SR 343 Complete Streets Plan

JANUARY 2022

TN TDOT Department of Transportation

Prepared by:

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Introduction

The City of Morristown was awarded a Tennessee Department of Transportation (TDOT) Urban Transportation Planning Grant (UTPG) in 2021 for an ITS Traffic Signal Coordination and Complete Streets Study of the SR 343/South Cumberland Street corridor. The ITS Traffic Signal Coordination study is a companion study to this Complete Streets Study with the section of SR 343/South Cumberland Street between Morris Boulevard and Lincoln Avenue/Algonquin Street shared by both. This Complete Streets Study, with the study area limits from SR 160 on the south end to US 11E/Morris Boulevard on the north end, identifies the existing conditions within the study area, identifies issues and opportunities along the corridor, and provides recommendations for the City moving forward with transitioning this roadway into a gateway corridor into Morristown. A copy of the UTPG application can be found in Appendix A.

Project Background

TDOT's Office of Community Transportation (OCT) works to coordinate the state's transportation planning, local land use decisions, and community visions to guide the development of a safe and efficient statewide transportation system. As part of this effort, TDOT initiated the Community Transportation Planning Grant (CTPG) program for rural communities, which then expanded to include urbanized areas.

The goals of the UTPG are to:

- Assist urban jurisdictions with transportation-related solutions that strengthen multimodal cohesiveness of the transportation system
- Guide communities with developing potential strategies that will support improvements in traffic flow, safety, mobility, and overall efficiency of the transportation system
- Provide jurisdictions with planning resources to achieve the community visions as related to transportation and land use needs that promote future economic growth

Project Purpose

The rationale for the study is: to improve the safety for all transportation modes; make it more pedestrian and/or bicycle friendly; enhance the aesthetics of the streetscape to create a gateway into Morristown; improve intersections to comply with ADA standards; and to provide consistency with SR 343 north of Morris Boulevard. The Complete Streets Plan will allow the City to provide thoughtful and intentional infrastructure that addresses their multimodal transportation needs.

Existing Conditions

The City of Morristown is located in Northeast Tennessee and is the county seat of Hamblen County. As Morristown is centrally located between eight counties, it serves as a regional hub for employment, shopping, recreation, healthcare, and educational opportunities. The community has evolved from an agricultural-based economy to a manufacturing-based economy, producing a wide range of projects such as plastics, automotive parts, and frozen cakes. There are many outdoor activities to enjoy such as boating, fishing, mountain biking, hiking, camping, and disc golf. Historic downtown is flush with unique shops and restaurants and other attractions including an arts center and museums.

This chapter will focus on the existing conditions of the corridor and will establish the foundation for which the recommendations of this study are based upon.

Demographics

The population and makeup of a city affects its current needs and influences how it will change over coming years. According to the American Community Service (ACS) data, Morristown had a population of 29,137 in 2010. By 2020, the population had grown to 30,431, an increase of approximately 4% in 10 years. The racial makeup of the area has become more diverse over the last decade, as evidenced in Table 1, which shows the racial makeup of the community in 2010 and 2020. The Hispanic or Latino cohort has increased the most as a percentage of the entire population, from approximately 20% in 2010 to almost 26% in 2020.

Table 1 – Morristown Population by Race (2010-2020)

	2010	2010 % of population	2020	2020 % of population	% change
Hispanic or Latino	**5,743**	**19.7%**	**7,781**	**25.6%**	**5.9%**
Not Hispanic or Latino:	**23,394**	**80.3%**	**22,650**	**74.4%**	**-5.9%**
White Alone	20,637	70.8%	19,067	62.7%	-8.1%
Black or African American Alone	1,827	6.3%	1,605	5.3%	-1.0%
American Indian & Alaska Native Alone	54	0.2%	65	0.2%	-
Asian Alone	233	0.8%	453	1.5%	0.7%
Native Hawaiian & Other Pacific Islander Alone	44	0.2%	254	0.8%	0.6%
Some Other Race Alone	39	0.1%	70	0.2%	0.1%
Two or More Races	560	1.9%	1,136	3.7%	1.8%
Total Population	**29,137**		**30,431**		**4.4%**

Typical changes in the distribution of people based on age and gender have occurred in Morristown between 2014 and 2019 – populations are aging, and the median age rose from 35.5 to 37.8. According to the US Census, in 2014 the median household income was $39,822. By 2019, the median household income increased by approximately 15% to $45,878. While this is higher than the median household income averaged across Hamblen County, it is lower than the Tennessee statewide and national median incomes.

Roughly 27% of Morristown residents were reported to live below the poverty line in 2019. Figure 1 shows the poverty status by census block adjacent to SR 343.

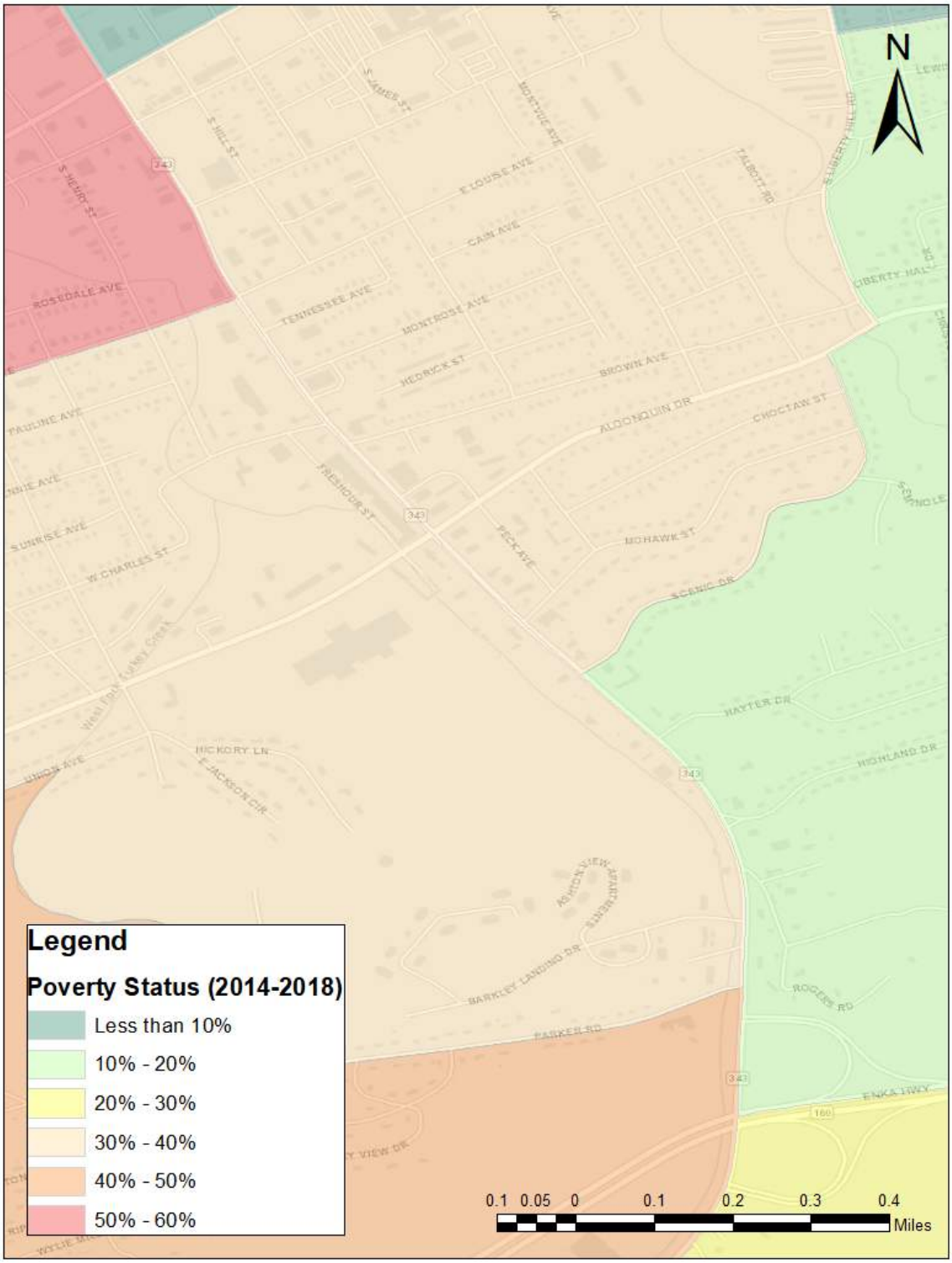


Figure 1 – Poverty Status by Census Tract

A web-based application called OnTheMap was used to understand travel patterns to and from Morristown. The application uses Longitudinal Employer-Household Dynamics (LEHD) to understand where residents in Morristown live and travel to work.

Within the municipal limits of Morristown, there were 30,058 jobs in 2019. Of those jobs, approximately 80% were filled by individuals who live outside of the city limits and the remaining 20% were filled by individuals who live and work in Morristown. Additionally, 6,247 individuals live within the Morristown municipal limits but work outside of the city. Table 2 shows the work commute distance into and out of Morristown. The majority of Morristown residents commute less than 10 miles to work.

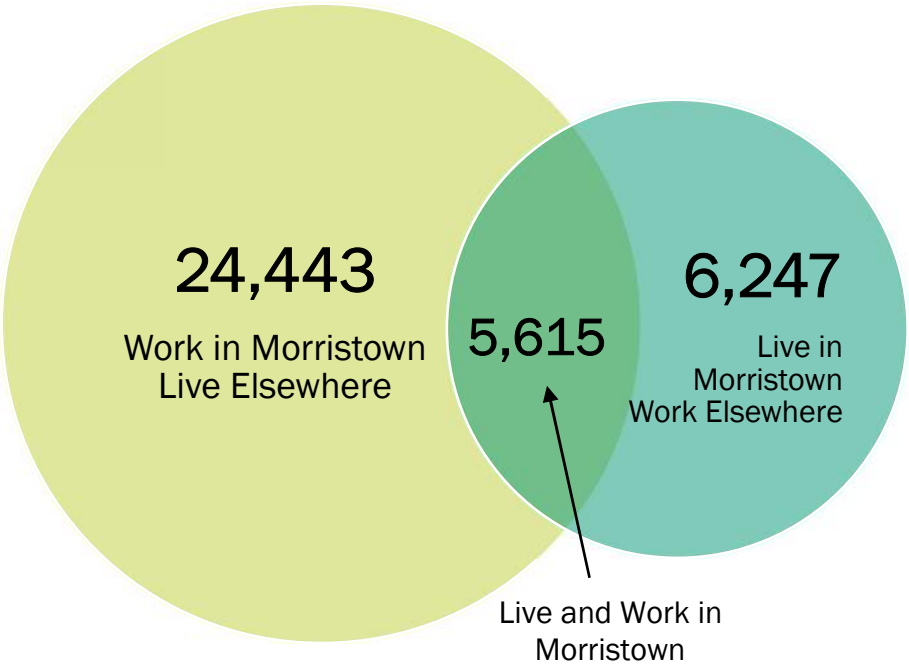


Table 2 – Work Commute Distance

	Commute Distance to Morristown	Commute Distance from Morristown
Less than 10 Miles	14,019 (46.6%)	6,381 (53.8%)
10 to 24 Miles	6,739 (22.4%)	1,297 (10.9%)
25 to 50 Miles	4,198 (14.0%)	1,963 (16.5%)
Greater than 50 Miles	5,102 (17.0%)	2,221 (18.7%)
Total Jobs	**30,058**	**11,862**

The top three job industries located in Morristown are Manufacturing (31.3%), Retail Trade (12.6%), and Health Care (11.4%). The Hamblen County Department of Education is the largest employer in Morristown, followed closely by the Koch Foods manufacturing plant. The top three job industries of Morristown residents are also Manufacturing, Retail Trade, and Health Care.

Land Use

The zoning and land use characteristics of Morristown reflect a city with several major thoroughfares. US 11E/Morris Boulevard acts as a bypass to the Morristown downtown central business district, while SR 160 circumvents around the outskirts of Morristown. Medium density residential is the most prominent land use; however, the SR 343 corridor consists of commercial development sandwiched between medium density residential, as shown in Figure 2. The commercial development along SR 343 is primarily restaurants, retail, and automotive services.

