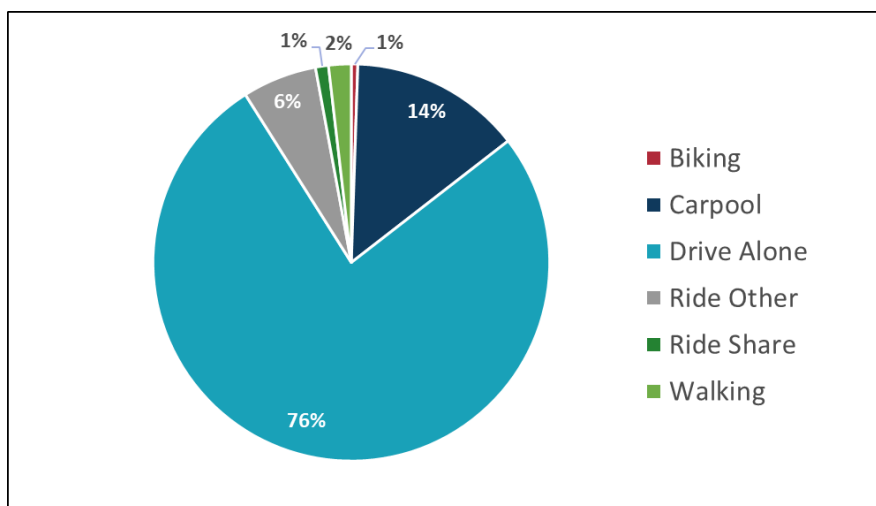


## II. TRANSPORTATION TRENDS

The survey's second section was dedicated to eliciting insights about transportation modes and their significance within the City of Red Bank. The second section of the public survey focused on gathering information on the importance of transportation, as well as preferred transportation

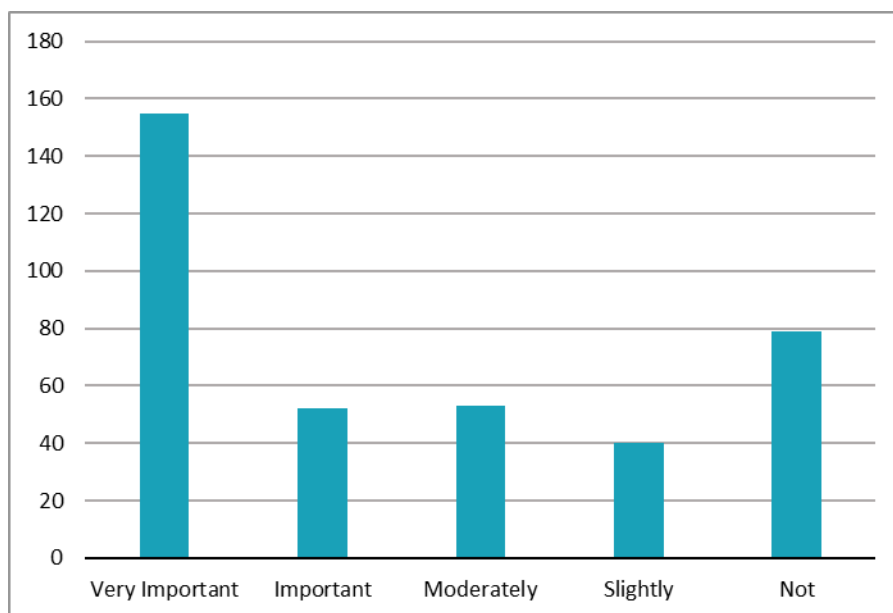
modes in the City of Red Bank.. Survey respondents were then asked a series of questions regarding their current transportation use, as well as obstacles or potential avenues for future transportation developments within Red Bank. When asked what their current main mode of transportation was, respondents overwhelmingly drove alone (76 percent), followed by carpooling (14 percent). Biking and walking made up only three percent of responses collectively.

Figure 18: What is your primary made of transportation?



As part of the Community Mobility Plan grant application, Red Bank expressed interest in making Dayton Boulevard more friendly to bicyclists and pedestrians. Residents of Red Bank were enthusiastic about bicycle and pedestrian improvements in the City of Red bank, with 54 percent stating that improvements to infrastructure were either very important or important. Only 21 percent of residents responded stating that these improvements were not important at all (Figure 19).

Figure 19: How important is walking/biking along Dayton Boulevard?



### III. IDENTIFIED IMPROVEMENTS

Figure 20: What prevents you from walking or biking on Dayton Boulevard?

| Reason                                 | Percentage |
|--|------------|
| Safety                                 | 23%        |
| Vehicle Speeds and Volumes             | 16%        |
| Distance to Destinations               | 8%         |
| Weather                                | 6%         |
| Terrain                                | 5%         |
| Lack of Bicycle/Walking Infrastructure | 21%        |
| Do Not Own a Bicycle                   | 7%         |
| Personal Mobility Challenges           | 1%         |
| Nothing                                | 9%         |
| No Interest                            | 4%         |

Questions 9 and 11 asked residents to describe improvements they would like to see along Dayton Boulevard, as well as at 3715 Dayton Boulevard (vacant middle school site). Both were open ended questions, but several themes emerged. Along Dayton Boulevard, there were a great number of comments that mention sidewalk and bicycle infrastructure improvements. Of the comments that discussed bicycle improvements, the majority discussed wanting protected bike lanes. Residents expressed a desire to have sidewalk quality improvements and additions of sidewalks on both sides of the road, in addition to more crosswalks. Finally, another emerging theme was rehabilitating buildings in the downtown area and increasing economic development.

When asked about preferred enhancements for 3715 Dayton Boulevard (vacant middle school site), respondents were very supportive of maintaining the property as a green space. Respondents noted that they would like some parking for residents to access a park, but they would mainly like a walking path, bike racks, improved sidewalks, and accessibility by public transit or bicycles.

### IV. MAP POINTS

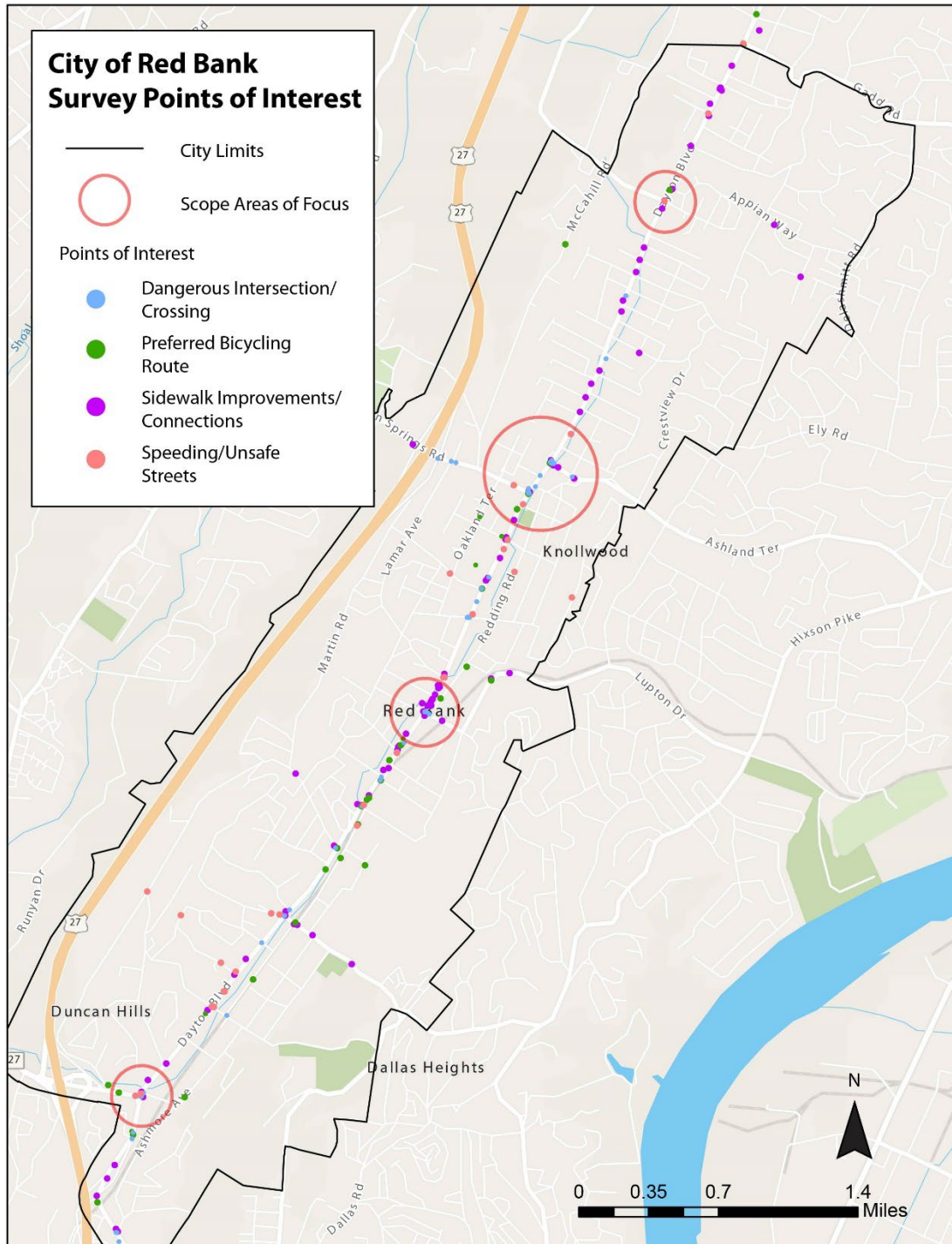
Respondents were asked to use a map to place points where they see opportunities and improvements along the Dayton Boulevard corridor in Red Bank. The categories that users could

identify were dangerous crossings/intersections, speeding/unsafe street, preferred bicycling route, and sidewalk improvements/connections. There were 503 points placed on the map. Of these points, 271 had comments. Of the comments, 35 percent were regarding sidewalk improvements and additions, 32 percent identified dangerous intersections and crossings, 17 percent identified desired bicycle infrastructure, and 16 percent identified speeding or unsafe streets.

When looking at location clusters of survey data, there are a few areas that generated a lot of resident feedback. At the Dayton Boulevard and Signal Mountain Road intersection, residents highlighted several safety concerns, particularly for pedestrians as there are no crosswalks and no sidewalks running southbound through the intersection. Pedestrians and drivers also perceived that drivers move too quickly through this intersection, which makes the area feel unsafe. At the Newberry Street and Dayton Boulevard intersection, respondents commented that it is a difficult spot to cross the street, particularly as the sidewalk abruptly ends on the southbound side of the street. There were also many comments asking for sidewalks along Dayton Boulevard from Newberry Street to Greenleaf Street. At the Ashland Terrace and Dayton Boulevard intersection, there are no signalized crosswalks along Dayton, which was a concern.

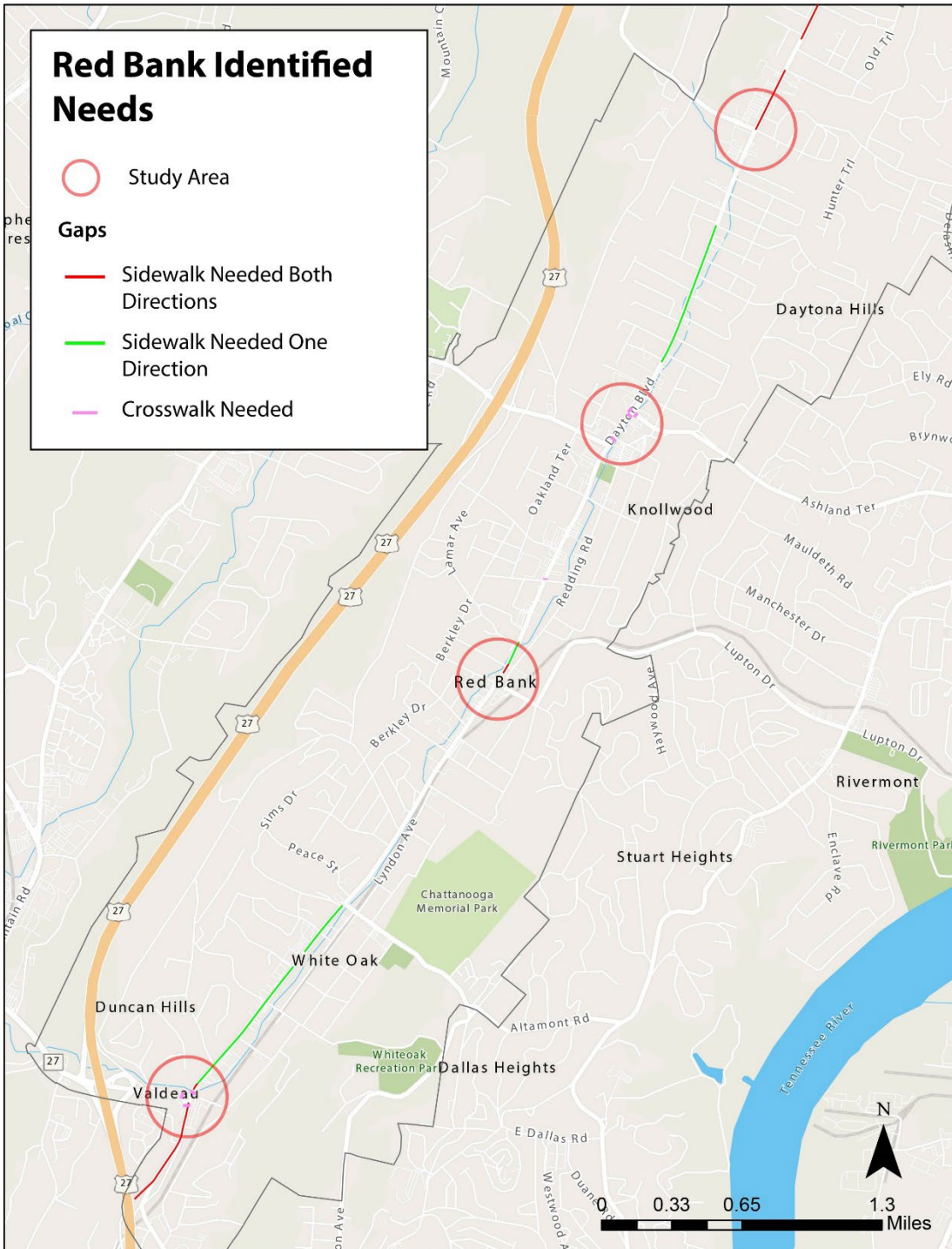
Lack of bicycle infrastructure was also a concern highlighted by the public throughout the entire corridor. Respondents emphasized the Bicycle Boulevard project that is in the design phase in Red Bank that will provide a path for cyclists on side streets, but residents still requested infrastructure along Dayton, connecting from Chattanooga through the tunnel south of the city. Bikers currently share lanes with cars, and because of proximity to drivers and blind curves, it is very dangerous. While there is fairly widespread sidewalk coverage along Dayton, there were many comments regarding continuity of sidewalks on both sides of the road. Respondents underscored that sidewalks often abruptly end on one side of the road, forcing unsafe crossings to get to the sidewalk on the other side. See Figure 22 below for all survey points, broken out by category.