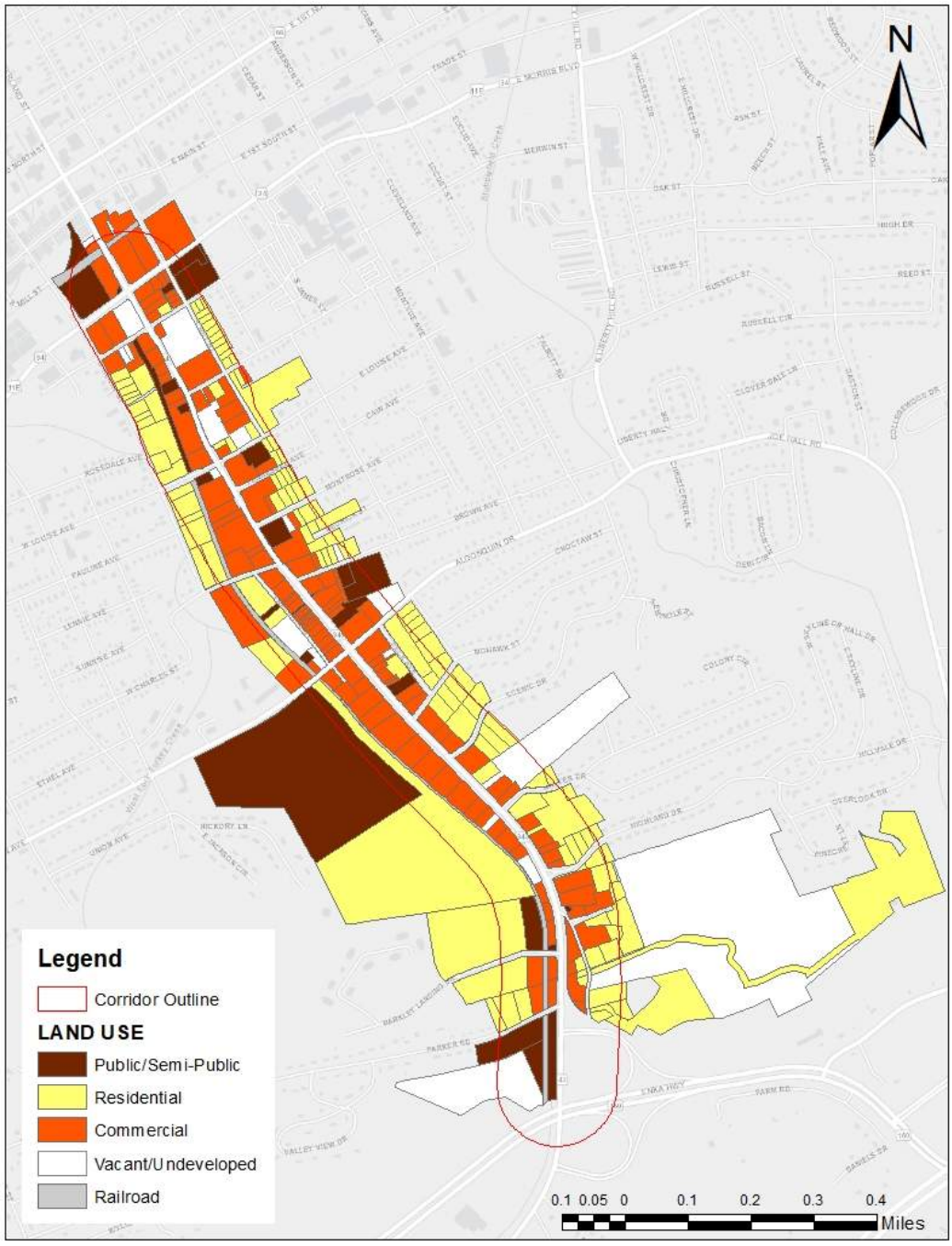


Figure 2 – Existing Land Use Map

Roadway Characteristics

SR 343 is classified as a Minor Arterial roadway. It serves as a north-south connection to downtown Morristown from Interstate 81. The posted speed limit from SR 160 to Lincoln Avenue/Algonquin Drive is 40 mph. North of Lincoln Avenue/Algonquin Drive, the posted speed limit decreases to 30 mph. There are three distinct cross-sections within the study area limits. Throughout the corridor, the travel lanes are 12-feet wide.

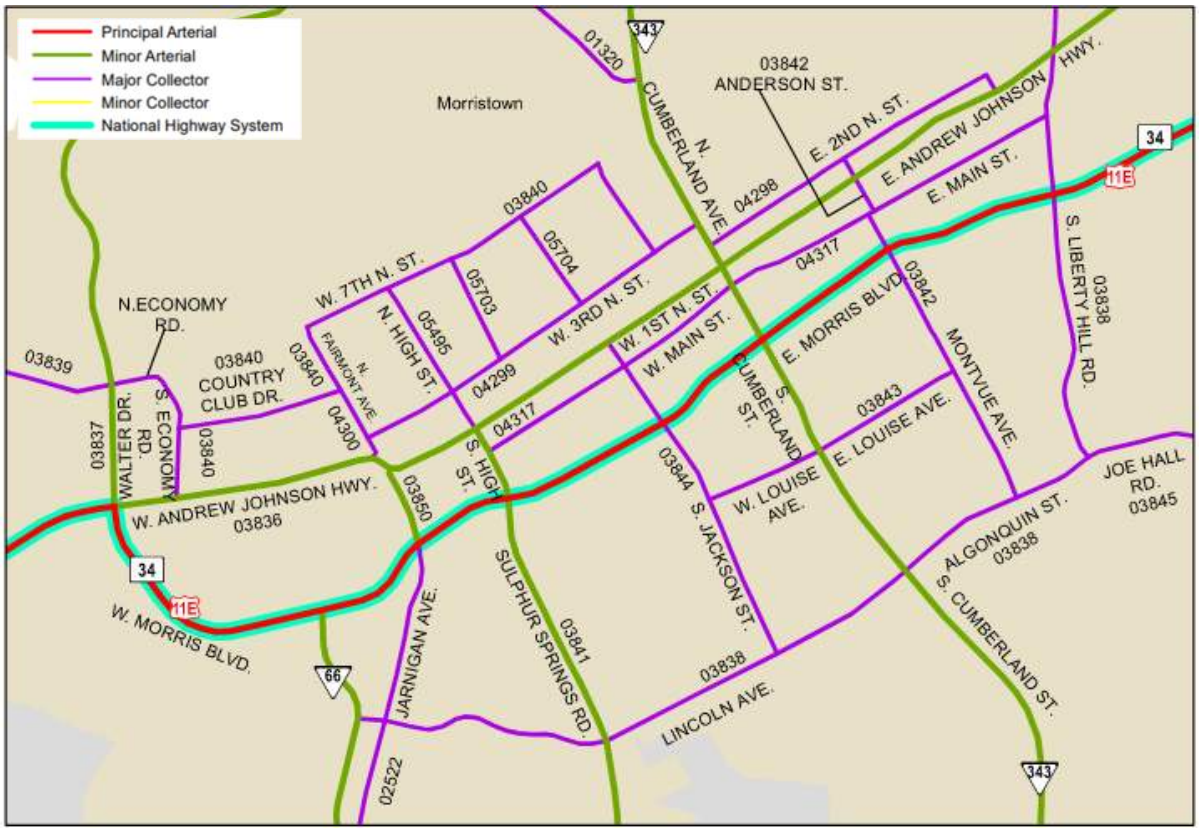


Figure 3 - Morristown Roadway Functional Classifications Source: TDOT Functional Classification Maps

From SR 160 to Highland Drive is a suburban five-lane section consisting of two through lanes in each direction and a center turn lane. There is no curb and gutter and no sidewalks.

From Highland Drive to Brown Avenue is an urban four-lane section. In general, there are two through lanes in each direction; however, at the Lincoln Avenue/Algonquin Drive intersection, the inner northbound through lane becomes a left turn lane. There is curb and gutter on both sides of the roadway, but the superfluous driveway openings render the curb and gutter obsolete in some areas. Within this segment, 3-foot wide raised concrete barriers divide the travel lane from the parking areas, which people use as a de facto sidewalk.

North of Brown Avenue, the roadway transitions to an urban five-lane section with two through lanes in either direction and a center turn lane. There is curb and gutter and sidewalks on both sides of the roadway.

Traffic Operations

According to TDOT's 2021 count information, the annual average daily traffic (AADT) between SR 160 US 11E/Morris Boulevard is approximately 14,000 vehicles per day. Hourly traffic count data was collected as part of the adjoining Traffic Signal Coordination effort and are shown in Figure 4.

There are four signalized intersection locations within the Complete Streets Plan study area:

1. US 11E/Morris Boulevard
2. Louise Avenue
3. Brown Avenue
4. Lincoln Avenue/Algonquin Drive

Through the ITS Traffic Signal Coordination Study, existing level of service (LOS) analysis determined that the signals south of US 11E/Morris Boulevard currently operate at LOS C or better in the AM and PM peak hours. The signal at US 11E/Morris Boulevard currently operates at LOS F in the PM peak hour, mainly due to the US 11E/Morris Boulevard approaches and the shared left/through lane configuration on the westbound approach. Table 3 shows the existing signalized intersection analysis. The ITS Traffic Signal Coordination Study concluded that the PM peak hour delays resulting in LOS F can be mitigated to LOS C (delays of 26.7 seconds) by implementing new traffic signal timing, which is reflected in Table 3.

Table 3 – SR 343 Existing Capacity and Levels of Service Summary

SR 343 Intersection	Peak Hour	Existing Conditions v/c	Delay	LOS
US 11E/Morris Boulevard	AM	0.58	24.5	C
	PM	0.82/0.74	131.7/26.3	F/C
Louise Avenue	AM	0.30	4.8	A
	PM	0.27	5.5	A
Brown Avenue	AM	0.27	4.9	A
	PM	0.28	3.4	A
Lincoln Avenue/Algonquin Drive	AM	0.57	24.5	C
	PM	0.48	24.6	C

Source: Companion ITS Traffic Signal Coordination Study - CDM Smith

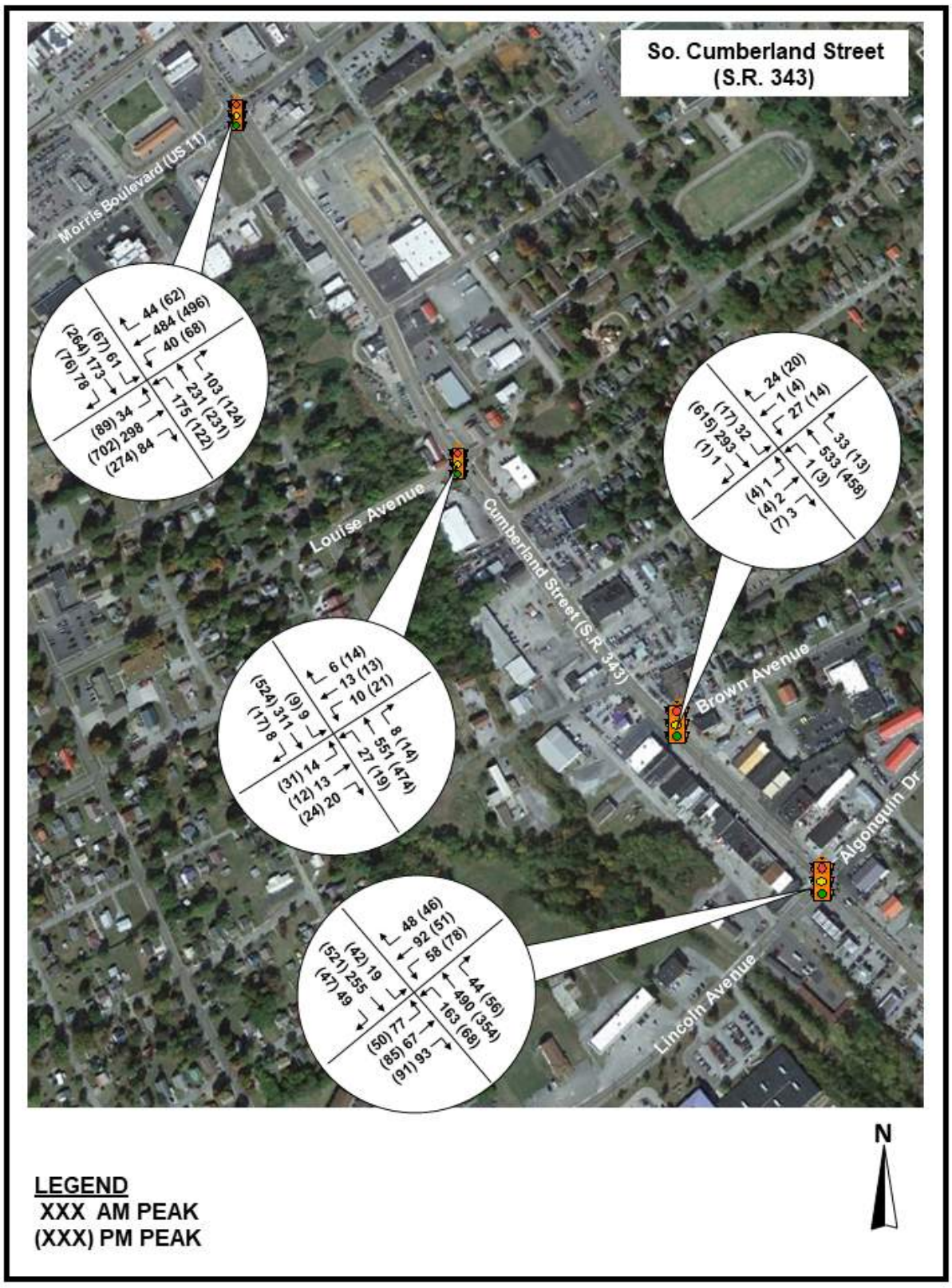


Figure 4 - Existing Turning Movement Volumes

Transit

A new fixed-route transit system, operated by Lakeway Transit, began service in February 2021. There are three routes that serve Morristown. These routes are shown in Figure 5. While the routes do not currently run along SR 343, the system is still new and assessments of ridership are being made which will determine where additional route stops should be provided.

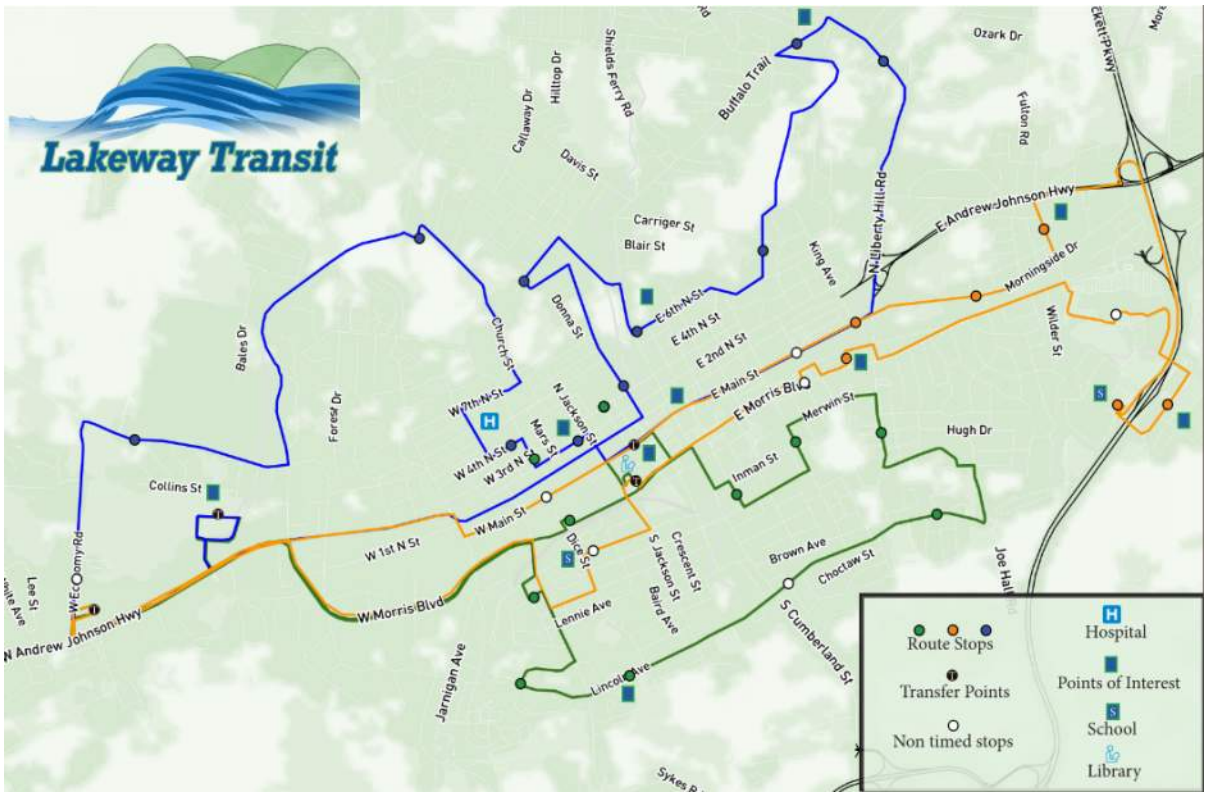


Figure 5 - Lakeway Transit Route Map Source: Lakeway Transit

Non-Motorized Facilities

Sidewalks are present and in acceptable condition along the northern section of the corridor between Brown Avenue and US 11E/Morris Boulevard. Between Scenic Drive and Brown Avenue, there are 3-foot raised concrete barriers that act as a de facto sidewalk; however, these are not ADA-compliant. South of Scenic Drive there are no sidewalks provided except between Hayter Drive and Highland Drive. In these areas, there are so many driveway openings that the sidewalks do not provide much protection for pedestrians. Figure 6 shows the existing sidewalk and greenways facilities around Morristown. Figures 7-9 depict the sidewalk inventory along SR 343 within the study limits.

There are currently no bicycle accommodations along SR 343.

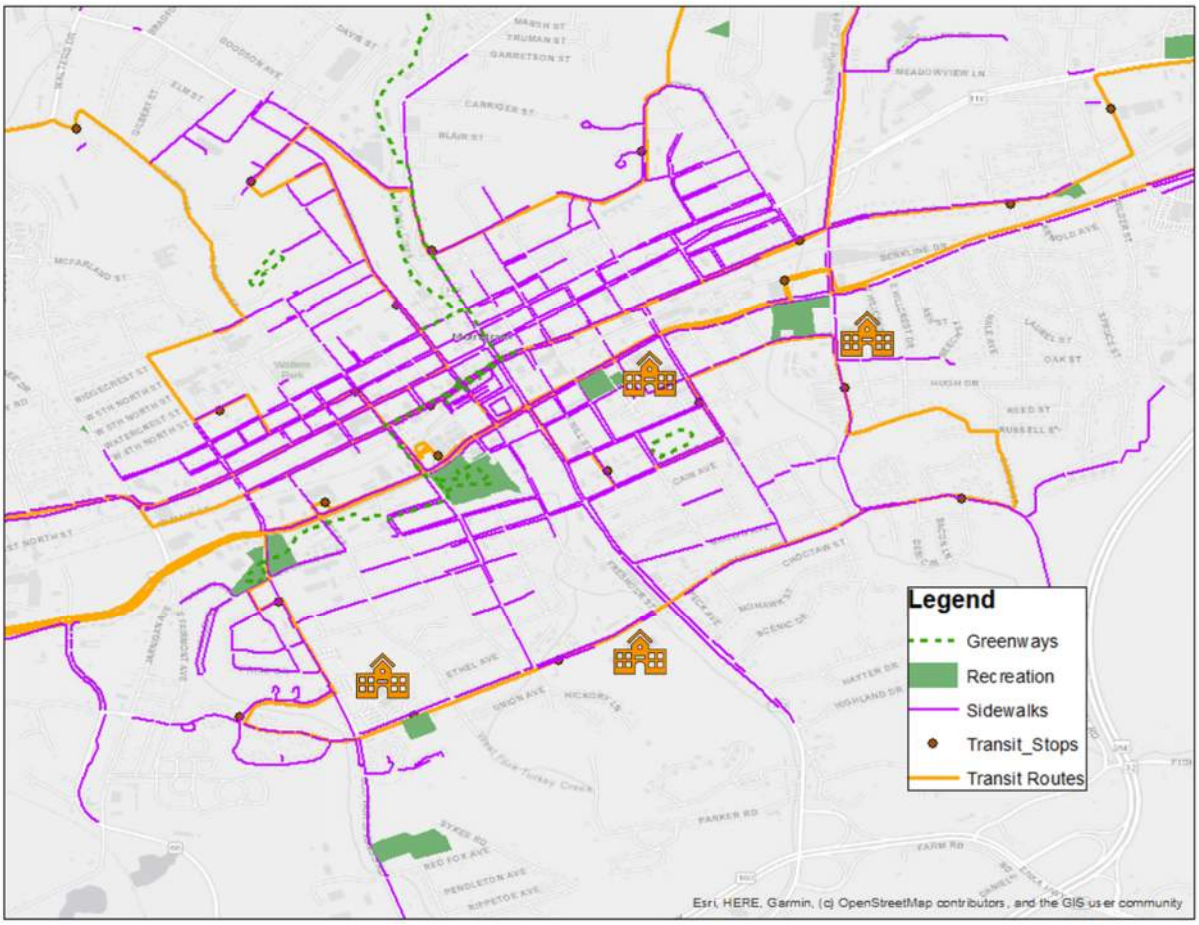


Figure 6 - Morristown Existing Bicycle and Pedestrian Facilities Source: City of Morristown GIS

Figure 7 - Existing Sidewalk Inventory Sheet 1 of 3 (Segments 1 and 2)

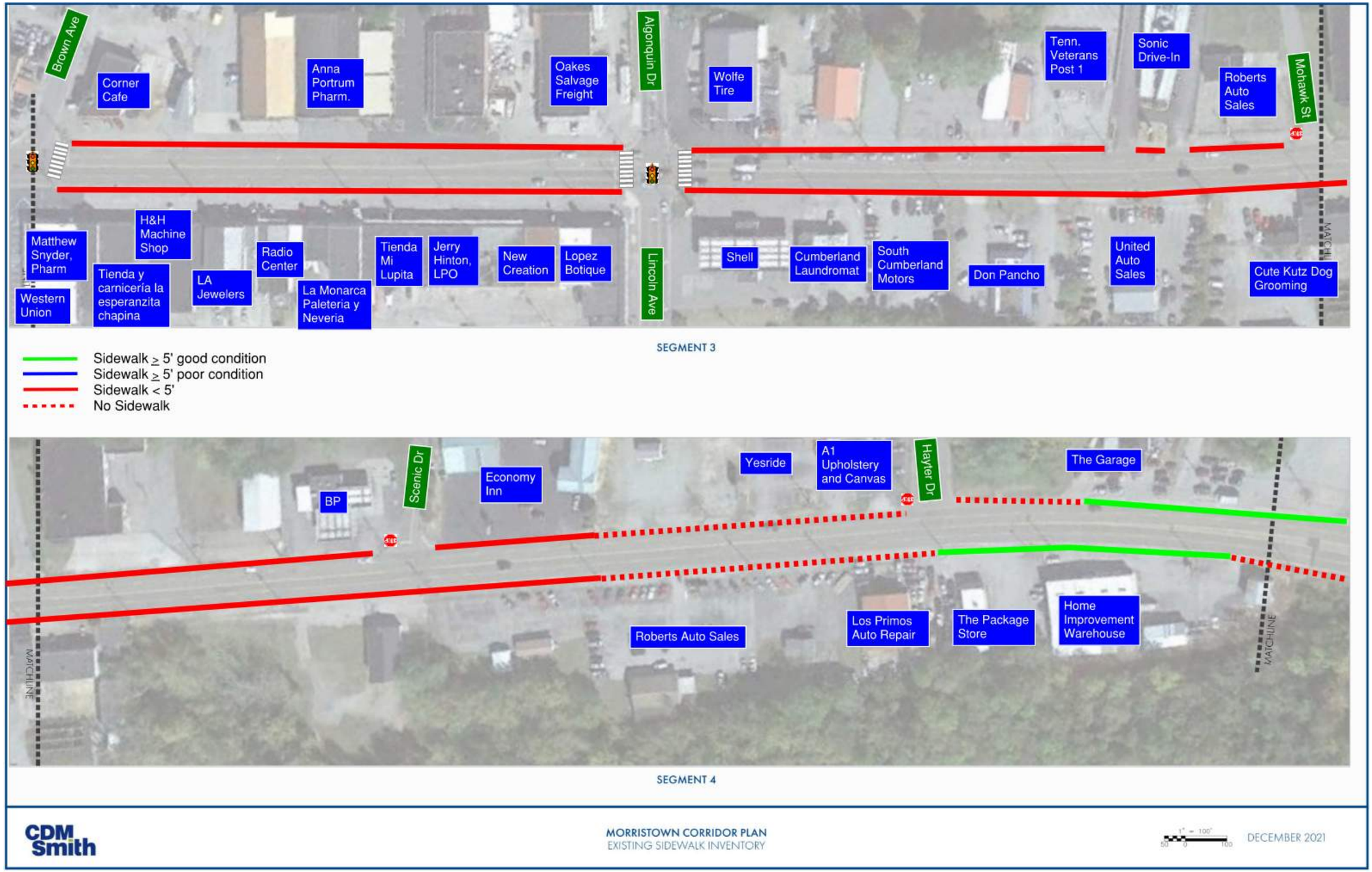


Figure 8 - Existing Sidewalk Inventory Sheet 2 of 3 (Segments 3 and 4)

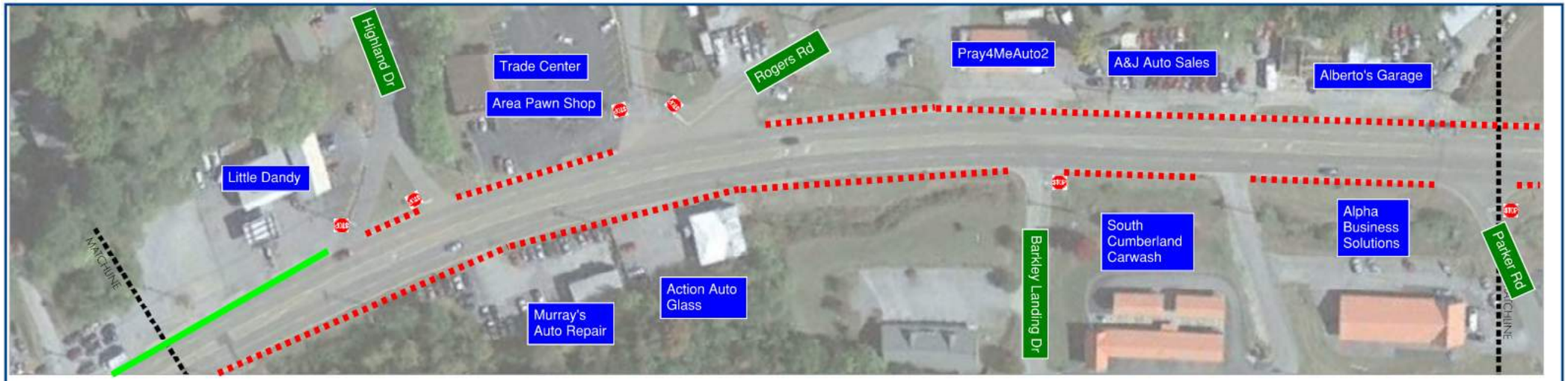


Figure 9 - Existing Sidewalk Inventory Sheet 3 of 3 (Segments 5 and 6)

Safety

Five years of crash data was evaluated for the SR 343 corridor between SR 160 and US 11E/Morris Boulevard. Due to COVID-19-related anomalies that have been observed in 2020, data from 2015 through 2019 were used. A total of 352 crashes occurred along the corridor, of which, the majority occurred between Lincoln Avenue/Algonquin Drive and US 11E/Morris Boulevard. While there was no annual linear trend observed, 2016 reported the highest number of crashes (80) and 2018 reported the lowest number of crashes (58). The crash summaries are provided in Table 4 and Table 5.

Table 4 – Crashes by Type (2015-2019)

Type of Crash	No. of Crashes
Head On	9
Angle	114
Rear End	132
Sideswipe, Opposite Direction	5
Sideswipe, Same Direction	28
Single Vehicle	29
Other	35
TOTAL	**352**

Table 5 – Crashes by Severity (2015-2019)

Crash Severity	No. of Crashes
Property Damage Only	295
Minor Injury	49
Serious Injury	7
Fatality	1
TOTAL	**352**

Approximately 70% of the crashes that occurred were either rear end or angle collisions, as shown in Figure 10. In general, angle crashes occurred in clusters within the vicinity of intersections and driveways. In the four-lane segment of the corridor, there are also many sideswipe crashes, which indicate that motorists may be trying to switch lanes quickly when they see a vehicle blocking the lane to turn left. Figure 11 shows the crashes by severity along SR 343. While one fatality was reported within the five-year analysis period, 84% of the crashes were property damage only and 16% resulted in injury. The fatal crash occurred at the intersection of SR 343 and Lincoln Avenue/Algonquin Drive at 11:08 pm and involved a pedestrian and a vehicle.

The safety issues along the corridor have resulted in two recent fatalities since the onset of this study. The first, occurring on August 28, 2021, a woman was walking her dog along SR 343 near SR 160 when she was struck by a vehicle. The second, occurring on November 2021, involved a pedestrian struck by a vehicle on Algonquin Drive as the

vehicle was turning from SR 343. Both incidents occurred when it was dark, with little to no lighting.