Figure 21: Survey Points of Interest





### Figure 22: Survey Identified Needs



## PUBLIC INFORMATION OPEN HOUSE

Following the online survey and inventory of existing infrastructure along the study corridor, the project team attended Red Bank's annual Jubilee on May 6, 2023. During the Jubilee, the project team provided attendees with information about the purpose and process for developing the Red Bank Mobility Plan and shared the goals, vision, and timeline for completing the plan. The project team also invited Jubilee attendees to look at maps of existing conditions and online survey data. Attendees were asked to fill out comment cards to share any issues or ideas they had for improving the Dayton Boulevard corridor in the future. The project team received roughly 20 comment cards and spoke to about 50 Jubilee attendees. Below is a summary of the input.

Figure 23: Pictures from Red Bank's Annual Jubilee



Much like the online survey results, the main issue the public noted with Dayton Boulevard was the lack of sidewalk continuity. They articulated that sidewalks abruptly start and stop without infrastructure to safely cross the road. The team also got feedback that there was a desire for a CARTA bus route through Red Bank, specifically to access Chattanooga to the south, as well as a stop at Food City. Jubilee participants also stated that safety was a big concern. Specifically, a considerable number of car accidents take place at intersections, which is further compounded by insufficient pedestrian infrastructure. They also had a perception that drivers are moving too quickly along the corridor for pedestrians and other drivers to maneuver safely to their destinations. Finally, they noted that there was not adequate bicycle infrastructure in Red Bank, and residents did not seem to be aware of the future Bicycle Boulevard project that will help address this issue.



## PUBLIC MEETING

Finally, after using the information gathered from the Public Information Open House and the online survey, the team assessed the needs of the community and formulated initial draft recommendations. On July 15, 2023, the team presented all findings and draft recommendations to members of the public at the Red Bank Community Center. After the presentation, the team took questions and comments on the recommendations. This feedback is captured in the recommendations section below starting on page 50. General overall recommendations for the Dayton Boulevard corridor are discussed, as well as specific recommendations for each of the four key study focus areas identified in the Needs Assessment section above.

Figure 24: Pictures from July 15th, Public Meeting



## NEEDS ASSESSMENT

### I. COMMON ISSUES AND POTENTIAL SOLUTIONS

In response to interest by the steering committee and in conjunction with public input, the study identified transportation needs related to a variety of issues. The team evaluated the needs and identified potential solutions. The issues and needs were categorized into various areas, outlined as follows:

- Access Management
- Continuous Pedestrian Infrastructure
- Bicycle Infrastructure
- Pedestrian Crossings
- ADA Compliance
- Parking Management

#### ACCESS MANAGEMENT

Access management is a term for a set of techniques that control several elements of a street, such as the spacing, design, and operation of driveways, turns, medians, and intersections. Access management is needed to clearly define the road, designate specific locations for vehicles to access the roadway from adjacent parcels, delineate vehicular and pedestrian spaces, reduce conflicts, increase safety, and simplify traffic operations. In some locations this would require adding curb and gutter.

#### CONTINUOUS PEDESTRIAN INFRASTRUCTURE

Project stakeholders and members of the public highlighted concerns regarding existing bicycle and pedestrian infrastructure. Although Dayton Boulevard has roughly five miles of sidewalks throughout Red Bank, the sidewalks are often only on one side of the road. The sidewalk infrastructure also often abruptly ends and re-starts on the opposite side of the road, forcing awkward and often dangerous crossings for pedestrians.

Figure 25: Dayton Boulevard at Newberry Street - Sidewalk Abruptly Ends

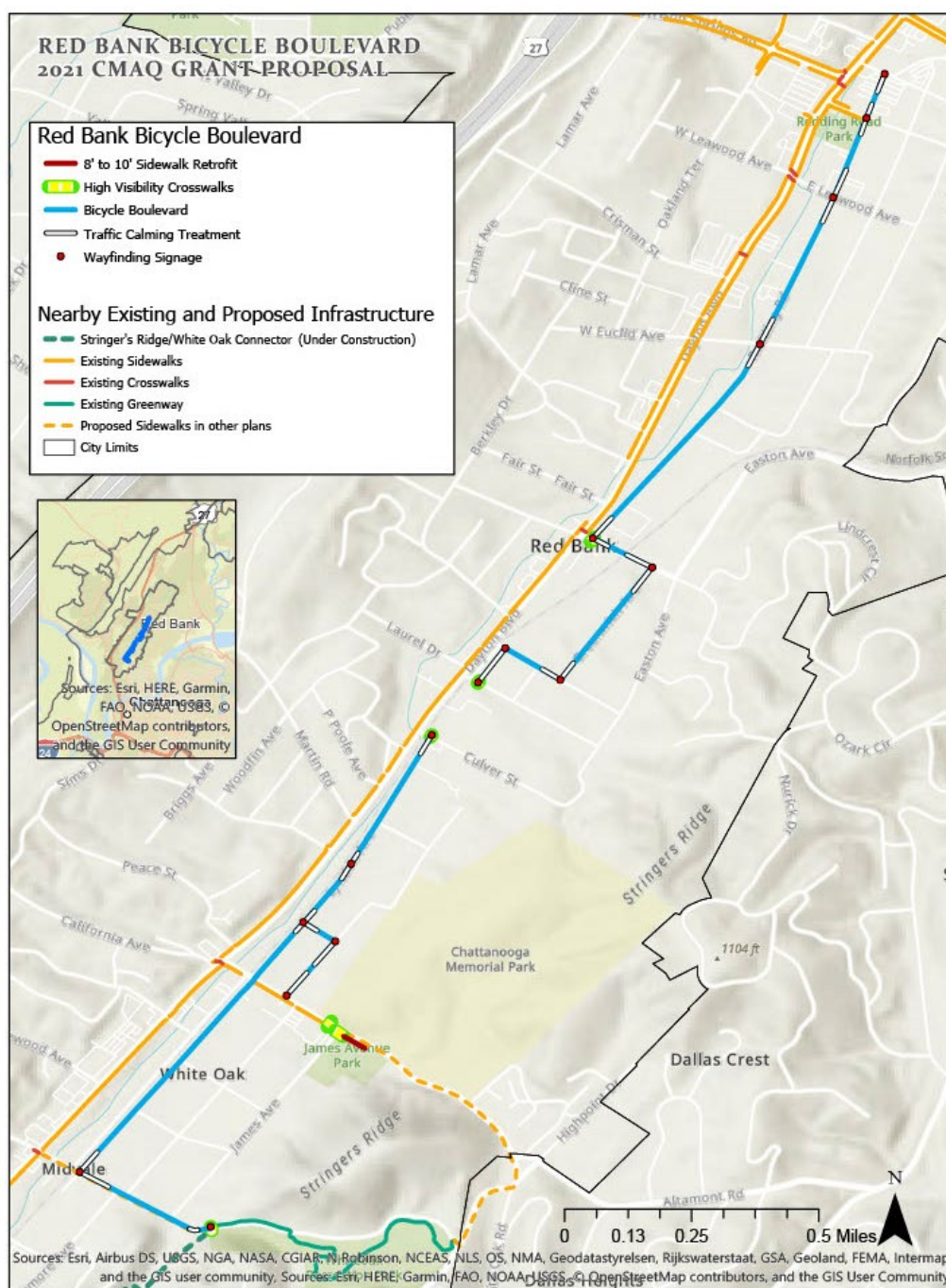


Survey respondents highlighted the need for sidewalk coverage starting north of Signal Mountain Road and continuing into Chattanooga, as well as between Greenleaf Street and Newberry Street. Currently, there is no pedestrian infrastructure in these areas. Throughout the corridor, pedestrians highlighted areas where the sidewalk abruptly ends, including at Dayton Boulevard at Memorial Drive and at Newberry Street (see Figure 25).

### **BICYCLE INFRASTRUCTURE**

Currently, there is no bicycle infrastructure along Dayton Boulevard or along any road in the City of Red Bank. During the Public Information Open House, several residents said they are often forced to cycle on sidewalks or in traffic with cars speeding past them. Red Bank has received a grant from the Tennessee Department of Transportation (TDOT) to build a bike trail through the city. The path will be known as the Bicycle Boulevard and will be 2.2 miles along side streets paralleling Dayton Boulevard. It is part of a larger network of pedestrian and bike paths in the Chattanooga area.

Figure 26: Proposed Bicycle Boulevard



Despite this ongoing project, residents and stakeholders highlighted a desire for additional bicycle facilities along Dayton Boulevard. Residents had specific concerns with the Ashland Terrace intersection, as cyclists feel drivers do not yield to them, particularly when turning right or left. Many people highlighted the desire for protected bike lanes on Dayton Boulevard in tandem with the Bike Boulevard.



## PEDESTRIAN CROSSINGS

Project stakeholders and online survey respondents highlighted many concerns about the need for additional marked pedestrian crossings, as well as improving visibility and safety of existing crossings. Several intersections do not have crosswalks going across each direction of traffic, and several do not have crosswalks at all. Dayton Boulevard at Ashland Terrace was emphasized as the most dangerous intersection to cross as a pedestrian, and survey responses requested signalized crossings.

Figure 27: Lack of Crosswalks in Intersection



Figure 28: Lack of Crosswalks in Several Directions



There are currently four pedestrian refuge islands at crossings not located at signalized intersections along Dayton Boulevard within Red Bank. However, survey respondents raised the issue that despite these crosswalks, they are not sufficiently visible, so drivers tend to ignore pedestrians trying to cross. They also highlighted that these crossings are not illuminated properly, which makes it more difficult for pedestrians to see when crossing and can contribute to pedestrians feeling less safe. These crossings not at signalized intersections need rectangular rapid flashing beacons (RRFB).

Figure 29: Crossing Not at Signalized Intersection



## ADA ACCESSIBILITY

Sidewalk, crossing, and curb ramp improvements are needed to ensure compliance with the Americans with Disabilities Act (ADA). Considerations include providing a sufficiently wide (four-foot) clear path and minimal (<2%) cross-slope on sidewalks and curb ramps with maximum 1:12 slope. Stakeholders highlighted issues of sidewalk clearance particularly along the roadway at Dayton Boulevard at Ashland Terrace.

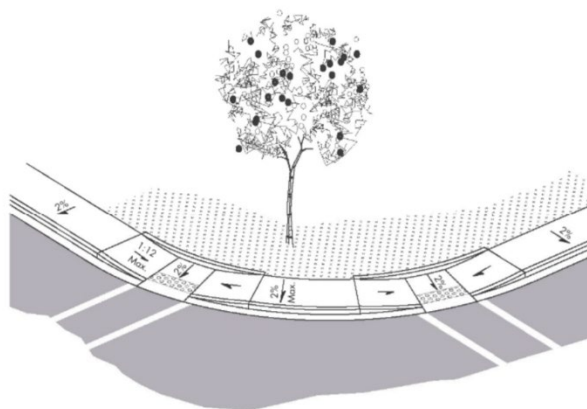


Figure 3-28. Parallel Curb Ramps

© 2021 by the American Association of State Highway and Transportation Officials.

## PARKING MANAGEMENT

Managing the provision and organization of parking, especially along high-activity locations, can reduce congestion on the surrounding corridors. Particularly in the northern end of Dayton Boulevard through Red Bank, several businesses do not have adequate, organized parking options for customers. Instead, cars often are in the right-of-way and are too close to traffic along the corridor.