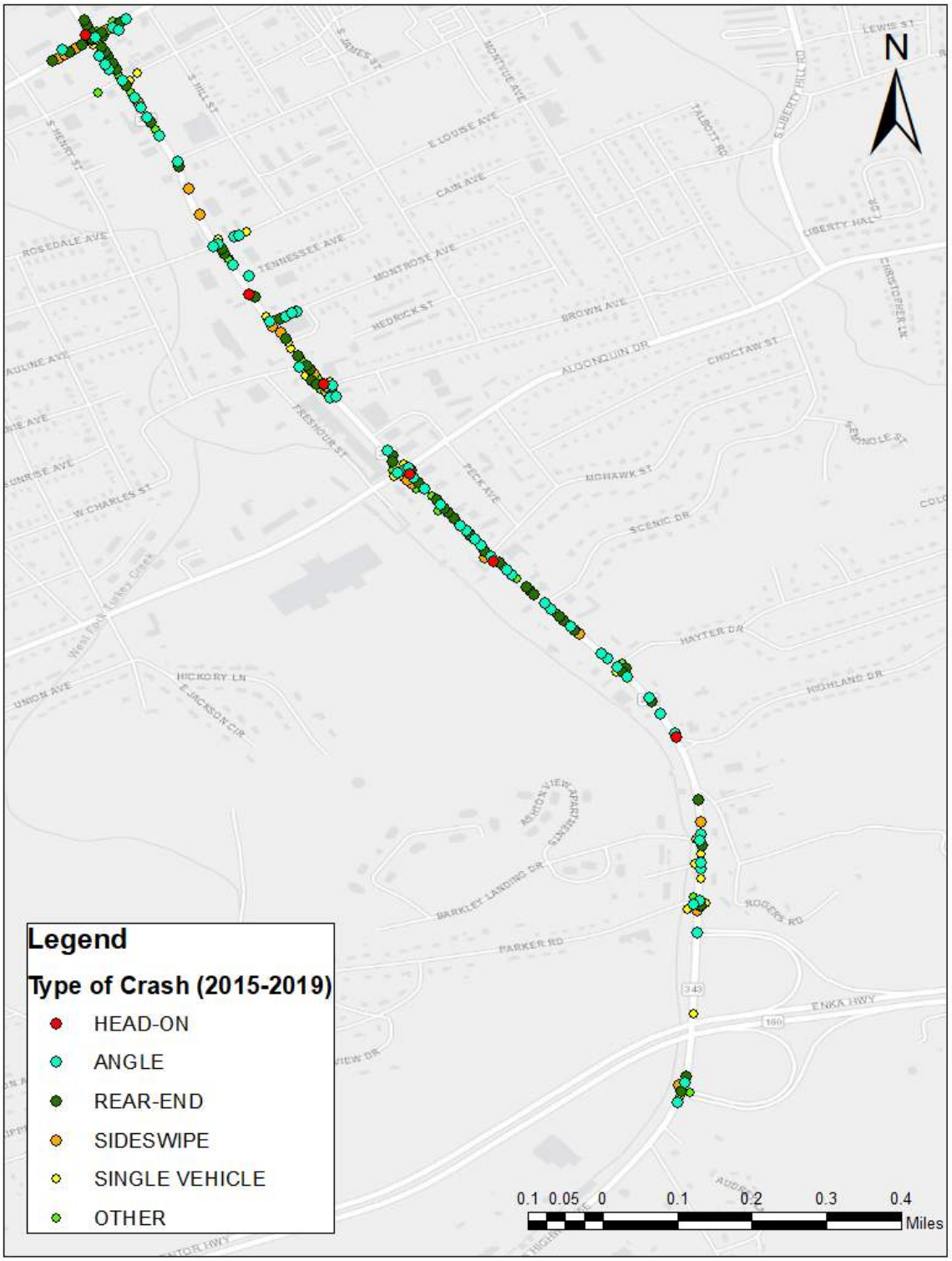


Figure 10 - Crashes by Type (2015-2019)

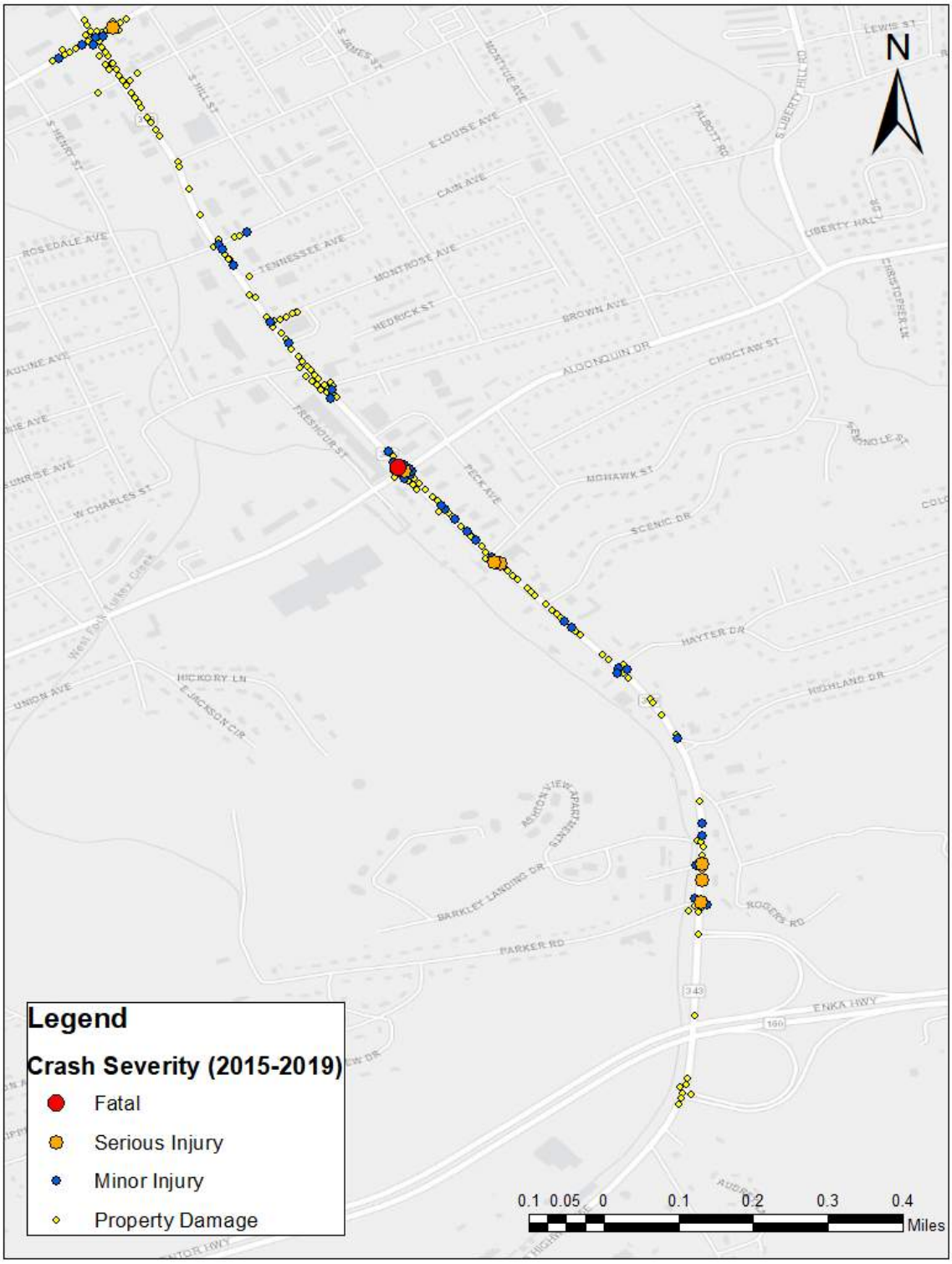


Figure 11 - Crashes by Type (2015-2019)

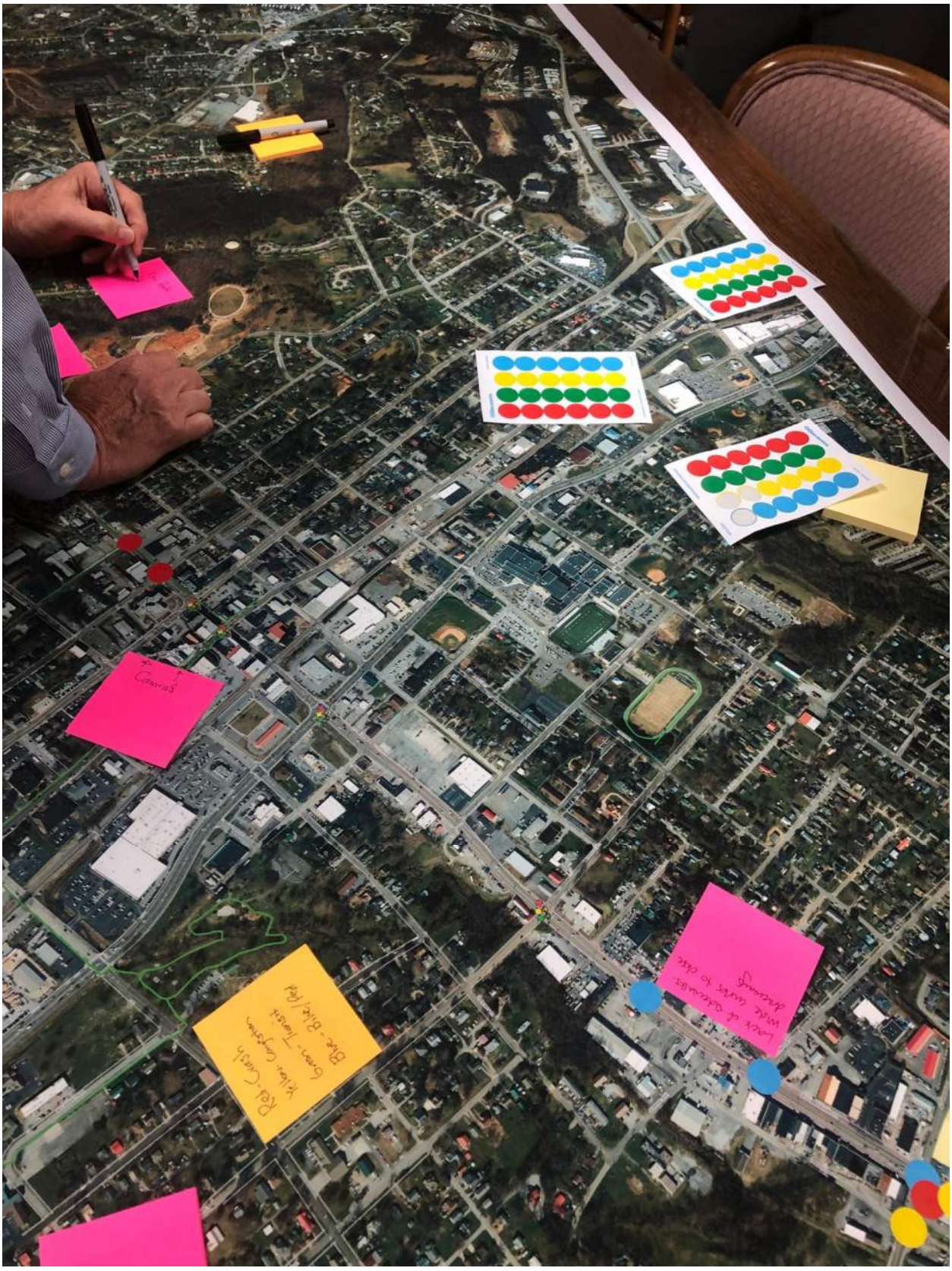
Public Engagement

The project team solicited feedback from a steering committee, the City Council, and the public throughout the planning process in an effort to gauge what they think are important to revitalize the SR 343 corridor.

Four steering committee meetings were held that included members of the project consulting team, TDOT Office of Community Development representatives, TDOT Traffic Operations representatives, City of Morristown staff, Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) representatives, and Tennessee Department of Health representatives. The first meeting was an in-person kickoff to the project to discuss the purpose and gather feedback regarding important issues. The following meetings were virtual and consisted of progress reports to highlight the work to date. The collaboration and input received at these meetings helped the planning process go smoothly and to ensure that the final recommendations reflect the comments received from the public and stakeholders.

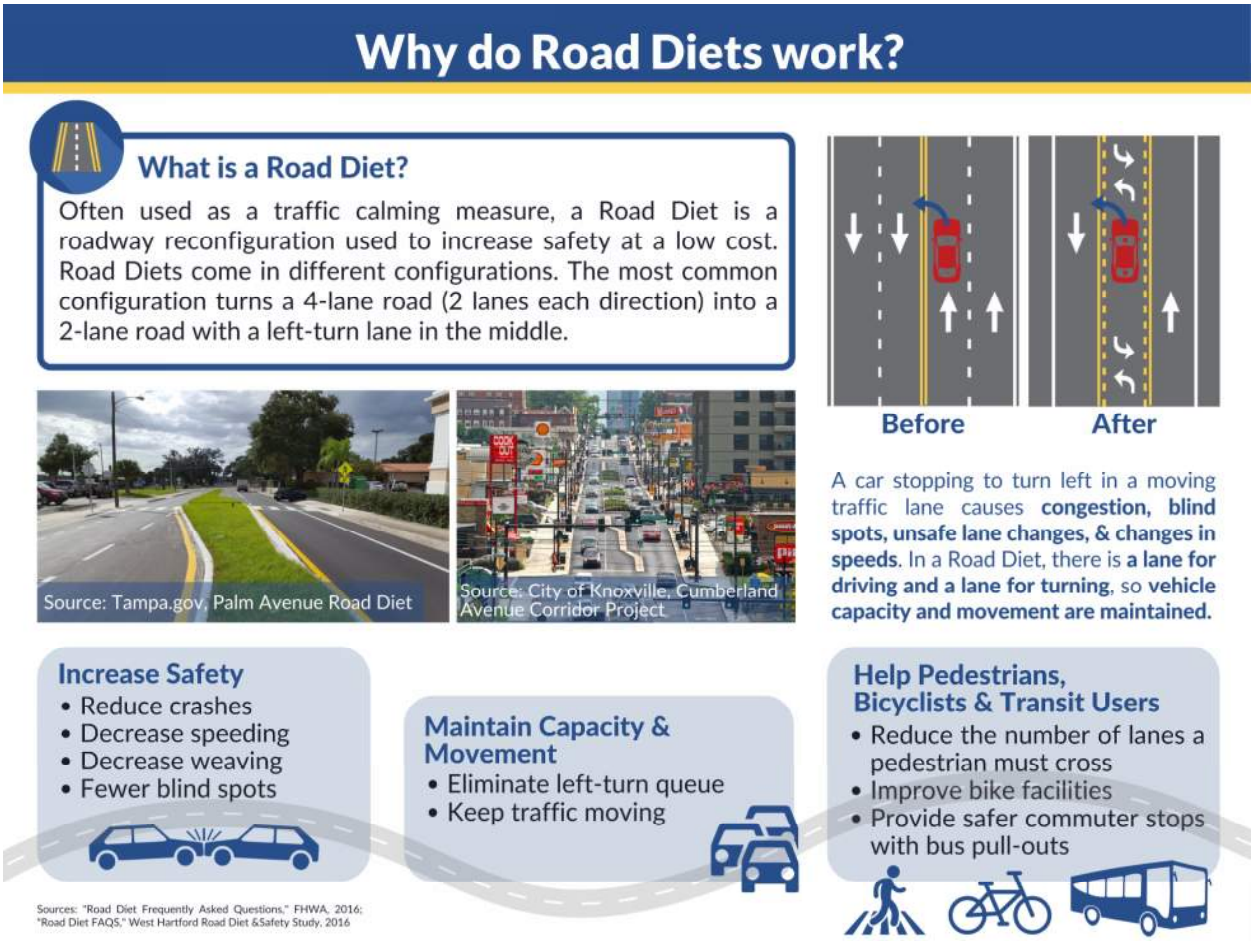
In addition to steering committee meetings, the project team also solicited feedback from the public via an in-person outreach effort to businesses along the corridor and an online public survey distributed to the general public. Information regarding the online survey was distributed on LAMTPO's website, LinkedIn, Nextdoor, the Morristown City website and social media pages, Hola Lakeway, in the Citizen Tribune and on the newspaper's website, and flyers were hand delivered to properties along SR 343. The public survey was generated using MetroQuest Studio and was open for responses between October 4, 2021 and October 22, 2021. An English and Spanish version were available. A total of 698 respondents participated in the survey. Approximately 3% of the responses were in Spanish. The detailed survey summary is provided in Appendix B.

Additionally, the project team presented to the Morristown City Council on October 5, 2021. This meeting was an informative session to introduce the City Council to the project and explain the importance of planning for multimodal transportation.



Finally, after the consultant team compiled all the responses from the public survey and developed recommendations for the corridor, a public meeting was held on November 18,

2021. In general, the responses to the preliminary concepts were positive. There was some concern about how the roadway reconfiguration would impact traffic operations, but the future traffic analysis shows that traffic operations would not be significantly impacted by the proposed recommendations.



Issues & Opportunities

According to feedback obtained from the steering committee and the public survey, the most popular improvement areas relate to traffic operations and traffic calming. Pedestrian improvements were ranked modestly, but bicycle and transit enhancements were not of high priority.

The steering committee was asked what destinations were critical to access from the SR 343 corridor and the popular responses included schools, downtown, the post office, Fred Miller Park, the Health Department, and Central Services. Over 200 “Add Sidewalk” comments were provided via the public survey. Of these comments, the majority of respondents do not walk themselves but observe pedestrians. This indicates that the community understands the need to provide safe accommodations for all users, not just vehicles. Of the respondents who walk frequently, the most common reason for walking was to access shopping/restaurants/services.

The most frequently placed map marker, representing 40% of all comments, on the public survey was “Feels Dangerous”. Of the respondents who feel in danger, 72% were drivers and 26% were pedestrians. Drivers feel that the corridor is dangerous mostly due to limited visibility and needed repairs. Pedestrians and bicyclists feel that the corridor is dangerous due to their proximity to traffic. The intersections respondents feel are the most dangerous are US 11E/Morris Boulevard and Lincoln Avenue/Algonquin Drive.

The steering committee was asked at the kickoff meeting how they want to be able to describe the corridor in the future. As seen in Figure 12, they want to see a corridor that can act as a gateway into Morristown. They would also like to see all users be able to safely navigate the corridor. Other responses relate to the aesthetics of the roadway.

Figure 12 - Steering Committee Kickoff Meeting Responses

One additional topic of concern along SR 343 that was brought up was the number of driveways throughout the corridor. Many properties have multiple access points that do not conform to TDOT's most recent access management standards. There are also properties that do not have a clear delineation of their driveways and essentially have open frontage to the roadway. An inventory of the existing driveways shows that there are currently 125 driveways within the 1.6-mile corridor study area. This equates to approximately one driveway every 135 feet. Every driveway opening poses a potential risk to pedestrians and bicyclists as they create a conflict point with a vehicle. Figures 13-15 show the existing driveway inventory along SR 343.

Based on these findings and what was observed from the existing conditions analysis, recommendations are categorized by improvements in the following areas:

- Pedestrian Improvements
- Connections to Resources
- Safety Improvements
- Aesthetics
- Access Management

Figure 13 - Existing Driveway Inventory Sheet 1 of 3 (Segments 1 and 2)

Figure 14 - Existing Driveway Inventory Sheet 2 of 3 (Segments 3 and 4)

Figure 15 - Existing Driveway Inventory Sheet 3 of 3 (Segments 5 and 6)

Recommendations

The following section describes the recommendations that were developed based on data collection, existing conditions assessments, discussions with the steering committee, and comments received from the public engagement efforts. The recommendations are further broken down by the categories mentioned in the Issues and Opportunities.

The following concepts shown in Figures 16-19 depict the long-term vision for the corridor. Based on the daily and peak hour volumes along SR 343, a three-lane roadway section will be able to accommodate through traffic. The SR 343 corridor currently experiences approximately 14,000 vehicles per day. The AADT threshold for converting a four-lane section to a three-lane section is 20,000. Considering traffic growth has been flat along this corridor over the past decade, it is reasonable to assume that the three-lane section will accommodate traffic for the foreseeable future. As shown in Table 6, the signalized intersections will operate adequately with a three-lane section.

Table 6 – SR 343 Proposed Capacity and Levels of Service Summary

SR 343 Intersection	Peak Hour	Proposed Conditions v/c	Delay	LOS
US 11E/Morris Boulevard	AM	0.57	25.3	C
	PM	0.81	26.1	C
Louise Avenue	AM	0.49	5.0	A
	PM	0.42	6.1	A
Brown Avenue	AM	0.48	5.4	A
	PM	0.50	4.2	A
Lincoln Avenue/Algonquin Drive	AM	0.65	24.3	C
	PM	0.71	27.3	C

Source: Companion ITS Traffic Signal Coordination Study - CDM Smith

The addition of the center turn lane will help to clear left-turning vehicles that would otherwise be blocking a through lane and should result in a significant reduction in rear end crashes. The Crash Modification Factors (CMF) Clearinghouse shows that converting a four-lane roadway to a three-lane roadway with a center turn lane results in a 47% reduction in crashes in suburban areas.

A six-foot sidewalk is proposed along the eastern side of the roadway. Where right-of-way is available, a landscaped buffer will be provided between the travel lane and the sidewalk. On the western side of the roadway, a ten-foot shared-use path is proposed that will provide a safe space for pedestrians and bicyclists. A landscaped buffer with varying width will be provided to allow separation from the travel lane. With the removal of one through lane in the existing four-lane section and two through lanes in the existing five-lane section, these improvements can be constructed within the existing right-of-way.

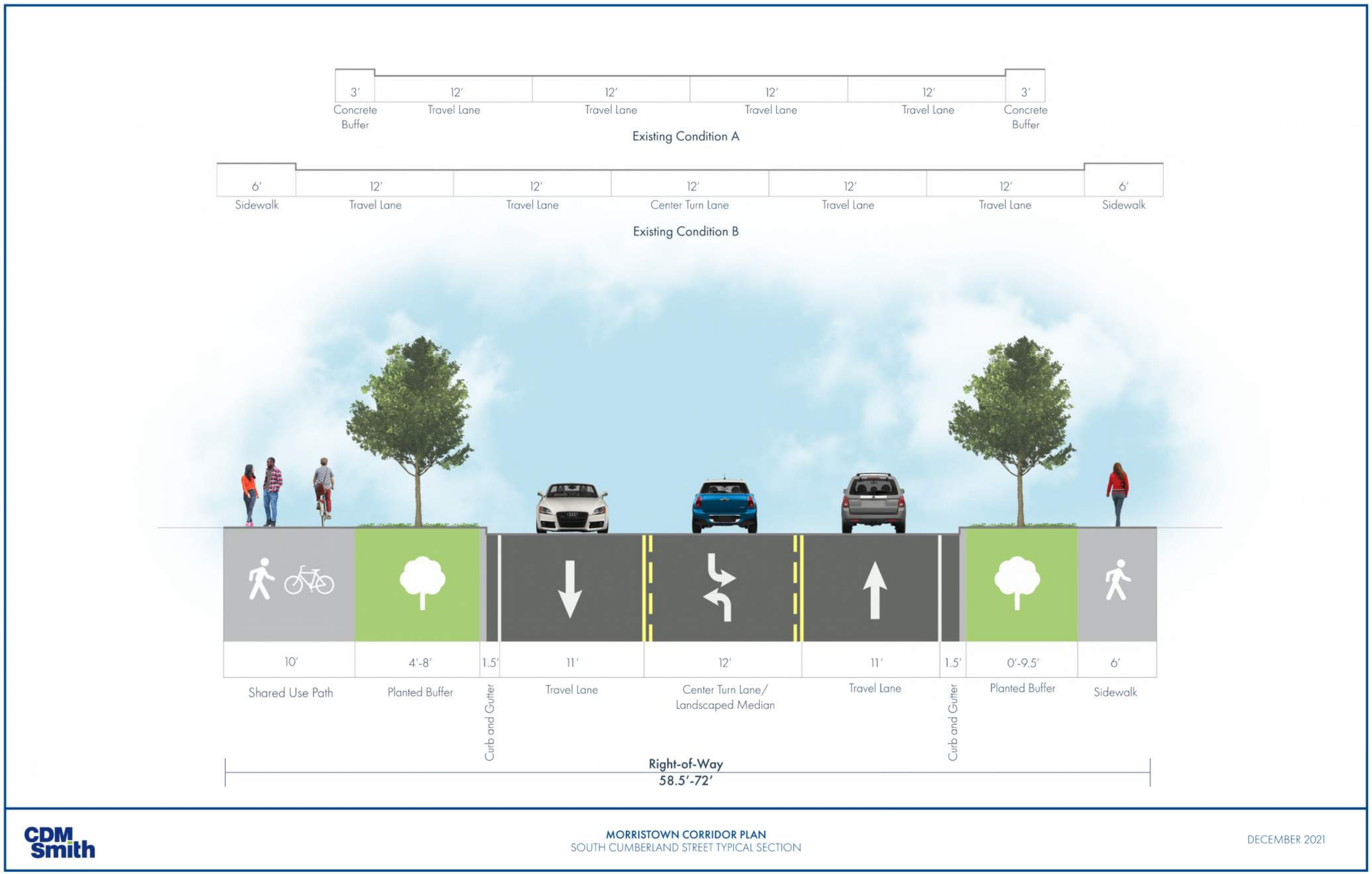


Figure 16 - Proposed Typical Section

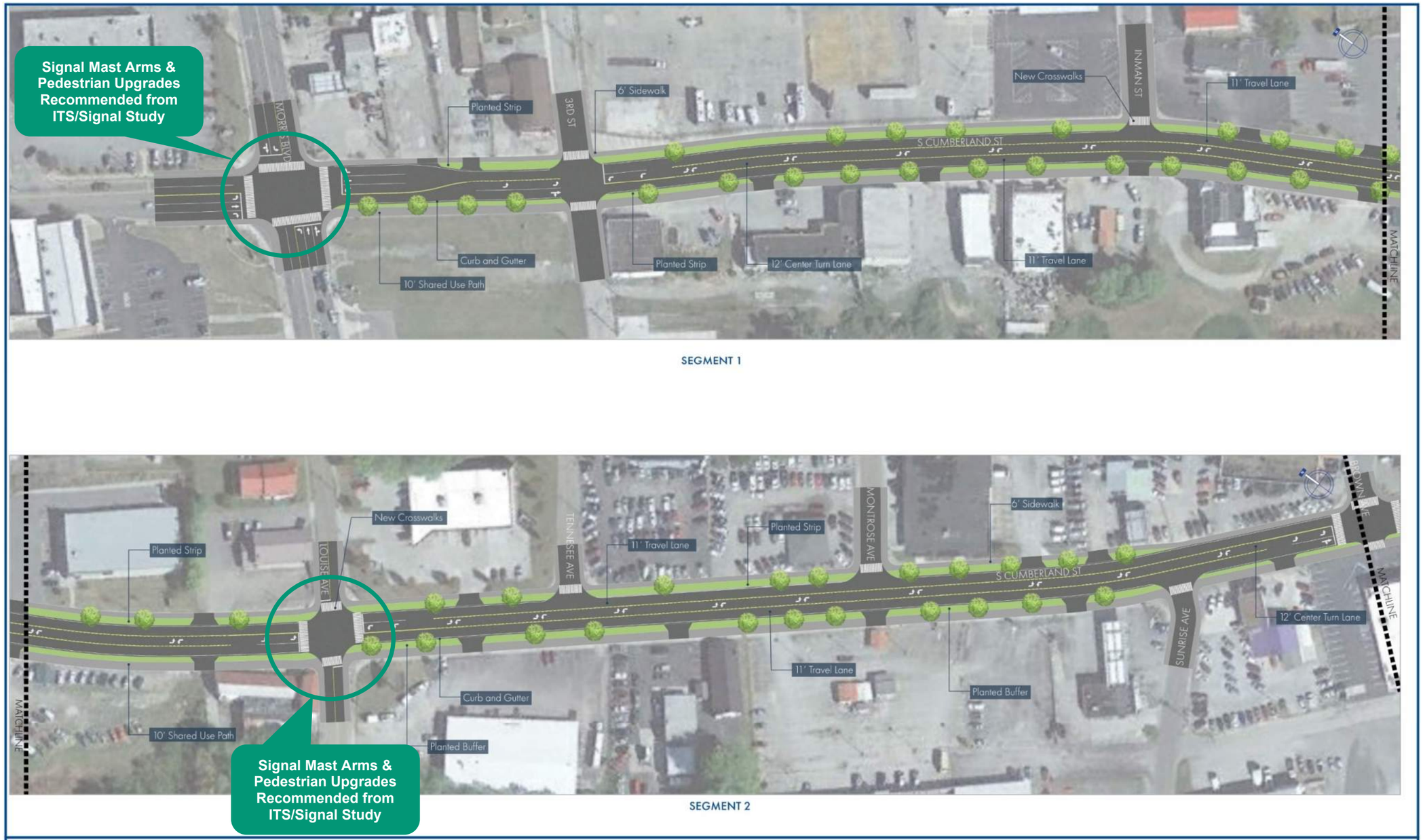
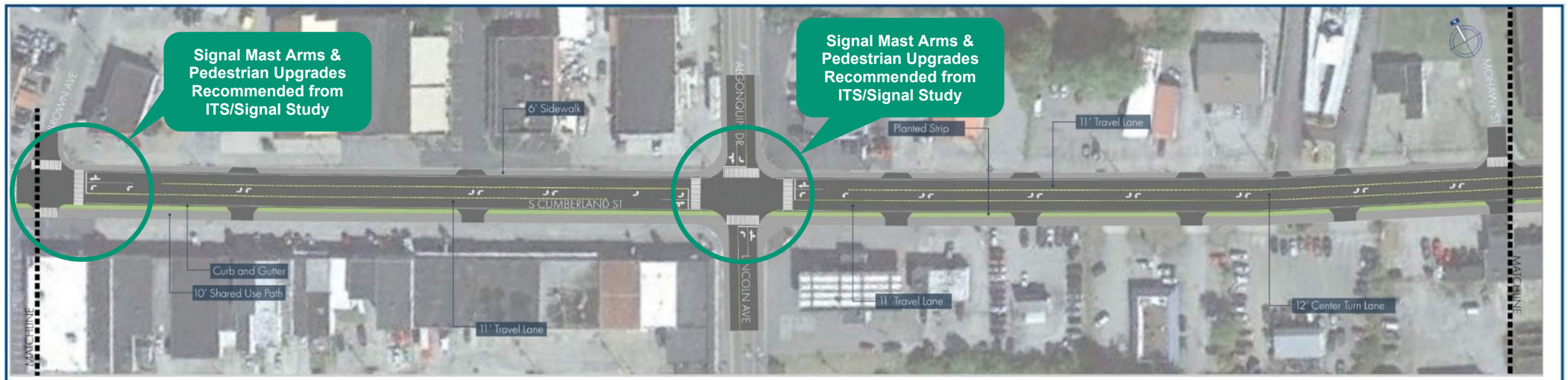