## **SAFETY AND SPEEDING**

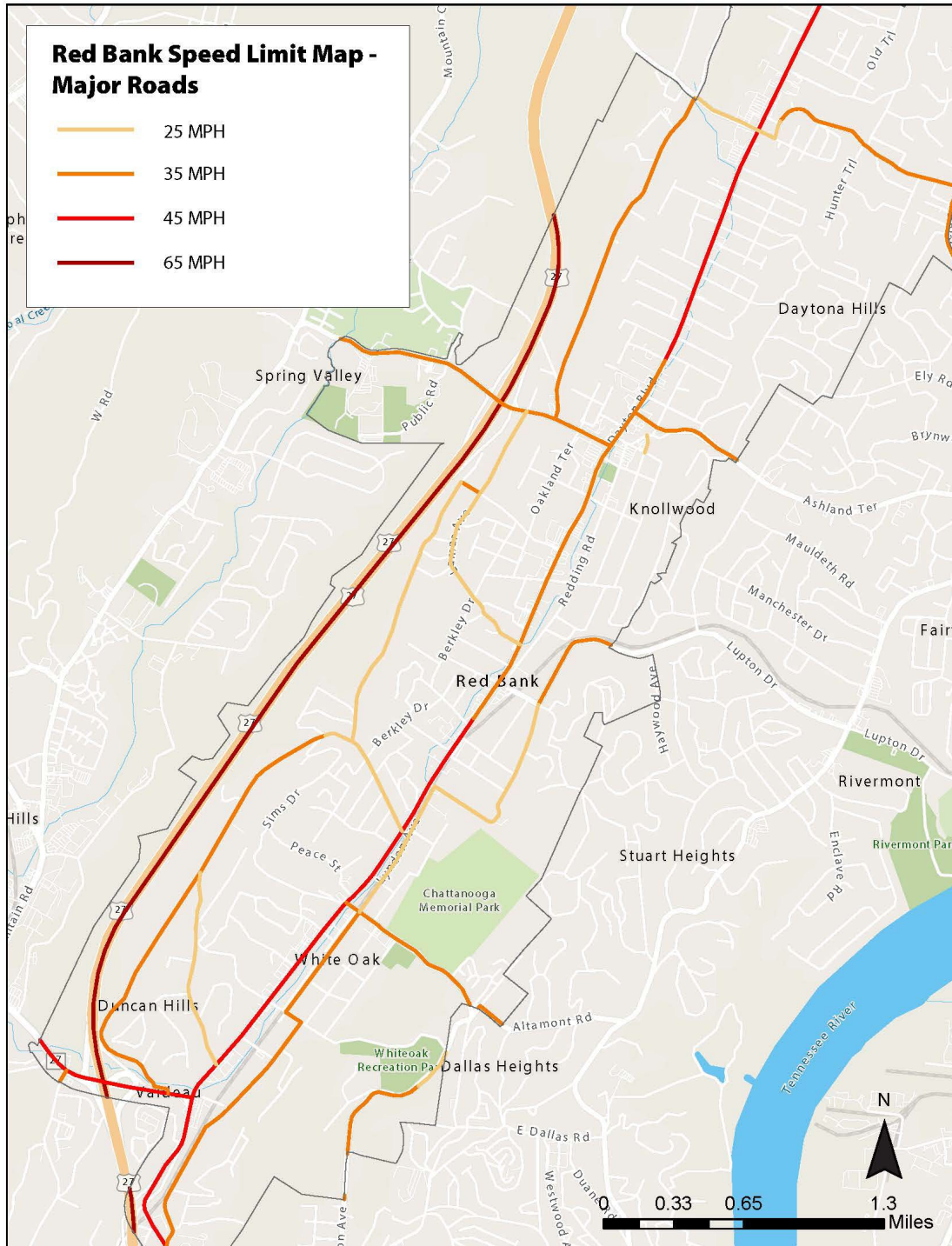
Because Dayton Boulevard is a four-lane roadway that serves as a commuter thoroughfare for communities north to travel into Chattanooga, speeding and safety was reported by some residents to be an issue along Dayton Boulevard. Feedback from stakeholders and members of the public reinforced that public perception is that cars move too fast throughout the entire corridor. Particularly along the southern end of the corridor, the public felt that cars move too quickly through the Signal Mountain/Dayton Boulevard and Midvale/Dayton Boulevard (McDonalds) intersections. Below are several comments from the survey highlighting this issue at the southern end of the corridor:

- “Fast cars, Can't cross the road”
- “Frequency speeding and narrowly missed crashes.”
- “Difficult area because of traffic”
- “Speeding issues”
- “Speeding, unsafe intersection”

See below (Figure 30) for a map of the speed limits of major roads in Red Bank.



Figure 30: Speed Limits of Major Roads in Red Bank



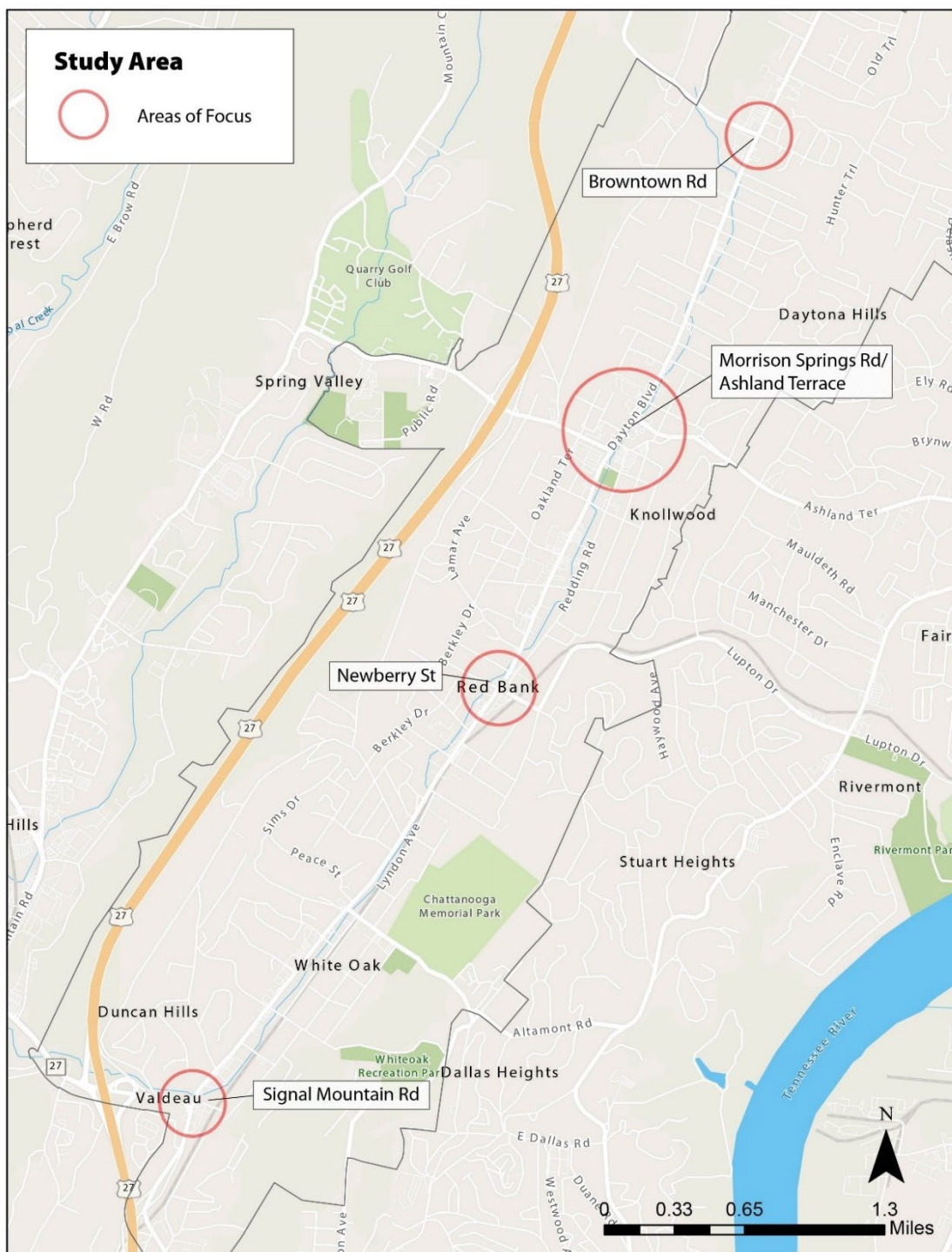




## II. FOCUS AREAS

The study focused on several areas of interest that were identified by the stakeholder committee in the grant application for the City of Red Bank. In the grant, the city identified three major intersections along Dayton Boulevard that they felt would benefit from improvements – at Signal Mountain Road, Morrison Springs Road at Ashland Terrace, and Browntown Road. After the initial round of analysis on the public online survey, it became clear that the public had many comments and concerns about the intersection of Dayton Boulevard at Newberry Street. As a result, the project team incorporated this intersection, subsequently designating it as another focus area of the study. See map below (Figure 31) with focus areas highlighted.

Figure 31: Project Study Areas



While these are the areas of interest, the study focused on the larger context of Red Bank as well looking at the overall flow of Dayton Boulevard, as well as other ongoing infrastructure projects in the city.

Figure 32: Dayton Boulevard at Signal Mountain Road



At the south end of the study corridor, Signal Mountain Road intersects Dayton Boulevard. This is a busy intersection, as it is a connector to nearby US 27, which runs south into Chattanooga. There is limited pedestrian infrastructure here with no sidewalks or marked crossings. Stakeholders and the public expressed a desire for better pedestrian access through this intersection, as there is no way to safely cross any of the roads. There is also a desire for bike and pedestrian access going south to Chattanooga.

The intersection at Signal Mountain Road has the highest number of crashes in the corridor, as well as the highest number of crashes resulting in an injury. Survey respondents reported that drivers speed through this intersection, as well as run the light when it is red. The intersection is offset as well, with Spring Road intersecting Dayton Boulevard roughly 100 feet to the north. Due to high traffic volumes recorded on Signal Mountain Road, realignment could prove beneficial.

Finally, the shops and restaurants surrounding this intersection have a lack of sufficient access management for their parking lots and driveways. This lack of well-defined curbs to delineate private property and control access to properties contributes to the safety issues, crashes, and traffic flow at this intersection. Below is an example of a business at this intersection with opportunities to improve access management.

Figure 33: Lack of Access Management



Figure 34: Dayton Boulevard at Newberry Street



This intersection has some pedestrian infrastructure, with signalized crossings running across both Dayton Boulevard and Newberry Street. However, the pedestrian infrastructure has continuity issues, with the sidewalk abruptly ending on the southbound side, forcing pedestrians to cross the road at Newberry Street (Figure 33 below). Survey results highlighted that this is a difficult crossing, particularly for those on a bicycle. Access management is also an issue here, with a lack of defined curbs at many businesses along Dayton Boulevard at this intersection.



Figure 35: Sidewalk Abruptly Ends



Figure 36: Dayton Boulevard at Morrison Springs Road/Ashland Terrace



A key element of the Red Bank 2035 Plan is to create a central business district along Dayton Boulevard between Morrison Springs Road and Ashland Terrace, which is where the Food City and the highest density of businesses is located. In this area, there are marked and signalized crosswalks running across Dayton Boulevard, as well as across Morrison Springs Road. At the Ashland Terrace intersection, there is a marked crosswalk across Dayton Boulevard, but none across Ashland Terrace. The crosswalk is not signalized. Additionally, at Morrison Springs Road, the existing sidewalks are not ADA compliant, with utility poles and streetlights located in the center of the sidewalks (Figure 34 below). During the project team's site visit, as well as through Google Maps Streetview analysis, there appeared to be issues with sidewalk quality as well. Particularly in front of the shops at the Morrison Springs Road intersection, the sidewalk is uneven and broken in several locations. At crosswalk locations, curb ramps need to be ADA compliant as well.

Figure 37: Not ADA Compliant

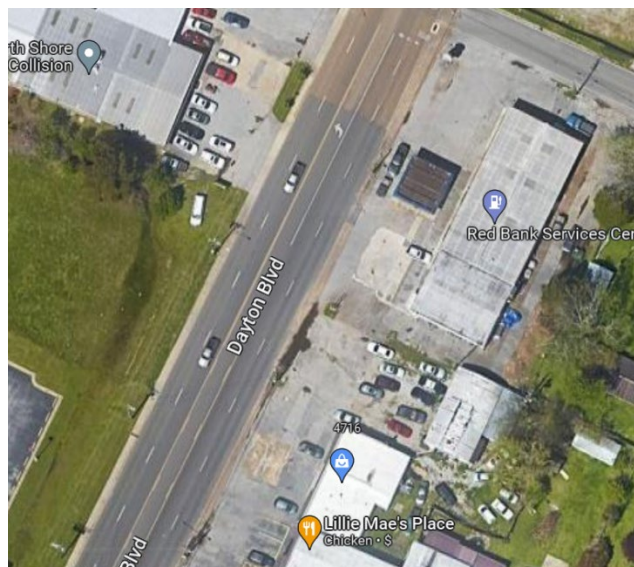


Figure 38: Dayton Boulevard at Browntown Road



Currently the Dayton Boulevard and Browntown Road intersection signal operates with permissive only left turns, which causes left turn yielding issues. It could be beneficial to modify this to be a protected left turn. At the businesses on either side of Dayton Boulevard, there are limited access management strategies, with very few curbs and driveways used. Several of these businesses also do not have proper parking management, with unmarked parking spaces (Figure 35). Therefore, in several areas there are cars parked in the public right-of-way along Dayton Boulevard.

Figure 39: Parking Management Issues



North of this intersection there are no sidewalks on either side of the road (Figure 36 below). There are also no marked or signalized crosswalks throughout this intersection.

Figure 40: Browntown Road Intersection



## BEST PRACTICES FOR IMPROVEMENTS

After examining the common issues that are confronting the study area in Red Bank, the project team began looking into potential pathways for improving mobility in the study area. While these are not specific recommendations, these best practices for improvement will help guide and shape recommendations within the four focus areas.

At all of the intersections highlighted in the study area, stakeholders and survey respondents highlighted safety and speed as issues with traffic flow. Implementing traffic intersection control measures is crucial to tackle this issue. A road diet involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way



## City of Red Bank Community Mobility Plan

left-turn lane (TWLT<sup>15</sup>). Removal of traffic signals at several smaller intersections along the corridor and modifying them to be Right-In, Right-Out or a Restricted Crossing U-Turn (RCUT) improves safety by decreasing potential conflict points, as well as improving overall roadway operations. Traffic signals can also be modified to implemented protected or protected-permissive left turns based on the number of angle crashes in an area.

Figure 41: Road Diet<sup>16</sup>

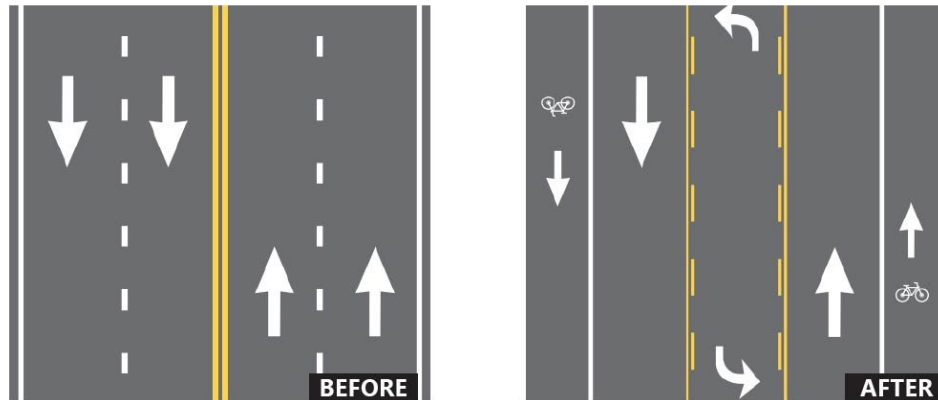


Figure 42: Signal Improvement<sup>17</sup>



Parking and access management are both important issues to address traffic flow problems in the area. Access management manages vehicle access points to parcels adjacent to roadways. Red Bank should ensure driveways are clearly marked by curbs, as well as ensure there are fewer driveways spaced further apart to allow more orderly merging of traffic<sup>18</sup>. Business driveways should not be in or around an intersection and access should instead be provided through side streets. Parking management requires a systemic manner of parking for every business or parcel along a roadway. Instead of allowing cars to park randomly or within a

<sup>15</sup> FHWA

<sup>16</sup> FHWA

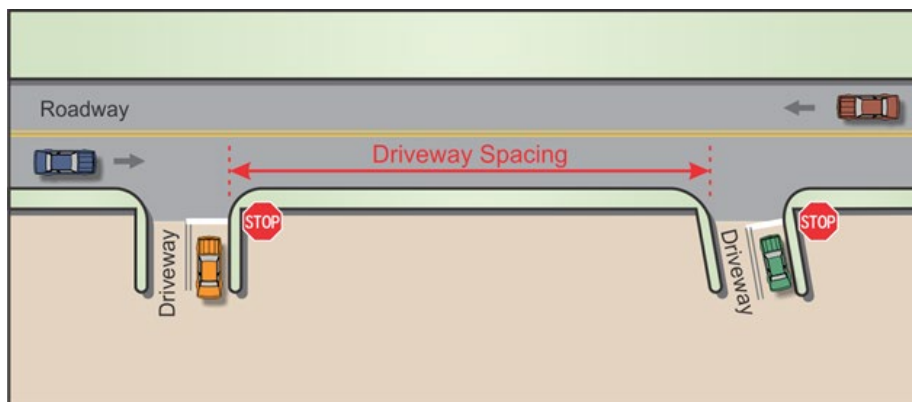
<sup>17</sup> FHWA

<sup>18</sup> [https://ops.fhwa.dot.gov/access\\_mgmt/what\\_is\\_accsmgmt.htm](https://ops.fhwa.dot.gov/access_mgmt/what_is_accsmgmt.htm)



roadway's right-of-way, proper parking management requires parking spaces to be regulated and clearly marked. Both parking and access management policies can help manage the flow of traffic along a busy corridor.

Figure 43: Access Management<sup>19</sup>



Pedestrian safety was also a major issue highlighted in assessing the area's needs. Installing more sidewalks to cover both sides of Dayton Boulevard would be an important improvement, as well as installing protected or separated bicycle lanes. Additionally, sidewalk quality is an issue, particularly when it comes to ADA compliance. New and existing sidewalks should ensure curb ramps with proper grade to the road, in order to accommodate those with disabilities. Sidewalks should also have a minimum of 4' of clearance to allow for wheelchairs. Utility poles or other barriers should not be placed in areas that impede this clearance.

Figure 44: Bicycle and Pedestrian Infrastructure<sup>20</sup>



<sup>19</sup> FHWA

<sup>20</sup> MLive.com

## RECOMMENDATIONS

### I. GENERAL RECOMMENDATIONS

#### TRAFFIC COUNT COLLECTION

In order to recommend traffic improvements along Dayton Boulevard, the City of Red Bank would need to conduct a traffic study for Dayton Boulevard, as well as other major roads that intersect Dayton Boulevard. Throughout the plan development process, the City of Red Bank has asked the project team if a road diet is appropriate for Dayton Boulevard. According to the TDOT Geometric Design Guidelines a Road Diet is the reduction of vehicular lanes of an existing four or six lane roadway to a three or five lane roadway to improve safety, and/or accommodate non-motorized users to achieve systemic improvements. Particularly when considering a road diet, the Federal Highway Administration (FHWA), as well as TDOT, have developed specific guidelines for selecting roadways that warrant a road diet to mitigate negative impacts on traffic operations. Additionally, when looking at realigning intersections or implementing traffic calming measures, traffic counts will help select the most appropriate traffic solution and understand the impacts of the solution.

The FHWA recommends the following operational metrics when conducting a traffic study:

- Daily traffic counts
- Peak hour traffic counts
- Turning movement traffic counts
- Intersection queue lengths
- Travel times
- Travel speeds
- Adjacent street traffic counts and speeds
- Bicycle and pedestrian counts

After the traffic study data collection is complete, the data will be reviewed and analyzed. The results of the data analysis will inform the City of Red Bank on whether or not a road diet would be feasible for right sizing locations along Dayton Boulevard. A road diet could convert the existing four-lane road into a three-lane segment, typically consisting of two through lanes and a center, two-way left turn lane. After a road diet, a roadway typically experiences fewer crashes, reduced vehicle speeds, improved mobility, and safer conditions for walkers or bikers.

#### WAYFINDING OPPORTUNITIES

During the public outreach portion of this project, many residents highlighted the lack of safe and protected bicycle infrastructure along the Dayton Boulevard corridor. Due to the existing capacity, speeds, and absence of a shoulder along Dayton Boulevard, the project team directed their efforts towards enhancing bicycle infrastructure on neighboring roads in Red Bank. Specifically, the existing Bike Boulevard project (Appendix B) will bring a safe and marked bike route from Red Bank to Chattanooga. The project team recommends continuing the Bike Boulevard along side streets with wayfinding and signage along the side streets and Dayton Boulevard. This approach would direct cyclists to the Bike Boulevard route that will run parallel with Dayton Boulevard.

Additionally, although the Bicycle Boulevard will serve as an alternative to cycling on Dayton Boulevard, the proposed Boulevard only runs north until the Dayton Boulevard at Morrison

Springs Road intersection. While extending the Boulevard is beyond the scope of this project, the project team recommends extending the Bike Boulevard north of this intersection. Many residents on the north end of Red Bank feel excluded from planning and future projects, as heard during public outreach. In order to connect all of Red Bank, the city should work to extend the Boulevard further north.

### **SIDEWALK CONTINUITY AND CROSSINGS**

As discussed previously in this document, pedestrian safety along Dayton Boulevard is a concern regarding the lack of continuous, high-quality sidewalks along the roadway. Often, the sidewalks will stop abruptly with no marked crosswalk or signal to safely reach the other side of the road where the sidewalk continues. There are also several sizable gaps in sidewalk coverage on either side of the road.

Throughout the four focus areas, the project team recommends adding sidewalks in areas where there are gaps. High Intensity Activated Crosswalk (HAWK) signals should also be added in areas where crossings are unmarked and dangerous. Sidewalk quality should also be assessed and repaired in areas where the sidewalk is crumbling or is not ADA compliant. The following section presents the recommendations of each of the four focus areas. Each of the four areas requires new sidewalk connections and crossings.

### **PUBLIC TRANSPORTATION**

Throughout the stakeholder and community engagement process, the project team received feedback that community members desire public transit access in Red Bank. In the past, Red Bank was served by a Chattanooga Area Regional Transportation Authority (CARTA) route that ran down Dayton Boulevard into Chattanooga. However, due to funding, the bus route was eliminated, leaving Red Bank as a transit desert. Currently, Red Bank is only served by CARTA's Care-A-Van service, which serves qualifying seniors 65 and older and individuals with temporary and permanent disabilities. Red Bank residents who want to use the Care-A-Van service need to have a completed, approved and current CARTA Eligibility Application on file before booking a trip.

As seen in the map below (Figure 41), there are a significant number of households that do not have a personal vehicle available, thus residents are unable to reach surrounding areas for employment. These areas with low car ownership rates also tend to correspond with areas of higher poverty rates (Figure 42). Residents highlighted a desire for more connections with Chattanooga to the south, as well as access to the Food City along Dayton. In order to address these issues of equity and access, the project team recommends meeting with CARTA to discuss reinstating the former bus route that ran through Red Bank or designing a new route or on-demand service that will connect residents of Red Bank to local grocery stores and employment centers.