Figure 17 - Proposed Concept Layout Sheet 1 of 3 (Segments 1 and 2)



SEGMENT 3

SEGMENT 4

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MORRISTOWN CORRIDOR PLAN
SOUTH CUMBERLAND STREET IMPROVEMENTS

1" = 100'
50 0 100

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Figure 18 - Proposed Concept Layout Sheet 2 of 3 (Segments 3 and 4)

SEGMENT 5

SEGMENT 6

CDM Smith

MORRISTOWN CORRIDOR PLAN
SOUTH CUMBERLAND STREET IMPROVEMENTS

1" = 100'
50 0 100

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Figure 19 - Proposed Concept Layout Sheet 3 of 3 (Segments 5 and 6)

Pedestrian Improvements

While there are some sidewalks located on the northern portion of the corridor, the southern portion is lacking adequate pedestrian facilities. ADA-compliant facilities should replace the three-foot raised concrete buffers. It is recommended that six-foot sidewalks are provided on the eastern side of the roadway and a 10-foot shared-use path is provided on the western side of the roadway, as shown in the intersection concept in Figure 20. The shared-use path should be provided throughout the length of the study limits; whereas the sidewalk should terminate at Parker Road to not interfere with the SR 160 ramps.

Figure 20 - Proposed Intersection Perspective (Lincoln Avenue/Algonquin Drive)

The ITS Traffic Signal Coordination Plan details the crosswalk, curb ramp, and pedestrian signal head improvements needed at the signalized intersections. It is recommended that the crosswalk treatments be installed along all four legs of each signalized intersection. Additionally, it is recommended that the ladder style crosswalk, as shown in Figure 21 be used along the corridor.

Figure 21 - Crosswalk Marking Examples

Connections to Resources

Fred Miller Park is located on the northern end of the corridor off US 11E/Morris Boulevard at Jackson Street. There is an existing greenway from Fred Miller Park that extends up N Cumberland Street to Fulton Hill Park. A shared-use path, as proposed in this study, will allow for additional bicycle and pedestrian access to these parks.

There are several schools located near the study corridor that will benefit from new non-motorized facilities.

To the south of the corridor is the Morristown Hamblen Central Services Food Pantry. The Hamblen County Health Department and Ministerial Association Temporary Shelter (MATS) are located on W Main Street to the north of the corridor study limits. The Douglas-Cherokee Economic Authority, which distributes USDA surplus commodity food to eligible residents, is located on E 1st North Street. The Daily Bread Community Kitchen is located just north of the study limits across N Cumberland Street from Little Dutch restaurant. Many individuals who rely on these services may not have regular access to a vehicle and would benefit greatly from an improved non-motorized network along SR 343.

Safety Improvements

There are several inherent safety benefits to reconfiguring the existing roadway to a three-lane roadway section. The separation from the travel lanes by the landscaped buffers provides additional protection to pedestrian and bicyclists using the sidewalks and shared-use path. The continuous three-lane section throughout the length of the project provides an element of safety because drivers have a consistent expectation of the roadway section. The center turn lane also provides a refuge for left-turning vehicles instead of blocking a through lane, which typically results in fewer rear end collisions.

It should be noted that the number of driveways along SR 343 poses a safety concern for the shared-use path concept because each driveway is a potential conflict point with a vehicle; however, when the City is ready to construct the facility, all the properties adjacent to the path will need to conform to TDOT's latest driveway standards. Many of the duplicitous driveways will need to be removed.

Additional safety features recommended for the corridor are pedestrian-scale lighting and high visibility pedestrian crossings at unsignalized intersections. The existing signalized intersections are spaced ¼-mile or less from each other. South of Lincoln Avenue/Algonquin Drive, there are currently no opportunities for pedestrians to safely cross the road. It is recommended that high visibility crossings utilizing Rectangular Rapid Flashing Beacons (RRFBs) be provided at the following locations:

- Parker Road
- Highland Drive
- Scenic Drive

These locations would allow for pedestrian crossing opportunities at ¼-mile increments. Figure 22 shows an example of an RRFP on a three-lane roadway section along Sutherland Avenue in Knoxville, TN.

Figure 22 - Sutherland Avenue RRFB

Aesthetics

The removal of one lane of traffic allows for more green space in the form of landscaped buffers along SR 343. The addition of green space makes the corridor feel more inviting and acts as a traffic calming measure when trees are introduced because the driver feels more confined and naturally slows down. The landscaping features will need to be vetted through TDOT but can include low bushes or trees with narrow trunks and branches that

would not impede sight distance. It is also important to plant trees whose roots grow down instead of out so that the roots do not destroy the sidewalk and/or shared-use path.

As was mentioned by the steering committee, the City would like for SR 343 to act as a gateway into Morristown. Figure 23 depicts what the corridor could look like at the SR 160 eastbound ramps – the southern end of the study area. A gateway sign is shown in the northeast quadrant of the intersection. The pavement area could be reduced and more green infrastructure could be introduced to delineate the on- and off-ramps. While the southbound left turn lane must be maintained for storage, a landscaped median could be provided south of the ramps.

Figure 23 - Proposed Intersection Perspective (SR 160 Eastbound Ramps)

A major undertaking that would vastly improve the look of the corridor is burying all of the utility poles. This recommendation should be a long-term goal for the City.

Access Management

The continuous center turn lane will deliver a much-needed improvement along SR 343 by providing a refuge for vehicles turning left into properties or onto side roads. As already mentioned, the number of driveways along SR 343 pose a safety hazard to pedestrians and bicyclists. The City should prepare an access management plan that will prescribe how to consolidate driveways as properties along the corridor develop and/or redevelop. The plan should promote the use of shared access between properties that could eliminate the need for individual access onto SR 343. Figure 24 depicts an example of how properties could use a backage road for access. In this example, the driveways onto SR 343 are shown as right-in/right-out only. This configuration also allows for a landscaped median along this stretch of roadway, which would provide more green space and traffic calming.

Cost Estimate

A cost estimate for the complete street project was generated using TDOT's Cost Estimate Tool, which is included in Appendix C. The TDOT planning estimate includes generalizations on soft costs, utilities, and construction engineering and inspection (CEI). For the complete street project, it was assumed that there would be no right-of-way costs since the proposed cross section is within the existing right-of-way. A six-foot sidewalk and ten-foot shared use path were assumed for the entire length of the project. The total estimate for the complete street project is $21,198,000. The cost estimate for the signal system project is $2,040,000, which is provided in Appendix C. The total estimated project cost equals **$23,238,000**.

Figure 24 - Proposed Concept Layout with Backage Road Access

Implementation

The recommendations provided in the previous chapter represent a long-term vision for the corridor and are intended to be implemented over time. Moreover, recommendations in the ITS Traffic Signal Coordination Study are compatible with recommendations in this report. At the four signalized intersections covered in the ITS study, reconstruction of the traffic signal is recommended to include mast arms, new traffic signal heads, relocated controllers, and full pedestrian equipment. The sketch concepts in the ITS Report are general preliminary concepts and can be adapted to recommendations in this report. This section of the report provides a plan to phase the improvements to make the long-term recommendation more successful and attainable. This plan will aid the City of Morristown in securing additional grant monies to make this vision a reality. The plan will also provide the City with future bargaining power regarding driveway access when properties develop/redevelop along SR 343.

Short-Term Improvements

- Roadway Resurfacing – In the near term, before committing to moving curb lines for the shared-use path and closing driveways, repaint the roadway to show a three-lane section and buffered bike lanes
- Leverage traffic signal improvements from the ITS Traffic Signal Coordination Study to take advantage of traffic signal upgrade funding
- Crosswalks, Pedestrian Signals, Unsignalized intersection crosswalks with RRFBs
- Upgrade sidewalks and intersection curb ramps that are not ADA-compliant
- Landscaped median and gateway feature on southern end of study area
- Close driveway openings in areas where they are not currently being used
- Redefine driveways in areas where there is open frontage to SR 343

Long-Term Improvements

- Access Management
- Underground Utilities

Funding Opportunities

Finding sufficient funding to construct transportation projects is often difficult. Table 7 summarizes various federal, state, and local funding sources that are available for implementing transportation and non-motorized improvements. These programs focus on multimodal improvements such as sidewalks, bike lanes, shared-use paths, and other similar infrastructure. In addition to programs identified in Table 7, the City should also consider timing improvements along SR 343 with TDOT's resurfacing program.

Table 7 – Funding Strategies

Grant/Program	Agency	Examples of Eligible Activities	Funding
Multimodal Access Grant	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 non-compliance; pedestrian-scale lighting; and other improvements which primarily improve access for multimodal users.	95% state 5% local match State portion may not exceed $950,000
Transportation Alternatives Program (TAP)	TDOT Local Programs	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. TAP 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 Preliminary engineering, design, and ROW expenses are responsibility of local government
Highway Safety Improvement Program	FHWA	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 10% local match
Surface Transportation Block Grant	FHWA	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 within the pre-FAST Act title 23 definition of "transportation alternatives."	80% federal 20% local match

Built Environment Grants	TN Dept 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, work, play, worship, and learn in the community.	Up to $85,000
Project Diabetes	TN Dept of Health	Grants are awarded to community partners with a focus on reducing overweight and obesity as risk factors for the development of type 2 diabetes. Grant activities are geared toward interventions that are applied before there is any evidence of disease.	Category A – funded up to 3 years; max of $150,000/year Category B – funded up to 2 years; max of $15,000/year
Community Development Block Grant	TN Dept of Economic and Community Development	Provide essential, pressing community development needs in underserved areas. Can go towards community livability projects.	100% federal
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 Cyclovias or Open Streets Days; and campaigns to increase investment in bicycle infrastructure.	Up to $10,000
Fasttrack Infrastructure Program	TN Dept 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 At-Risk County – 35% premium to projects
Active Transportation Infrastructure Investment Program (IIJA Section 11529)	FHWA	This is a new discretionary grant program authorized under the Infrastructure Investment and Jobs Act (IIJA). Eligible applicants include local governments and MPOs, among others. The program funds planning and infrastructure projects that improve active transportation (walking and biking). Infrastructure projects have a minimum total cost of $15M while planning projects have a minimum total cost of $100,000.	Maximum federal share of 80%

Appendix A: UTPG APPLICATION

Urban Transportation Planning Grant
FY 2020-21 Application

Program Goals

- *Assist urban jurisdictions with transportation-related solutions that strengthen multimodal cohesiveness of the transportation system.*
- *Guide communities with developing potential the strategies that will support improvements in traffic flow, safety, mobility, and overall efficiency of the transportation system.*
- *Provide jurisdictions with planning resources in order to achieve the community transportation and land use visions and future economic growth.*

Eligible Applicants

- *Must be a TN jurisdiction (municipal or county) located within a MPO's Planning Area.*
- *Multiple jurisdictions will be able to apply jointly.*

Key Facts

- *$200,000 is the maximum amount of planning services.*
- *90% of consultant services will be funded by TDOT.*
- *10% of the project cost must be a local cash match on behalf of the awarded jurisdiction.*
- *Length of projects shall not exceed 12 months.*

Eligible Activities

- *Transportation plans that include analysis to determine multimodal transportation needs to increase the accessibility, mobility, and safety of people and freight, such as active transportation plans, safety focused plans (motorized and non-motorized), urban freight studies, and community mobility plans.*
- *Transportation planning activities to better coordinate transportation and land-use decisions, including corridor studies and school siting/industrial-commercial siting.*
- *Transportation planning activities to support a Corridor Management Agreement including curbside management in more urban environments.*
- *Transportation plans to enhance the integration and connectivity of the transportation system, such as a Transportation Systems Management & Operations (TSMO) study, a smart mobility plan, or a transportation resilience or transportation sustainability plan.*
- *Transportation plans that address parking management and Transportation Demand Management (TDM) strategies that support the use of transit, reduce private automobile demand, or promote alternative and/or shared modes, including transit-oriented development plans, urban area parking studies, and park-n-ride investment plans.*
- *Other innovative transportation-related planning projects and activities that are consistent with both the MPO's Metropolitan Transportation Plan and the State of Tennessee's transportation goals.*

Please provide the following information below. ***Limit your application to no more than 4 pages.***

Applying Jurisdiction (if filing jointly, please include all parties):

City of Morristown, TN

MPO / TPO Location:

Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)

Identified Transportation Needs (Double click to open dialog box and select "Checked" for all that apply):

☒ **Accessibility** (e.g., access to local or regional services and facilities)
☒ **Economic Development** (e.g., supporting economic growth, commerce, tourism, revitalization)
☒ **Safety** (i.e., address safety concerns)
☐ **Community Support** (i.e., studies to help increase awareness or advance transportation policy)
☐ **Mobility** (e.g., smart mobility plans, TSM&O, parking management, etc.)