Figure 45: Zero Car Households

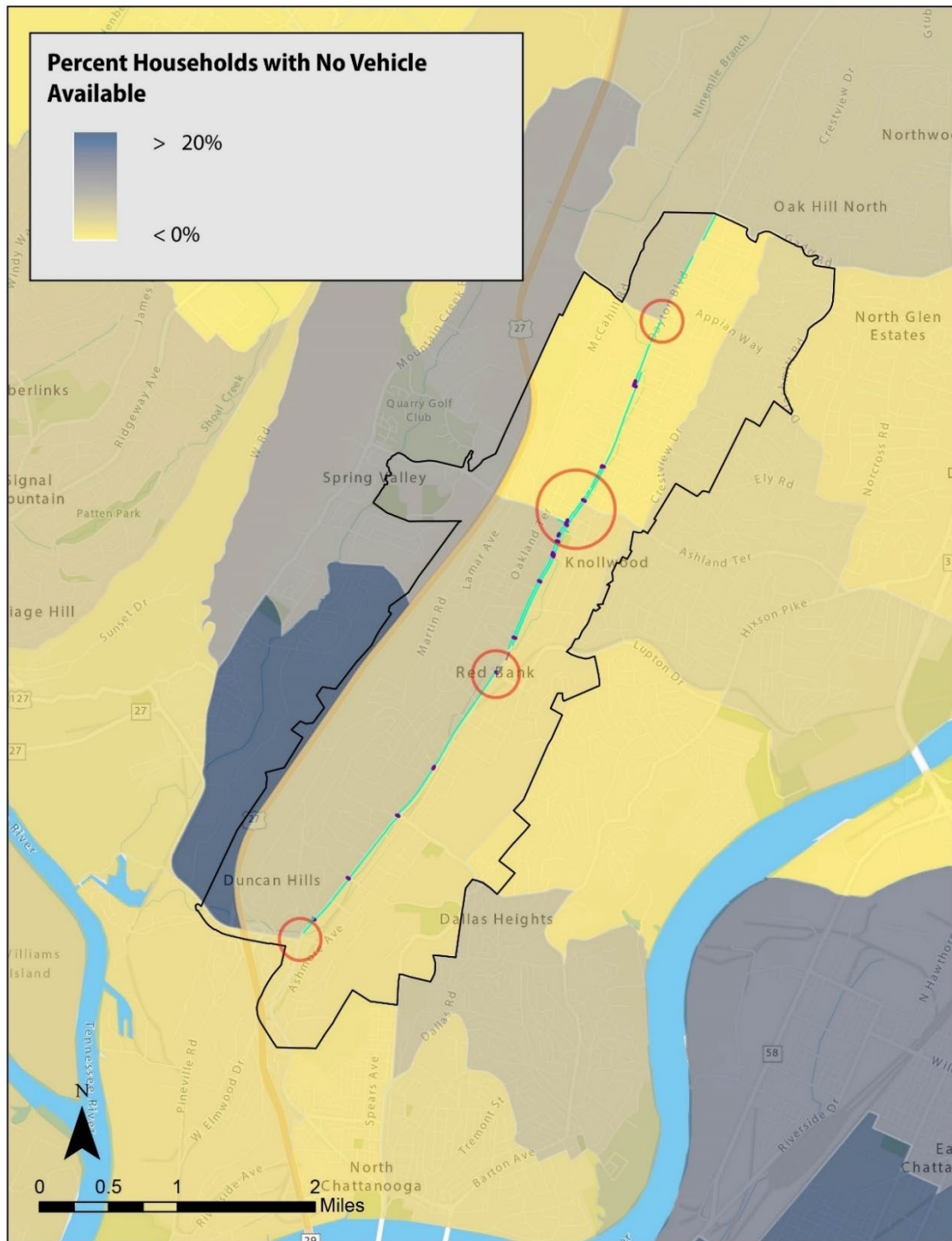
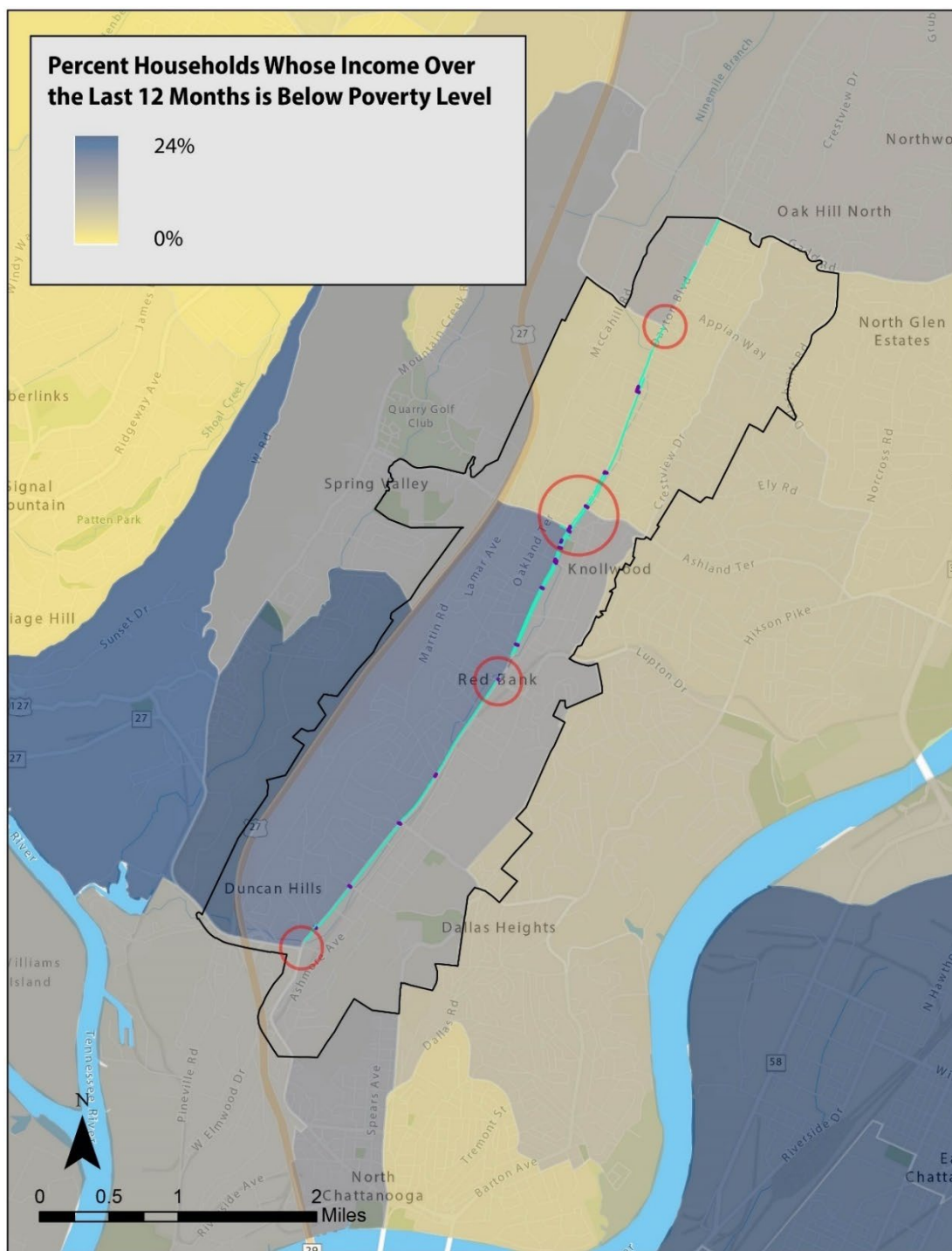




Figure 46: Population Under the Poverty Level



### CONSISTENCY WITH RED BANK'S LAND USE PLAN

While many of the recommendations proposed in this Community Mobility Plan align with Red Bank's existing land use categories, not all of them are currently permitted. The corridor and focus areas primarily consist of commercial land use, with scattered residential areas interspersed.

However, it is important to note that the suggested recommendations can be applied across all land use categories in Red Bank.

## FOCUS AREA RECOMMENDATIONS

The section above outlines general recommendations that can improve conditions along the entire Dayton Boulevard corridor, however, the following section highlights the recommendations for the four focus areas that are outlined in the Needs Assessment section. These recommendations were made based off the data/information the project team were able to access at this time.

1. These recommendations are planning level concept ideas and would require further engineering to determine project feasibility, scope, design, and cost prior to being constructed. For each of the recommendations, planning level cost estimates are provided below in Appendix C.
2. TDOT's updated 2023 Cost Estimate tool was used, which included the following changes from the 2021 version:
  - a. The updated tool has updated/higher unit costs for multiple items of construction reflective of recent inflation.
  - b. Mobilization increased from 5% to 10%.
  - c. Additional items increased from 10% to 20%.
  - d. Construction Contingency (non-structures items) increased from 30% to 50%.
  - e. Construction Engineering and Inspection costs increased from 10% to 15%.
  - f. Structure contingencies added – this affected the cost of the pedestrian bridge near Newberry.
3. The following assumptions were used to develop the 2023 cost estimates for the recommended improvements:
  - a. Since right-of-way (ROW) estimates were calculated differently in TDOT's 2023 Cost Estimate Tool, the project team's evaluation of the impacts was subjective. These planning level estimates for ROW should be updated by location as the recommendations move from planning to the design phase.
4. The earthwork calculation computed in TDOT's 2023 Cost Estimate Tool was removed and quantities were added based on the area of new proposed sidewalk to develop the planning level cost estimates. The estimates for new sidewalk should be updated by location as the recommendations move from planning to the design phase.
5. TDOT's 2023 Cost Estimate tool was used to develop the drainage quantities for anticipated new pipe and catch basins that are generally required with the construction of curb and gutter. The planning level cost estimates for drainage could be higher than what's needed. Actual cost for curb and gutter should be further refined as recommendations move from planning to the design phase.

## **DAYTON BOULEVARD AT SIGNAL MOUNTAIN ROAD**

At the southern end of the study area, Signal Mountain Road and Dayton Boulevard have the highest concentration of crashes among the four-study area locations. As constructed currently, there are limited pedestrian infrastructure with no sidewalks, as well as no marked crosswalks.

Improving this intersection to enhance pedestrian safety would be to add sidewalks on both sides of the intersection. Along the southbound side of Dayton Boulevard, the sidewalk could stretch from the entrance to the existing apartment complex, through the Signal Mountain Road intersection and end across from the Ace Hardware. Northbound Dayton Boulevard, sidewalks should be installed starting at the Scenic City Self Storage and would connect to the existing sidewalk. Crosswalks are recommended to cross Signal Mountain Road, Dayton Boulevard, and Spring Road.

The recommended sidewalks running northbound along Dayton Boulevard will improve issues associated with access management. The installation of defined curbs and driveways along this portion of Dayton Boulevard will control where motorists can enter and exit parking areas. This recommendation would not only reduce the number of vehicle collisions, but also reduce the amount of vehicle interactions with pedestrians.

Overall, a total of approximately 2,155 feet of new sidewalk is recommended for this focus area, along with the addition of five new pedestrian crossings. Figure 43 shows the recommended improvements at this intersection. The sidewalks in this location vary in width, ranging from 6 to 12 feet. The wider sidewalks, spanning from south of Signal Mountain Road to the existing housing development and in front of the current businesses, are particularly focused on implementing access management strategies. Notably, at the intersection, pedestrian refuge/medians are being installed, featuring various vegetation from TDOT's approved Landscape Design Guidelines.



Figure 47: Improvements at Signal Mountain Road





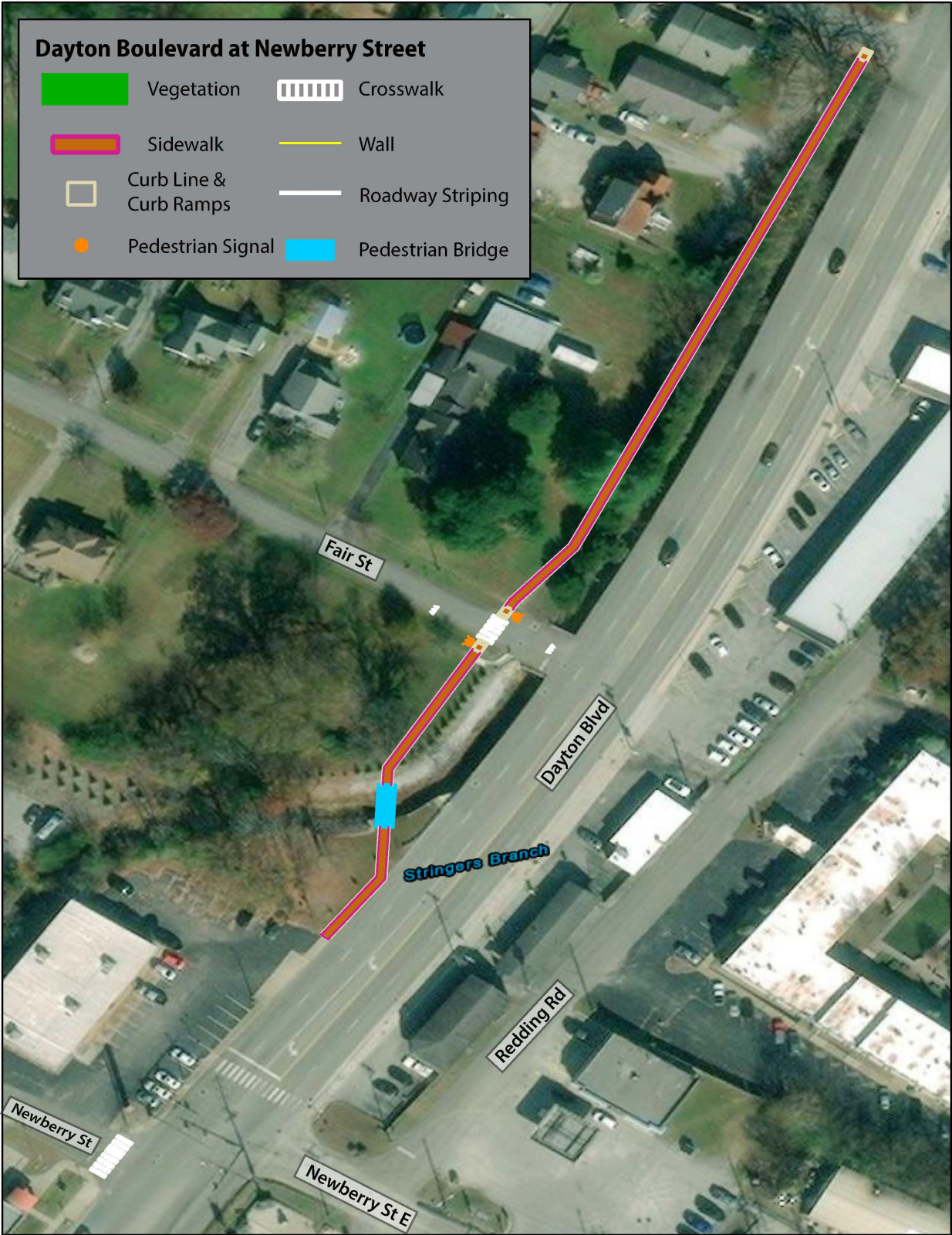
### **DAYTON BOULEVARD AT NEWBERRY STREET**

The intersection of Newberry Street and Dayton Boulevard as currently constructed creates a problem for both vehicular and pedestrian traffic. The intersection is not a traditional four-way intersection due to the alignment of Newberry Street on both sides of the intersection. There are currently no safe crossings across Newberry Street and there are not continuous sidewalks on either side of Dayton Boulevard.

To improve pedestrian access at this intersection, a marked crosswalk will be placed across Newberry Street on the west side of Dayton Boulevard. A sidewalk will be installed on the west side of Dayton Boulevard from the existing sidewalk in front of AutoZone Auto Parts to Greenleaf Street. This recommended sidewalk would cross over Stringers Branch with a pedestrian bridge.

Around 660 feet of new sidewalk is recommended to be added to this focus area. Figure 44 shows the recommendations for the Dayton Boulevard and Newberry Street intersection. The proposed improvements at this location may necessitate easements from property owners for the construction of the sidewalk. Once the location is surveyed, the City of Red Bank will have all the necessary information to determine if an easement is required and the specific area needed.

Figure 48: Improvements at Newberry Street



### **DAYTON BOULEVARD AT MORRISON SPRINGS ROAD/ASHLAND TERRACE**

Since Morrison Springs Road and Ashland Terrace both intersect Dayton Boulevard less than .25 miles apart in downtown Red Bank. Since this portion of Dayton Boulevard has a high AADT, this creates safety and mobility concerns for drivers, cyclists, and pedestrians.

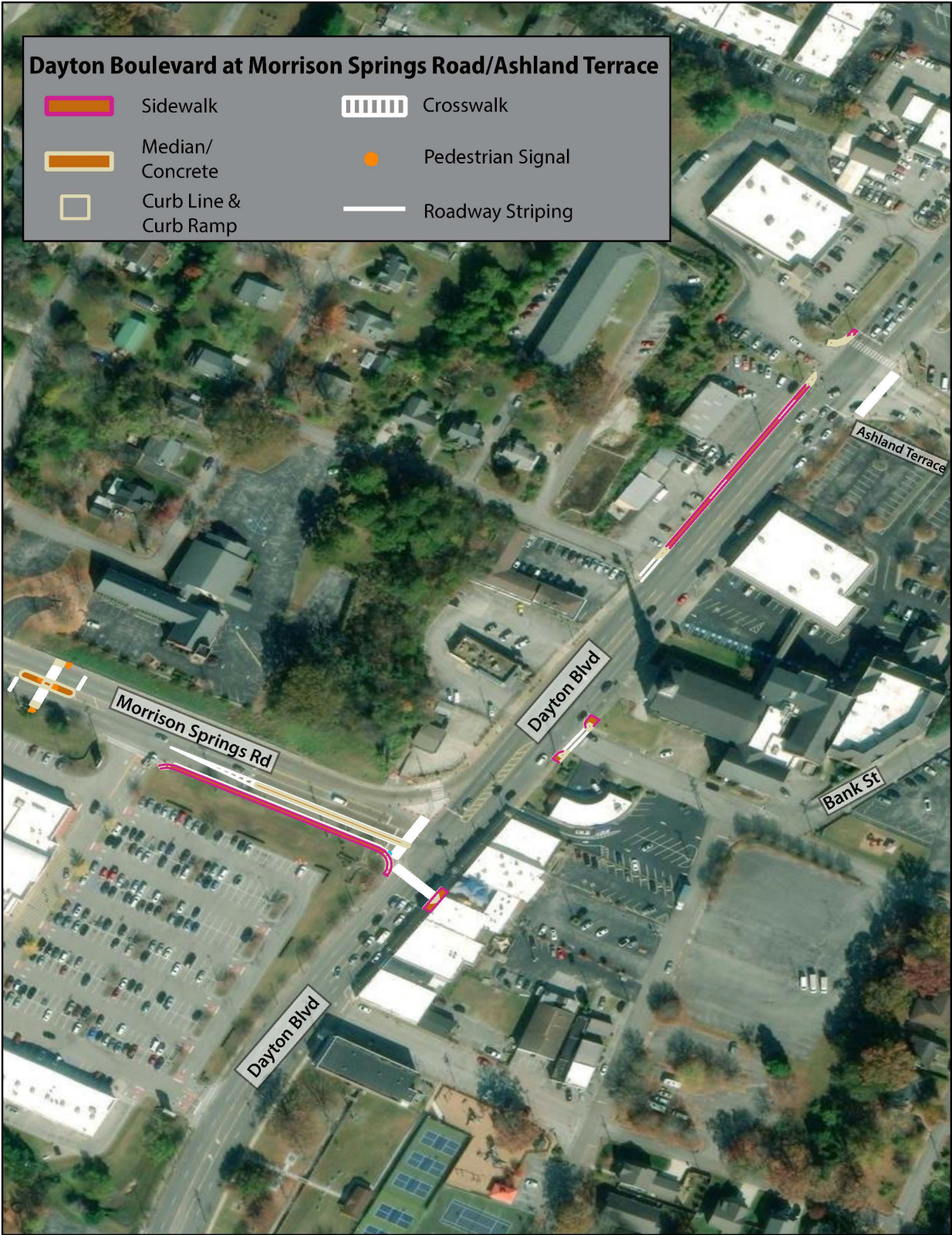
To address pedestrian safety, sidewalks would be installed along the corners of the intersection. The sidewalk would be added along the westside of Morrison Spring Road (side of Food City parking lot). Crosswalks will be installed across Morrison Springs Road at the intersection, as well as across Lawton Street and Trenton Street. Additionally, a HAWK pedestrian signal with a pedestrian island should be installed across Morrison Springs Road just west of the intersection to allow Food City customers to access the grocery store safely.

At the Ashland Terrace intersection, a sidewalk should be added on the southbound side of Dayton Boulevard from Ashland Terrace to Trenton Street. A marked crosswalk should also be added across Ashland Terrace.

Within this focus area, approximately 989 feet of new sidewalk is recommended to be added, accompanied five pedestrian crossings. Figure 45 shows the recommendation for the Morrison Springs/Ashland Terrace intersections.



Figure 49: Improvements at Morrison Springs Road/Ashland Terrace





## **DAYTON BOULEVARD AT BROWNTOWN ROAD**

At the Browntown Road to Gadd Road focus area, improving sidewalk connectivity, and providing safe crossings were identified as the needs within this area of Red Bank.

Sidewalks will be installed along Dayton Boulevard going northbound from Barker Road to Gadd Road. Sidewalks will also be installed along Dayton Boulevard going southbound from Gadd Road to Browntown Road. Crosswalks and curb ramps will also be installed at each intersection within this focus area.

Within this focus area about 1.3 miles of new sidewalk is recommended to be constructed in this focus area. Figure 46 shows the recommendations within this focus area.

Figure 50: Improvements at Browntown Road



## POTENTIAL FUNDING OPPORTUNITIES

There are a variety of potential funding sources ranging from local, regional, state, and federal. The City of Red Bank could also take advantage of private contributions from potential developers/stakeholders to further design or assist with construction cost. Figure 47 provides a list of potential funding sources (ranges local, state, and federal level) for the recommendations that are outlined in this Community Mobility Plan.

Figure 51: Potential Funding Sources

| Grant/Program                       | Agency   | Examples of Eligible Activities   | Funding   |
|-------------------------------------|--|---|---|
| Multimodal Access Grant Program     | TDOT Multimodal Division                             | Multimodal Access Grant funding is available to improve transportation access for pedestrians, bicyclists, and transit users along State Routes using the following improvement types: sidewalks; pedestrian crossing improvements; bicycle facilities; multi-use paths; transit stop amenities; complete streets, road diet or traffic calming measures; improvements that address ADA noncompliance; pedestrian-scale lighting; and other improvements which primarily improve access for multimodal users.     | 95% state; 5% local match<br><br>State portion may not exceed \$950,000   |
| Transportation Alternatives Program | TDOT Local Programs Office                           | All facilities must be hard-surfaced, ADA compliant, and provide adequate connectivity and separation from vehicular traffic. Sidewalk facilities must be a minimum of 5 feet wide and shared-use facilities must be a minimum of 10 feet wide. Funds can be used for sidewalks, walkways or curb ramps, bike lane striping, wide paved shoulders, bike parking and bus racks, traffic calming for the safety of bike/ped traffic, off-road trails, bike, and pedestrian bridges/underpasses, and ADA compliance. | 20% local match for construction;<br><br>Preliminary engineering, design, and ROW expenses are responsibility of local government |
| Recreational Trails Program         | Tennessee Department of Environment and Conservation | Provides grant funding for land acquisition for trails, trail maintenance, trail construction, trail rehabilitation, and for trail head support facilities. All grant projects MUST be on publicly owned land.  | 20% local match   |
| Local Parks and Recreation Fund     | Tennessee Department of Environment and Conservation | Provides for the purchase of land for parks, natural areas, greenways, and the purchase of land for recreational facilities. Funds may also be used for trail development and capital projects in parks, natural areas, and greenways.  | 50% local match   |



| Grant/Program                              | Agency   | Examples of Eligible Activities  | Funding  |
|--|--|--|--|
| FastTrack Infrastructure Program           | Tennessee Department of Economic and Community Development | Grants made to local governing bodies for public infrastructure improvements must be for specific infrastructure projects benefiting one or more companies committed to creating new jobs and/or making new capital investments. Covers infrastructure such as rail, public roadway, port, airport, site, water, sewer, gas, and telecommunication improvements.   | Local matching based on community's ability to pay<br><br>At-Risk County – 35% premium to projects |
| Community Development Block Grant          | Tennessee Department of Economic and Community Development | Provide essential, pressing community development needs in underserved areas; the funds can be applied for community livability projects.  | 100% federal   |
| Highway Safety Improvement Program         | Federal Highway Administration                             | The FAST Act continues the overarching requirement that HSIP funds be used for safety projects that are consistent with the State's Strategic Highway Safety Plan and that correct or improve a hazardous road location or feature or address a highway safety problem. The FAST Act specifically identifies the following activities on the inclusion list: installation of vehicle-to-infrastructure communication equipment; pedestrian hybrid beacons; and roadway improvements that provide separation between pedestrians and motor vehicles, including medians and pedestrian crossing islands.                                     | 90% federal<br><br>10% local match   |
| Surface Transportation Block Grant Program | Federal Highway Administration                             | In general, STBG projects may not be on local roads or rural minor collectors. There are a number of exceptions to this requirement, such as the ability to use up to 15 percent of a state's rural suballocation on minor collectors. Other exceptions include bridge and tunnel projects; safety projects; fringe and corridor parking facilities/programs; recreational trails, pedestrian and bicycle projects, and safe routes to school projects; boulevard/roadway projects largely in the ROW of divided highways; inspection/evaluation of bridges, tunnels, and other highway assets; port terminal modifications; and projects. | 80% federal<br><br>20% local match   |
| Tennessee Built Environment Grants         | Tennessee Department of Health                             | These grants aim to increase access to safe and publicly accessible places that provide opportunities for physical activity for a diverse group of users, including those who live, visit,   | Up to \$85,000 grant   |



| Grant/Program   | Agency   | Examples of Eligible Activities  | Funding  |
|---|--|--|--|
|   |  | work, play, worship, and learn in the community.   |  |
| Community Grant Program   | People for Bikes                                     | Focuses most grant funds on bicycle infrastructure projects, such as: bike paths, lanes, trails, and bridges; mountain bike facilities; bike parks and pump tracks; BMX facilities; and end-of-trip facilities such as bike racks, bike parking, bike repair stations, and bike storage. Some advocacy projects are also funded, such as: programs that transform city streets, such as Ciclovias (cycleway) or Open Streets Days; and campaigns to increase investment in bicycle infrastructure. | Up to \$10,000 grant   |
| Greenway Foundation Grant Program                                       | TennGreen (Tennessee Parks and Greenways Foundation) | This organization provides competitive grants to complete or repair a greenway or trail project.   | Grants range from \$500 to \$2,500 and must be matched.  |
| Active Transportation Infrastructure Investment Program                 | Federal Highway Administration                       | To connect people with public transportation, businesses, workplaces, schools, residences, recreation areas, and other community activity centers.   | \$1B (total program)<br><br>80% Federal Share;<br>100% Federal Share for Disadvantaged Communities |
| Safe Streets & Roads for All  | Federal Highway Administration                       | This program will provide funding directly to local and tribal governments to support their efforts to advance “vision zero” plans and other improvements to reduce crashes and fatalities, especially for cyclists and pedestrians.   | \$1B (total program)<br><br>80% Federal Share  |
| Strengthening Mobility and Revolutionizing Transportation (SMART) Grant | Federal Highway Administration                       | The SMART Grant program will be a programmed competition that will deliver competitive grants to states, local governments, and tribes for projects that improve transportation safety and efficiency.   | \$500M (total program)<br><br>Match unknown at this time (assume 80% Federal Share)                |

## **NEXT STEPS**

Upon adopting this Community Mobility Plan, Red Bank will embark on a transformative journey, to implement the recommendations outlined in the preceding sections. The immediate next step for the city is to conduct a comprehensive traffic study, as highlighted earlier. This study will enable Red Bank and TDOT to propose additional measures to optimize Dayton Boulevard, catering to the diverse needs of all users while prioritizing safety.

To accomplish the goal of enhancing Dayton Boulevard, the City of Red Bank should actively seek funding opportunities at the state, regional, and federal levels. These funds will play a crucial role in making Dayton Boulevard a safer and more accommodating environment for drivers, cyclists, and pedestrians, aligning with the proposals laid out in this plan. Moreover, the traffic study will provide valuable data to generate further recommendations, which can also be integrated into the funding applications.

By transitioning the conceptual suggestions from this Community Mobility Plan into concrete plans and final designs, Red Bank can significantly enhance its transportation infrastructure. Continued efforts to secure funding will prove instrumental in bringing these plans to life, facilitating the progression from initial ideas to actual implementation.