Plan Overview (include plan objectives and provide and provide any useful background information that supports the identified transportation need(s). Also, describe how you will use this plan once finalized):

SR343 ITS Traffic Signal Coordination and Complete Streets Project

Starting point is the N Liberty Hill Intersection to the north. The terminus point is the SR160 intersection to the south.

The total length of this project is approximately 3.70 miles.

Part 1. ITS Traffic Signal Coordination Project

There are thirteen (13) traffic signal intersections on SR343/ Buffalo Trail/ N Cumberland St/ S Cumberland St from the N Liberty Hill Rd intersection to the north to the Lincoln Avenue intersection to the south. Currently, most of these signals work independently of one another, and a majority of the traffic signal equipment is old and out of date. Also, several signals are on wires, and the City of Morristown would like to replace with mast arms. Several intersections have sidewalks, but will need to be upgraded to meet ADA standards, with pedestrian head crossing signals (8 ped-head crossing signals). A Systems Engineering Analysis (SEA) report is needed in order to implement the traffic signal coordination project.

Part 2. Complete Street segment of SR343/ S Cumberland St from US Hwy 11E/ E/ W Morris Blvd to SR160

The distance is approximately 1.60 miles in length with 17 intersections (4 of which are signalized). The existing corridor is a 4 or 5-lane undivided highway, with approximately 1 mile of the roadway does not have any sidewalks. This is an issue as S. Cumberland Street/ Lincoln Avenue intersection is within 500 feet of the nearest entrance to Lincoln Elementary and Middle Schools, thus no real safe walking areas for students to travel on.

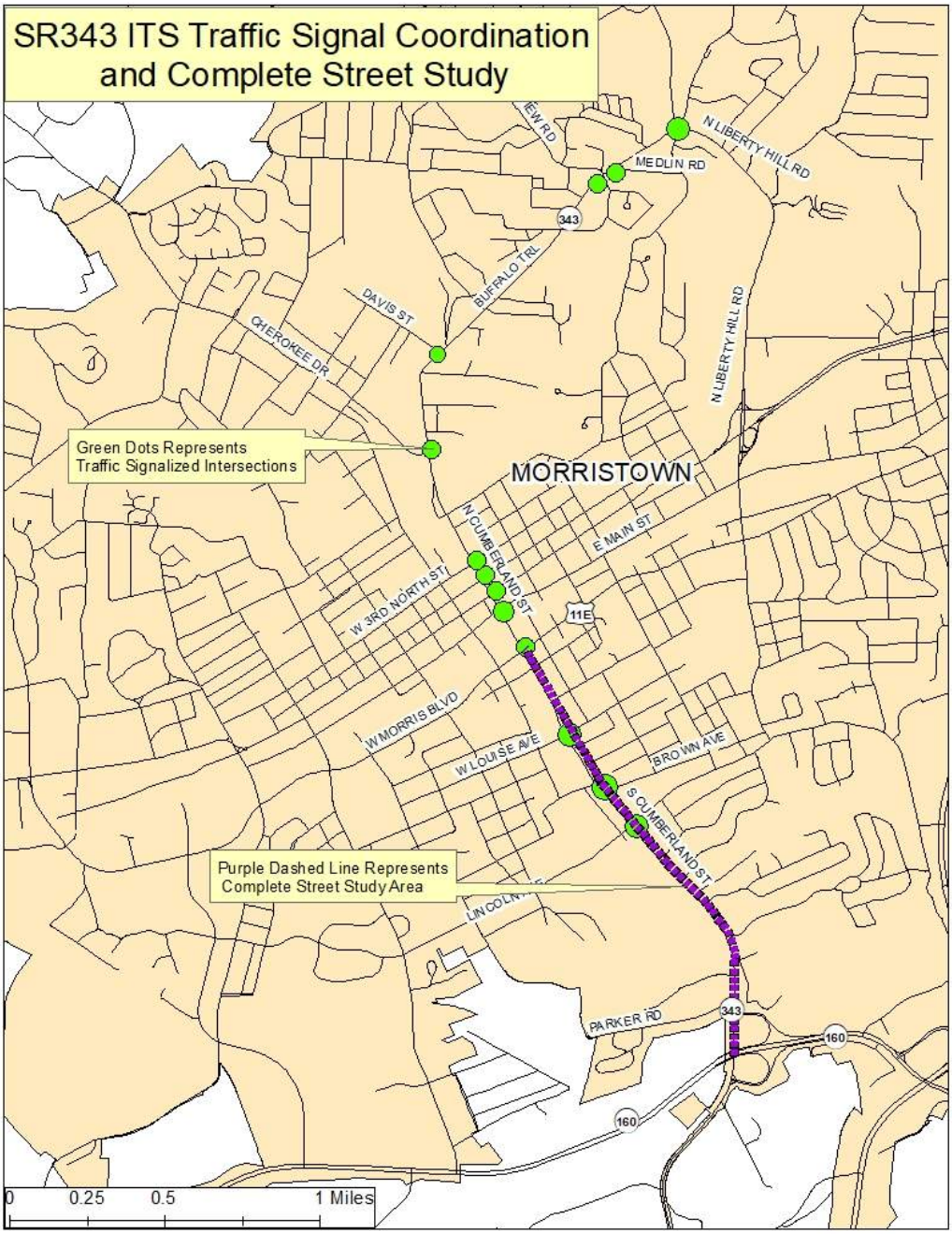
It should be noted a previous corridor study was done in 2008, thus needs to be updated. The rationale for this study are:

a. Improve the safety for all transportation modes;
b. Make it more pedestrian and/or bicycle friendly;
c. SR343 is a gateway into downtown Morristown, thus to enhance the aesthetics of the streetscape;
d. Improvements to various intersections, if needed
e. The northern section of SR343, from Cherokee Lake and US25E to E/ W Morris Blvd, is predominantly a 2 to 3 lane roadway. By narrowing down the S Cumberland St roadway from US Hwy 11E/ Morris Blvd to SR160 to a 3-lane roadway, it would be consistent with the northern end of SR343, and would also provide better, and safer, transportation by adding and/or improving sidewalks and/or bike lanes throughout this section of the corridor.

Once the plan is finalized, The City of Morristown will work with TDOT in implementing the work outlined in the report. The project may be broken down into phases in order to maintain financial constraint. The SR343 ITS traffic signal coordination and the complete street projects are in the current long range transportation plan (LRTP), and will be in the 2045 MTP.

Map of Study Area (highlight significant roadways and other important features):

[click on the icon below to insert map. Resize image if necessary]



Urban Transportation Planning Grant
FY 2020-21 Application

Applicant Contact Information:

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Development Director
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Michele Parvin
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City of Morristown
100 W 1st North St
Morristown, TN. 37814
423-585-4610
mparvin@mymorristown.com

Acknowledgements (Double click to open dialog box and select "Checked"):

☒ I agree to provide an upfront 10% local match should I become a successful grant awardee.

☒ If awarded, I agree my governing body will adopt a resolution stating intent to endorse the plan document upon completion.

Application is due January 15, 2021

Send completed application to:
TDOT.LongRangePlan@tn.gov

Don't forget to attach this application!

Appendix B: PUBLIC SURVEY RESULTS SUMMARY

State Route 343
Complete Streets Plan

Survey Summary

The public survey for the State Route 343 Complete Streets Plan in Morristown, Tennessee was created through MetroQuest Studio by Fairpointe Planning. The questions in the survey were developed to gather data on the public's concerns and wishes for State Route 343, locally known as S. Cumberland St. The survey, available in English and Spanish, opened on October 4th, 2021 and closed on October 22nd, 2021. The survey was distributed on the city website, social media, during a city council meeting, and to businesses along the corridor. It engaged a total of 698 participants on topics including local priorities, geographic concerns, and visual preferences for possible additions.

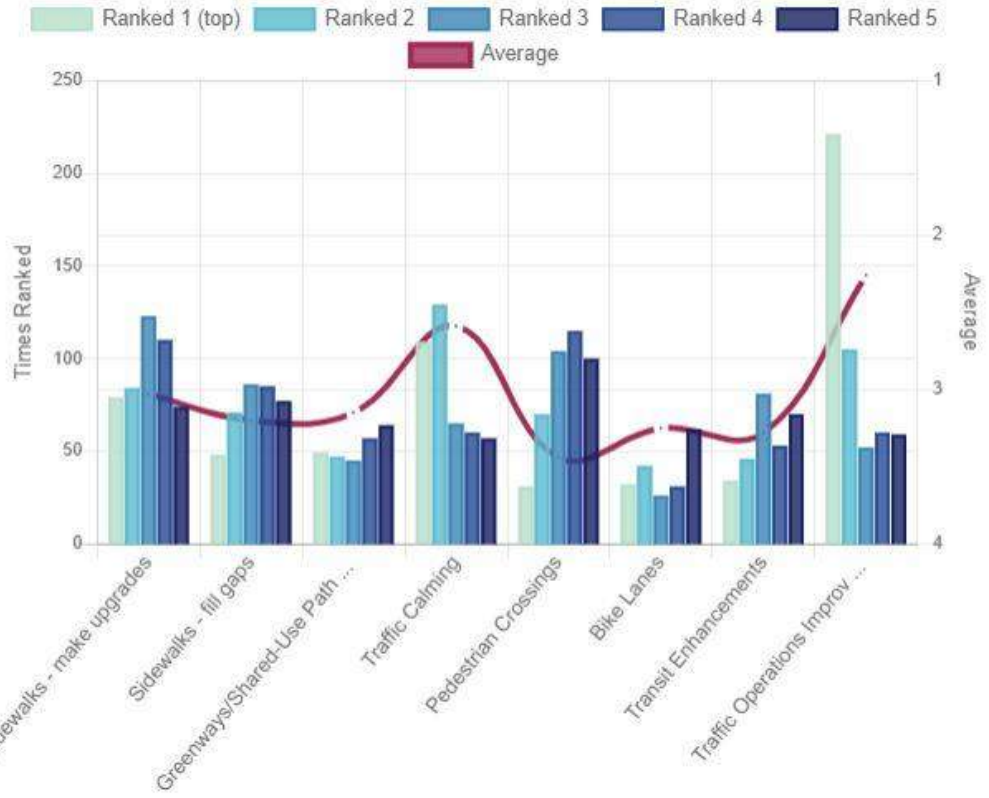
Some key takeaways from the survey are listed below:

- Traffic operations improvements ranked as the most important priority to the community
- Over half of all survey participants feel in danger at various places along the corridor
- The majority want a cross-section with sidewalks on both sides of the street and a turn lane that separates opposing traffic
- The Spanish survey only accounted for about 3% of responses

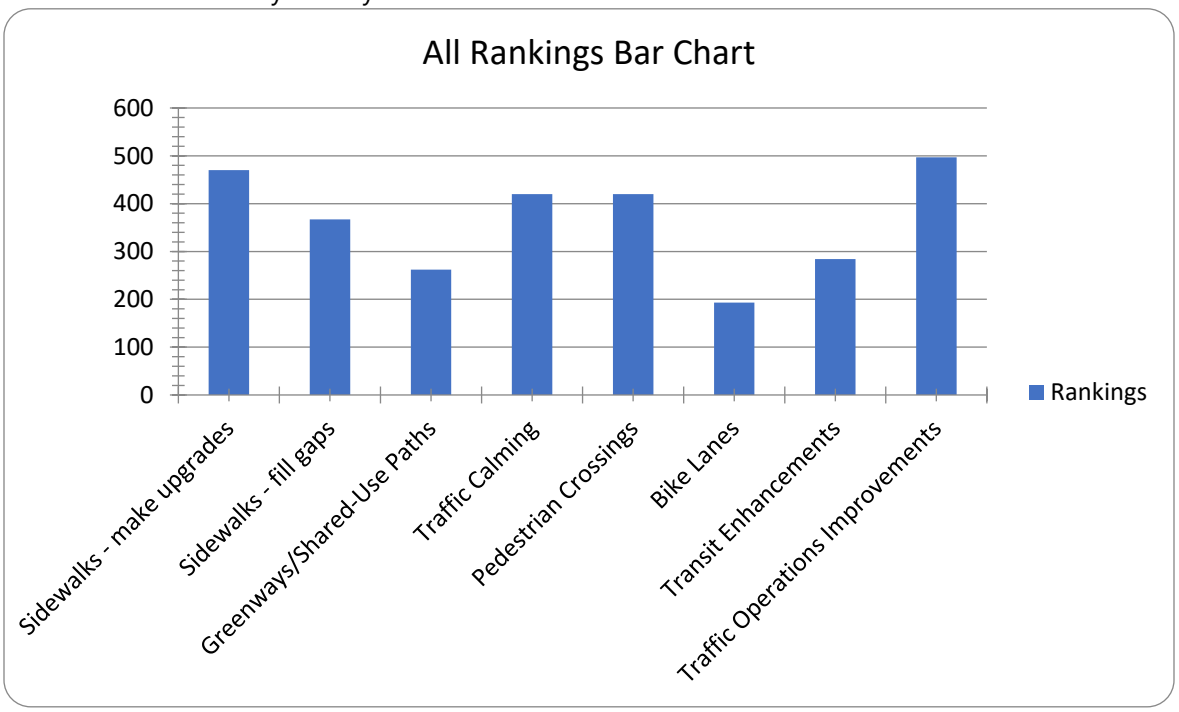
Slide 2: What is most important to your community?

This survey section asked participants to rank their top 5 priorities from most important to least important. They were given 8 options, meaning some options did not get ranked at all.