In summary, adopting this plan marks the beginning of a progressive approach for Red Bank, leading to improved safety and accessibility along Dayton Boulevard. Through strategic funding applications and dedication to seeing the recommendations through to construction, the city can effectively create a more vibrant and inclusive transportation network.



APPENDIX A: REGIONAL TRAFFIC CONDITIONS DURING PEAK PERIODS

Figure A - 1: AM Peak

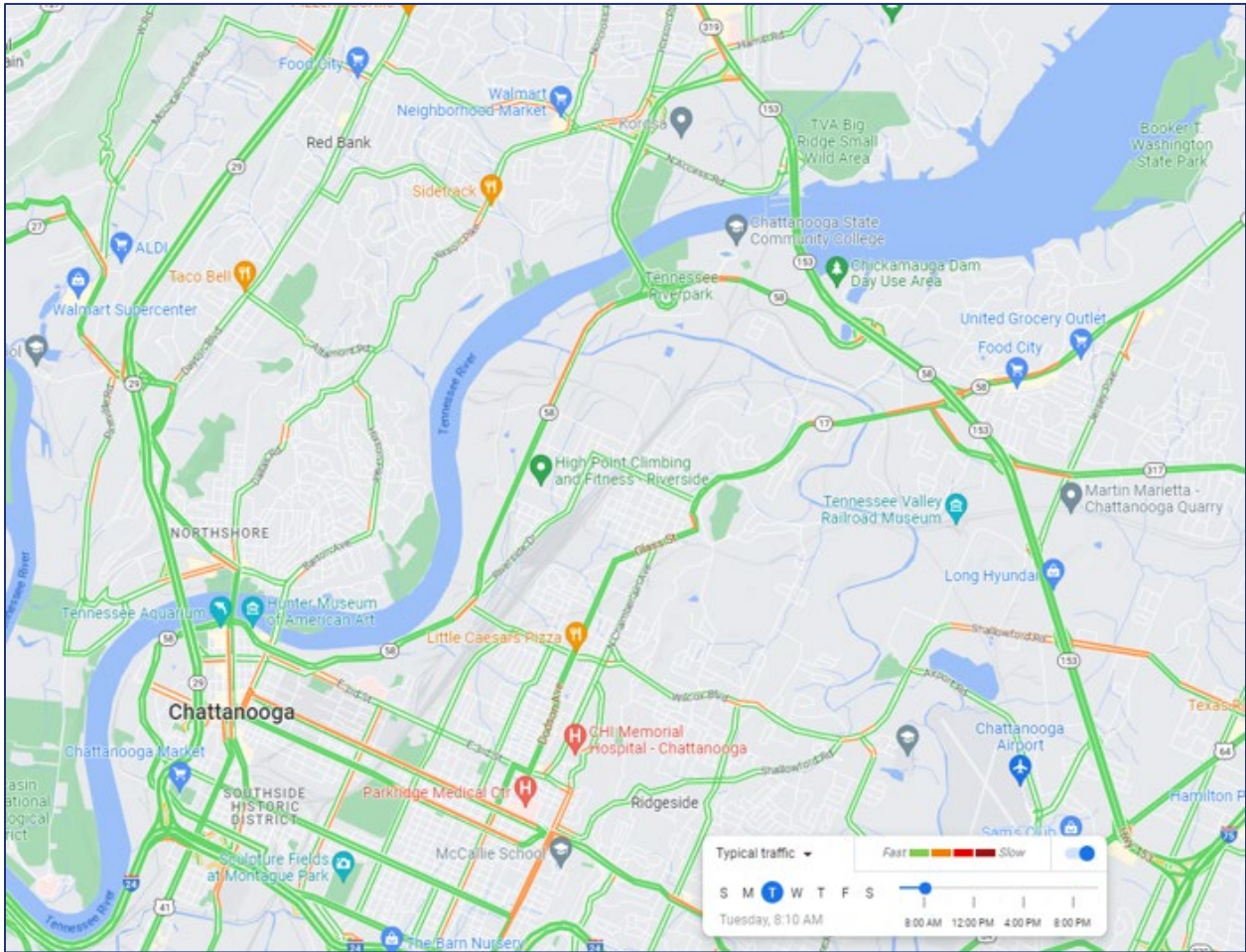
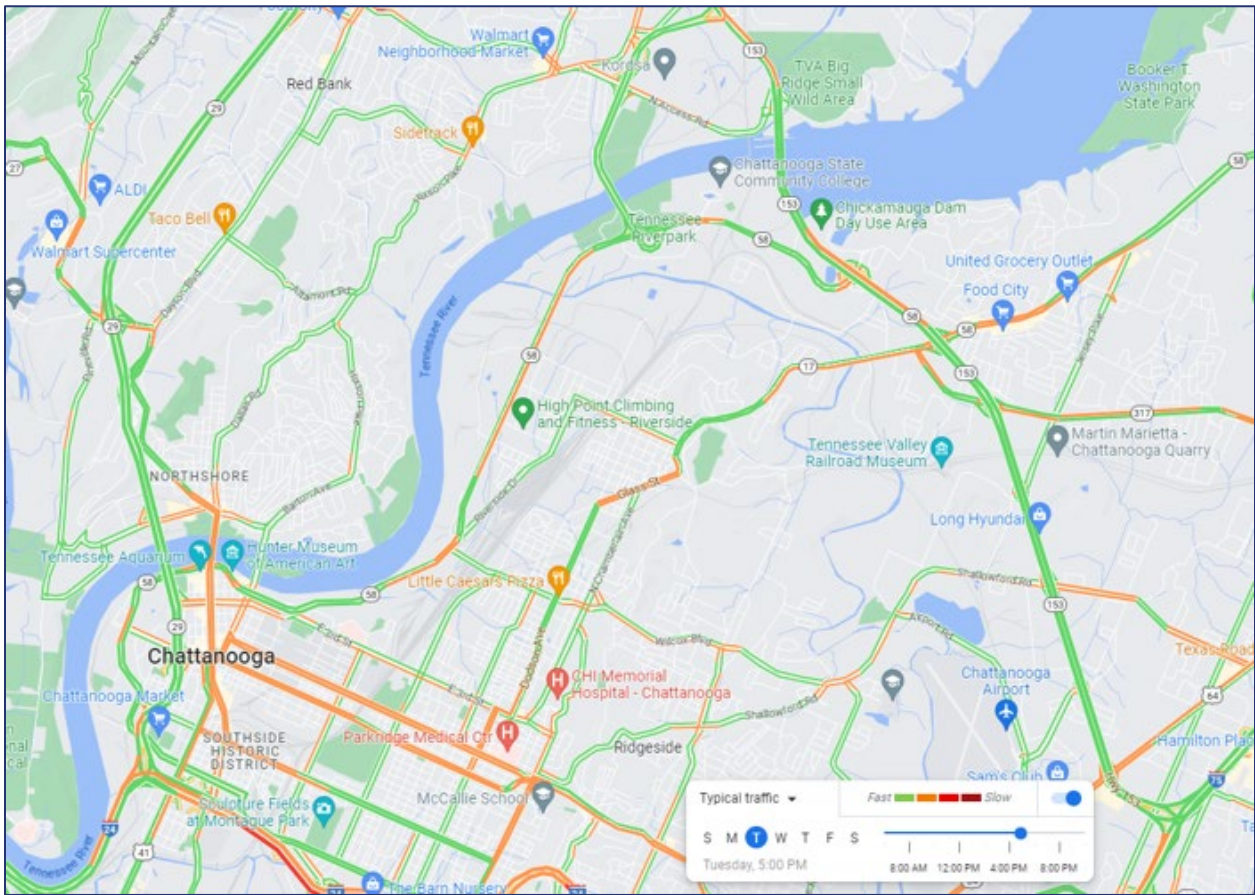




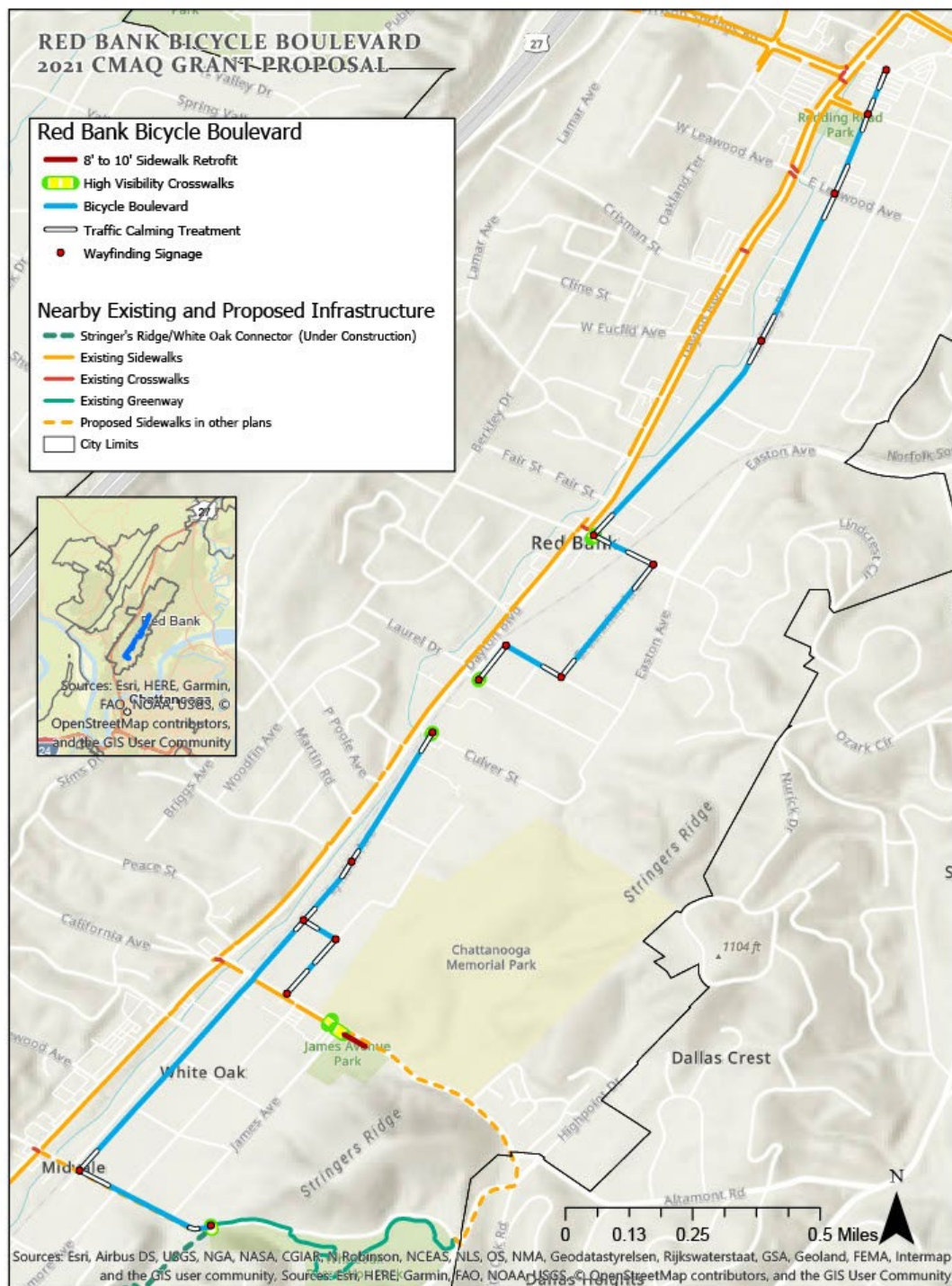
Figure A - 2: PM Peak





## APPENDIX B: PROPOSED BICYCLE BOULEVARD

### Figure B - 1: Proposed Bicycle Boulevard



## APPENDIX C: COST ESTIMATES

Figure C - 1: Cost Estimate for Dayton Boulevard at Browntown Road

| DESCRIPTION  | LOCAL | STATE | FEDERAL | TOTAL               | DBB & DB % Contributions | CMGC % Contributions |
|--|-------|-------|---------|---------------------|--------------------------|----------------------|
|  | 0%    | 0%    | 0%      |                     |                          |                      |
| <b>Construction Items</b>                              |       |       |         |                     |                          |                      |
| Removal Items  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Asphalt Paving   | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Concrete Pavement                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Drainage   | \$0   | \$0   | \$0     | \$1,210,000         | 18.34%                   | 13.29%               |
| Appurtenances  | \$0   | \$0   | \$0     | \$1,090,000         | 16.52%                   | 11.97%               |
| Structures & Contingency                               | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Fencing  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Signalization & Lighting                               | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Railroad Crossing                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Earthwork  | \$0   | \$0   | \$0     | \$143,000           | 2.17%                    | 1.57%                |
| Clearing and Grubbing                                  | \$0   | \$0   | \$0     | \$198,000           | 3.00%                    | 2.17%                |
| Seeding & Sodding                                      | \$0   | \$0   | \$0     | \$20,400            | 0.31%                    | 0.22%                |
| Rip-Rap or Slope Protection                            | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Guardrail  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                |
| Signing  | \$0   | \$0   | \$0     | \$2,700             | 0.04%                    | 0.03%                |
| Pavement Markings                                      | \$0   | \$0   | \$0     | \$154,000           | 2.33%                    | 1.69%                |
| Maintenance of Traffic                                 | \$0   | \$0   | \$0     | \$93,000            | 1.41%                    | 1.02%                |
| Construction Lines and Stakes                          | \$0   | \$0   | \$0     | \$72,000            | 1.09%                    | 0.79%                |
| <b>DESIGN-BID-BUILD &amp; DESIGN-BUILD PERCENTAGES</b> |       |       |         |                     |                          |                      |
| Mobilization   | 10%   | \$0   | \$0     | \$291,000           | 4.41%                    |                      |
| Additional Items                                       | 20%   | \$0   | \$0     | \$582,000           | 8.82%                    |                      |
| Const. Contingency (Structures Not Included)           | 50%   | \$0   | \$0     | \$1,890,000         | 28.65%                   |                      |
| Const. Eng. & Inspec.                                  | 15%   | \$0   | \$0     | \$851,000           | 12.90%                   |                      |
| Construction Estimate - DBB & DB                       |       | \$0   | \$0     | \$6,600,000         |                          |                      |
| <b>Right-of-Way &amp; Utilities</b>                    |       |       |         |                     |                          |                      |
|  | LOCAL | STATE | FEDERAL | TOTAL               |                          |                      |
|  | 0%    | 0%    | 0%      |                     |                          |                      |
| Right-of-Way   | \$0   | \$0   | \$0     | \$351,000           |                          |                      |
| Utilities  | \$0   | \$0   | \$0     | \$283,000           |                          |                      |
| <b>Preliminary Engineering</b>                         |       |       |         |                     |                          |                      |
|  | LOCAL | STATE | FEDERAL | TOTAL               |                          |                      |
|  | 0%    | 0%    | 0%      |                     |                          |                      |
| Prelim. Eng. (Design-Bid-Build)                        | 10.0% | \$0   | \$0     | \$660,000           |                          |                      |
| <b>Design-Bid-Build Project Cost</b>                   |       | \$0   | \$0     | <b>\$ 7,890,000</b> | <b>\$ 8,771,111</b>      | <b>Per Mile Cost</b> |

Figure C - 2: Cost Estimate for Dayton Boulevard at Newberry Street

| DESCRIPTION  | LOCAL | STATE | FEDERAL | TOTAL               | DBB & DB % Contributions | CMGC % Contributions     |
|--|-------|-------|---------|---------------------|--------------------------|--------------------------|
|  | <- -> | <- -> | <- ->   |                     |                          |                          |
|  | 0%    | 0%    | 0%      |                     |                          |                          |
| <b>Construction Items</b>                              |       |       |         |                     |                          |                          |
| Removal Items  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Asphalt Paving   | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Concrete Pavement                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Drainage   | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Appurtenances  | \$0   | \$0   | \$0     | \$95,000            | 16.74%                   | 12.69%                   |
| Structures & Contingency                               | \$0   | \$0   | \$0     | \$82,500            | 14.54%                   | 11.02%                   |
| Fencing  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Signalization & Lighting                               | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Railroad Crossing                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Earthwork  | \$0   | \$0   | \$0     | \$9,700             | 1.71%                    | 1.30%                    |
| Clearing and Grubbing                                  | \$0   | \$0   | \$0     | \$29,700            | 5.23%                    | 3.97%                    |
| Seeding & Sodding                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Rip-Rap or Slope Protection                            | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                    |
| Guardrail  | \$0   | \$0   | \$0     | \$12,500            | 2.20%                    | 1.67%                    |
| Signing  | \$0   | \$0   | \$0     | \$200               | 0.04%                    | 0.03%                    |
| Pavement Markings                                      | \$0   | \$0   | \$0     | \$23,300            | 4.11%                    | 3.11%                    |
| Maintenance of Traffic                                 | \$0   | \$0   | \$0     | \$11,800            | 2.08%                    | 1.58%                    |
| Construction Lines and Stakes                          | \$0   | \$0   | \$0     | \$21,000            | 3.70%                    | 2.81%                    |
| <b>DESIGN-BID-BUILD &amp; DESIGN-BUILD PERCENTAGES</b> |       |       |         |                     |                          |                          |
| Mobilization   | 10%   | \$0   | \$0     | \$26,500            | 4.67%                    |                          |
| Additional Items                                       | 20%   | \$0   | \$0     | \$52,900            | 9.32%                    |                          |
| Const. Contingency (Structures Not Included)           | 50%   | \$0   | \$0     | \$131,000           | 23.09%                   |                          |
| Const. Eng. & Inspec.                                  | 15%   | \$0   | \$0     | \$71,300            | 12.57%                   |                          |
| Construction Estimate - DBB & DB                       |       | \$0   | \$0     | \$567,000           |                          |                          |
| <b>Right-of-Way &amp; Utilities</b>                    |       |       |         |                     |                          |                          |
|  | LOCAL | STATE | FEDERAL | TOTAL               |                          |                          |
|  | 0%    | 0%    | 0%      |                     |                          |                          |
| Right-of-Way   | \$0   | \$0   | \$0     | \$1,190,000         |                          |                          |
| Utilities  | \$0   | \$0   | \$0     | \$95,700            |                          |                          |
| <b>Preliminary Engineering</b>                         |       |       |         |                     |                          |                          |
|  | LOCAL | STATE | FEDERAL | TOTAL               |                          |                          |
|  | 0%    | 0%    | 0%      |                     |                          |                          |
| Prelim. Eng. (Design-Bid-Build)                        | 10.0% | \$0   | \$0     | \$56,700            |                          |                          |
| <b>Design-Bid-Build Project Cost</b>                   | \$0   | \$0   | \$0     | <b>\$ 1,910,000</b> | \$                       | 14,143,704 Per Mile Cost |

Figure C - 3: Cost Estimate for Dayton Boulevard at Morrison Springs Road/Ashland Terrace

| DESCRIPTION  | LOCAL | STATE | FEDERAL | TOTAL               | DBB & DB % Contributions | CMGC % Contributions    |
|--|-------|-------|---------|---------------------|--------------------------|-------------------------|
|  | <- -> | <- -> | <- ->   |                     |                          |                         |
|  | 0%    | 0%    | 0%      |                     |                          |                         |
| <b>Construction Items</b>                              |       |       |         |                     |                          |                         |
| Removal Items  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Asphalt Paving   | \$0   | \$0   | \$0     | \$5,600             | 0.38%                    | 0.27%                   |
| Concrete Pavement                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Drainage   | \$0   | \$0   | \$0     | \$338,000           | 22.72%                   | 16.50%                  |
| Appurtenances  | \$0   | \$0   | \$0     | \$166,000           | 11.16%                   | 8.10%                   |
| Structures & Contingency                               | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Fencing  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Signalization & Lighting                               | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Railroad Crossing                                      | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Earthwork  | \$0   | \$0   | \$0     | \$16,500            | 1.11%                    | 0.81%                   |
| Clearing and Grubbing                                  | \$0   | \$0   | \$0     | \$56,400            | 3.79%                    | 2.75%                   |
| Seeding & Sodding                                      | \$0   | \$0   | \$0     | \$5,800             | 0.39%                    | 0.28%                   |
| Rip-Rap or Slope Protection                            | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Guardrail  | \$0   | \$0   | \$0     | \$0                 | 0.00%                    | 0.00%                   |
| Signing  | \$0   | \$0   | \$0     | \$600               | 0.04%                    | 0.03%                   |
| Pavement Markings                                      | \$0   | \$0   | \$0     | \$33,500            | 2.25%                    | 1.64%                   |
| Maintenance of Traffic                                 | \$0   | \$0   | \$0     | \$28,100            | 1.89%                    | 1.37%                   |
| Construction Lines and Stakes                          | \$0   | \$0   | \$0     | \$29,000            | 1.95%                    | 1.42%                   |
| <b>DESIGN-BID-BUILD &amp; DESIGN-BUILD PERCENTAGES</b> |       |       |         |                     |                          |                         |
| Mobilization   | 10%   | \$0   | \$0     | \$65,100            | 4.38%                    |                         |
| Additional Items                                       | 20%   | \$0   | \$0     | \$130,000           | 8.74%                    |                         |
| Const. Contingency (Structures Not Included)           | 50%   | \$0   | \$0     | \$423,000           | 28.44%                   |                         |
| Const. Eng. & Inspec.                                  | 15%   | \$0   | \$0     | \$190,000           | 12.77%                   |                         |
| Construction Estimate - DBB & DB                       |       | \$0   | \$0     | \$1,490,000         |                          |                         |
| <b>Right-of-Way &amp; Utilities</b>                    |       |       |         |                     |                          |                         |
|  | LOCAL | STATE | FEDERAL | TOTAL               |                          |                         |
|  | 0%    | 0%    | 0%      |                     |                          |                         |
| Right-of-Way   | \$0   | \$0   | \$0     | \$100,000           |                          |                         |
| Utilities  | \$0   | \$0   | \$0     | \$145,000           |                          |                         |
| <b>Preliminary Engineering</b>                         |       |       |         |                     |                          |                         |
|  | LOCAL | STATE | FEDERAL | TOTAL               |                          |                         |
|  | 0%    | 0%    | 0%      |                     |                          |                         |
| Prelim. Eng. (Design-Bid-Build)                        | 10.0% | \$0   | \$0     | \$149,000           |                          |                         |
| <b>Design-Bid-Build Project Cost</b>                   | \$0   | \$0   | \$0     | <b>\$ 1,880,000</b> | \$                       | 7,359,375 Per Mile Cost |



Figure C - 4: Cost Estimate for Dayton Boulevard at Signal Mountain Road

| DESCRIPTION  | LOCAL | <- | ->  | STATE | <- | ->  | FEDERAL | <- | ->  | TOTAL               | DBB & DB % Contributions | CMGC % Contributions |               |
|--|-------|----|-----|-------|----|-----|---------|----|-----|---------------------|--------------------------|----------------------|---------------|
|  | 0%    |    |     | 0%    |    |     | 0%      |    |     |                     |                          |                      |               |
| <b>Construction Items</b>                              |       |    |     |       |    |     |         |    |     |                     |                          |                      |               |
| Removal Items  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Asphalt Paving   |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Concrete Pavement                                      |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Drainage   |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$403,000           | 12.94%                   | 9.60%                |               |
| Appurtenances  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$451,000           | 14.48%                   | 10.75%               |               |
| Structures & Contingency                               |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$291,000           | 9.34%                    | 6.93%                |               |
| Fencing  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Signalization & Lighting                               |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Railroad Crossing                                      |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Earthwork  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$64,800            | 2.08%                    | 1.54%                |               |
| Clearing and Grubbing                                  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$66,000            | 2.12%                    | 1.57%                |               |
| Seeding & Sodding                                      |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$7,200             | 0.23%                    | 0.17%                |               |
| Rip-Rap or Slope Protection                            |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$0                 | 0.00%                    | 0.00%                |               |
| Guardrail  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$14,900            | 0.48%                    | 0.35%                |               |
| Signing  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$1,300             | 0.04%                    | 0.03%                |               |
| Pavement Markings                                      |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$70,700            | 2.27%                    | 1.68%                |               |
| Maintenance of Traffic                                 |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$74,400            | 2.39%                    | 1.77%                |               |
| Construction Lines and Stakes                          |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$43,000            | 1.38%                    | 1.02%                |               |
| <b>DESIGN-BID-BUILD &amp; DESIGN-BUILD PERCENTAGES</b> |       |    |     |       |    |     |         |    |     |                     |                          |                      |               |
| Mobilization   | 10%   |    | \$0 |       |    | \$0 |         |    | \$0 | \$144,000           | 4.62%                    |                      |               |
| Additional Items                                       | 20%   |    | \$0 |       |    | \$0 |         |    | \$0 | \$289,000           | 9.28%                    |                      |               |
| Const. Contingency (Structures Not Included)           | 50%   |    | \$0 |       |    | \$0 |         |    | \$0 | \$793,000           | 25.46%                   |                      |               |
| Const. Eng. & Inspec.                                  | 15%   |    | \$0 |       |    | \$0 |         |    | \$0 | \$401,000           | 12.88%                   |                      |               |
| Construction Estimate - DBB & DB                       |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$3,110,000         |                          |                      |               |
| <b>Right-of-Way &amp; Utilities</b>                    |       |    |     |       |    |     |         |    |     |                     |                          |                      |               |
|  | LOCAL |    |     | STATE |    |     | FEDERAL |    |     | TOTAL               |                          |                      |               |
|  | 0%    |    |     | 0%    |    |     | 0%      |    |     |                     |                          |                      |               |
| Right-of-Way   |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$429,000           |                          |                      |               |
| Utilities  |       |    | \$0 |       |    | \$0 |         |    | \$0 | \$142,000           |                          |                      |               |
| <b>Preliminary Engineering</b>                         |       |    |     |       |    |     |         |    |     |                     |                          |                      |               |
|  | LOCAL |    |     | STATE |    |     | FEDERAL |    |     | TOTAL               |                          |                      |               |
|  | 0%    |    |     | 0%    |    |     | 0%      |    |     |                     |                          |                      |               |
| Prelim. Eng. (Design-Bid-Build)                        | 10.0% |    | \$0 |       |    | \$0 |         |    | \$0 | \$311,000           |                          |                      |               |
| <b>Design-Bid-Build Project Cost</b>                   |       |    | \$0 |       |    | \$0 |         |    | \$0 | <b>\$ 3,990,000</b> | \$                       | 13,306,667           | Per Mile Cost |