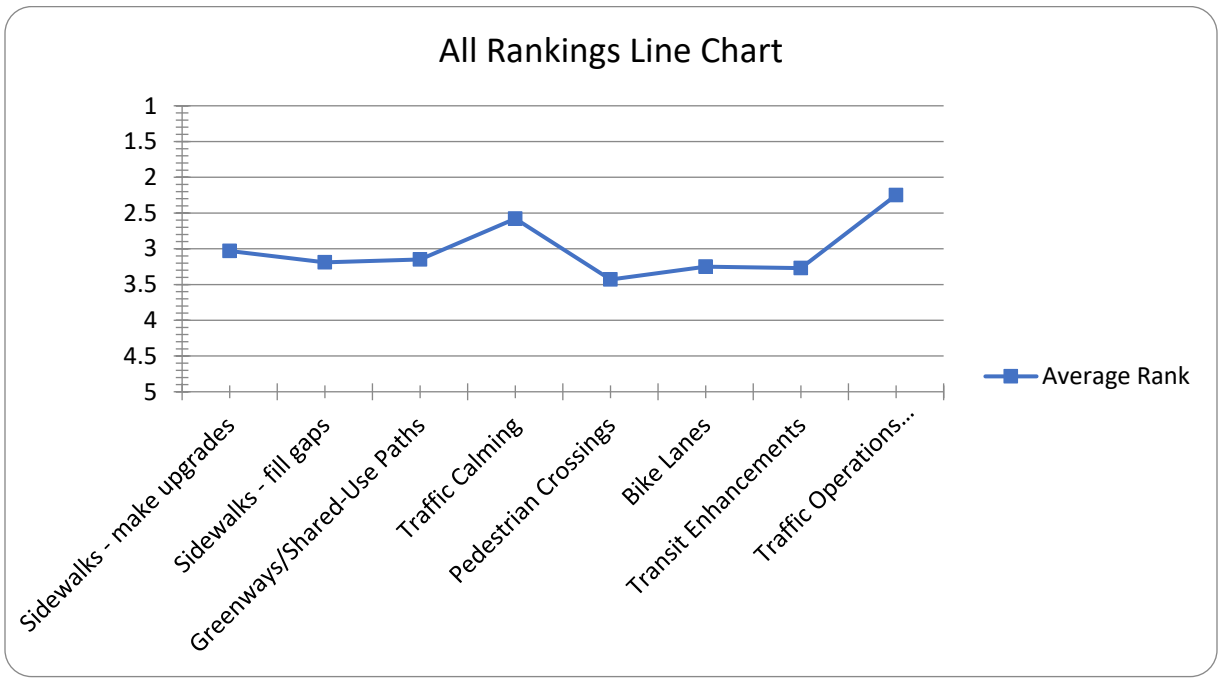
Graph 1: Total Times Ranked by Priority and Ranking



Graph 2: Total Times Ranked by Priority



Graph 3: Average Rank by Priority



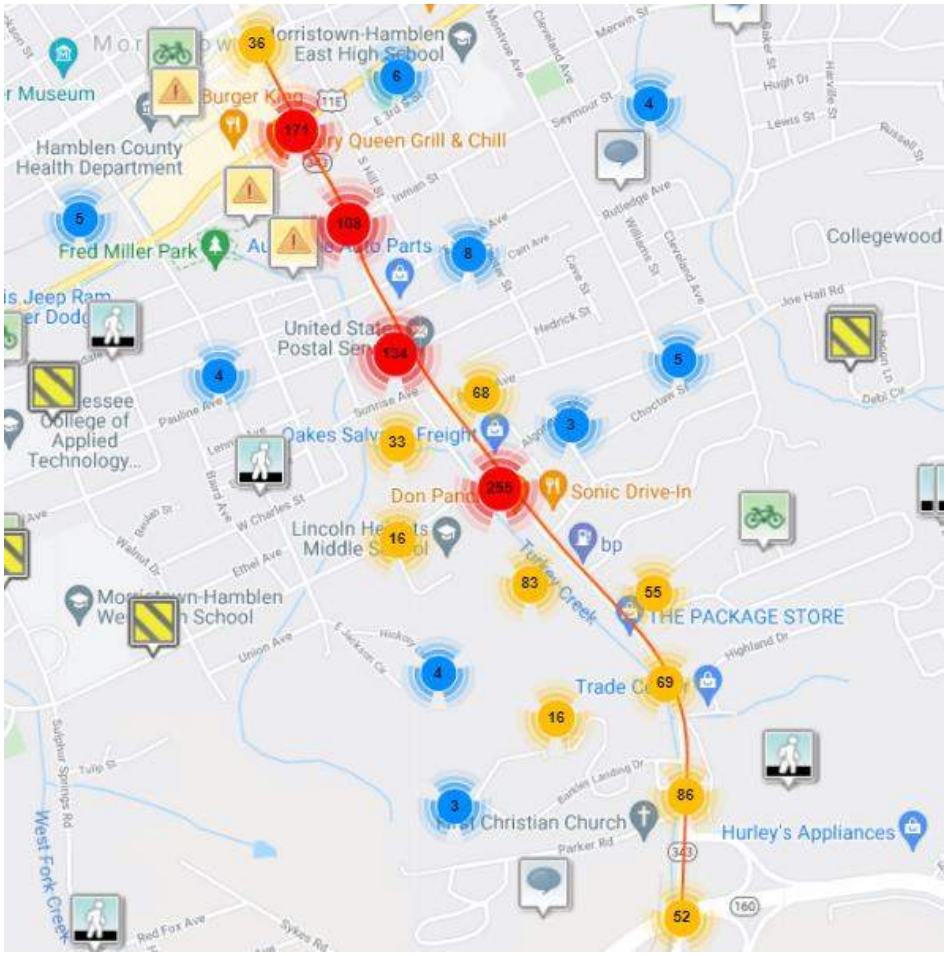
Key Takeaways:

- Traffic Operations Improvements ranked as most important on average, followed by Traffic Calming
- Pedestrian Crossings was ranked lowest on average in importance to the community but was included in participants top 5 more often than Greenways, Transit Enhancements, Bike Lanes, and Sidewalks – fill gaps.
- Sidewalks – make upgrades was ranked in participant's top 5 priorities second most to Traffic Operations Improvements
- Bike Lanes was least often included in participants top 5 priorities ranking

Slide 3: Where do you want to see changes?

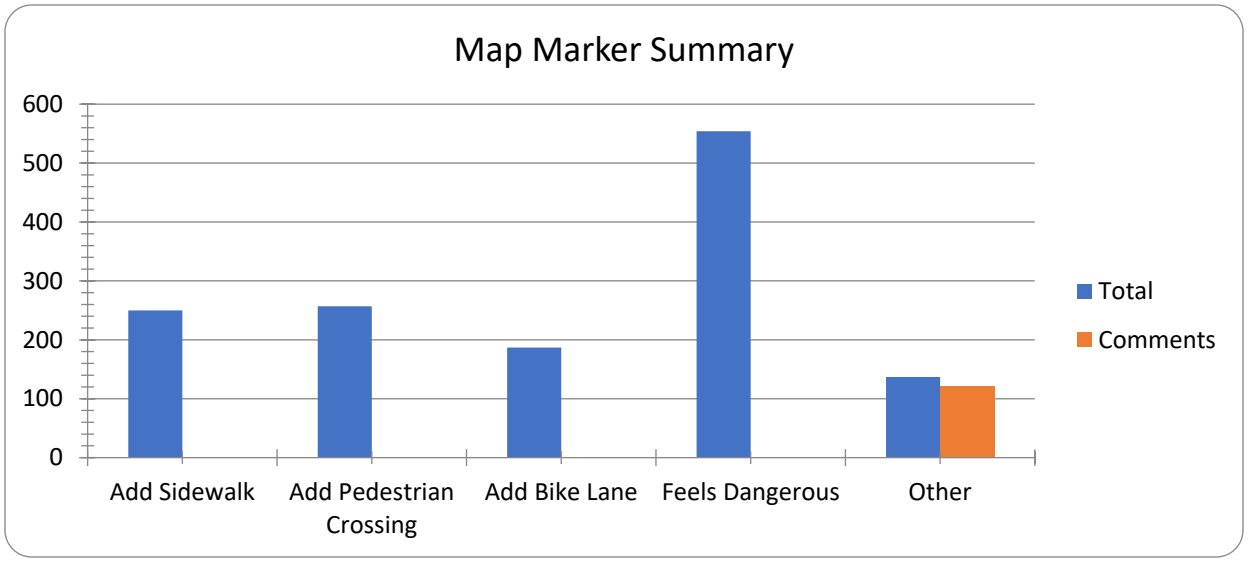
This survey section asked participants to drag 3 map markers to specific areas along State Route 343 that need change. The marker options included Add Sidewalk, Add Pedestrian Crossing, Add Bike Lane, Feels Dangerous, and Other Comment. When a marker was placed, participants were asked follow-up questions related to their concern.

Image 1: Map Marker Overview

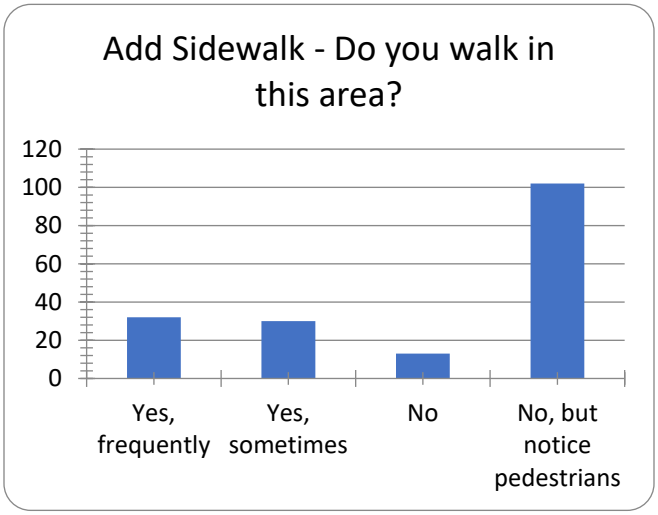


Above is an overview of the locations of concern that participants pinned on the map. State Route 343, the corridor in study, is highlighted in red, but there are still outlying markers. The analysis will include these, as there is no way to delete certain responses. The red clusters indicate a high concentration of map markers, followed by yellow, then blue. The three intersections with the most concerns are Lincoln Ave./Algonquin Dr., Morris Blvd., and around Louise Ave. The Lincoln Ave./Algonquin Dr. was commonly marked as dangerous with many requests to add a crosswalk. It was also the most requested location to add a bike lane. The most requested spot to add a sidewalk is between Rogers Rd. and Parker Rd. The intersection at Morris Blvd. received many comments about adding a turn lane and adjusting the signal timing. Other comments include paving the road, congestion due to poor light timing, adding a center turn lane, controlling the speed and flooding issues.

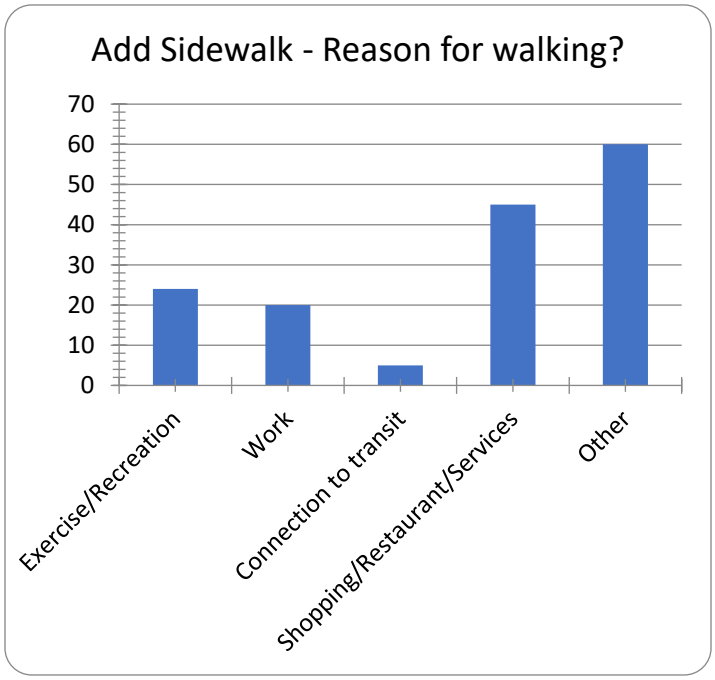
Graph 4: Total Map Markers by Issue



Graph 5: Add Sidewalk Map Marker Question 1



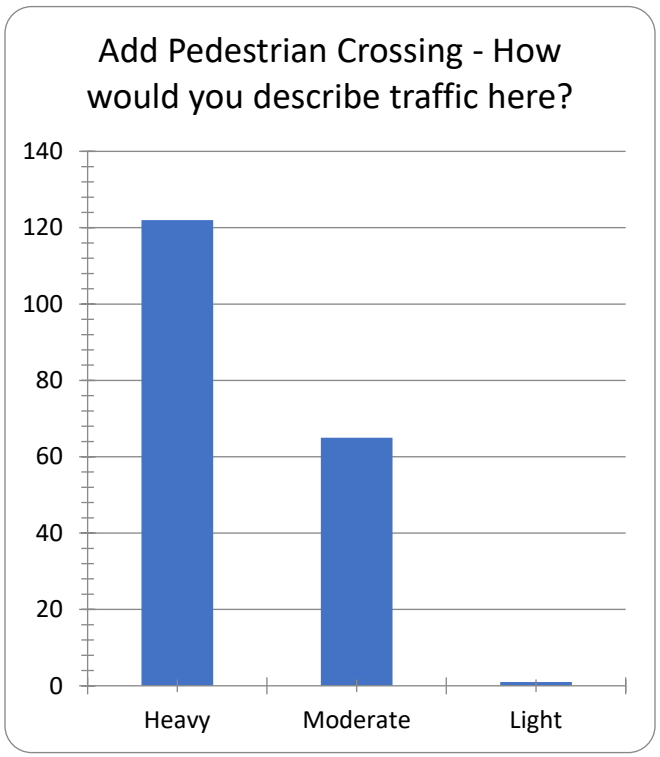
Graph 6: Add Sidewalk Map Marker Question 2



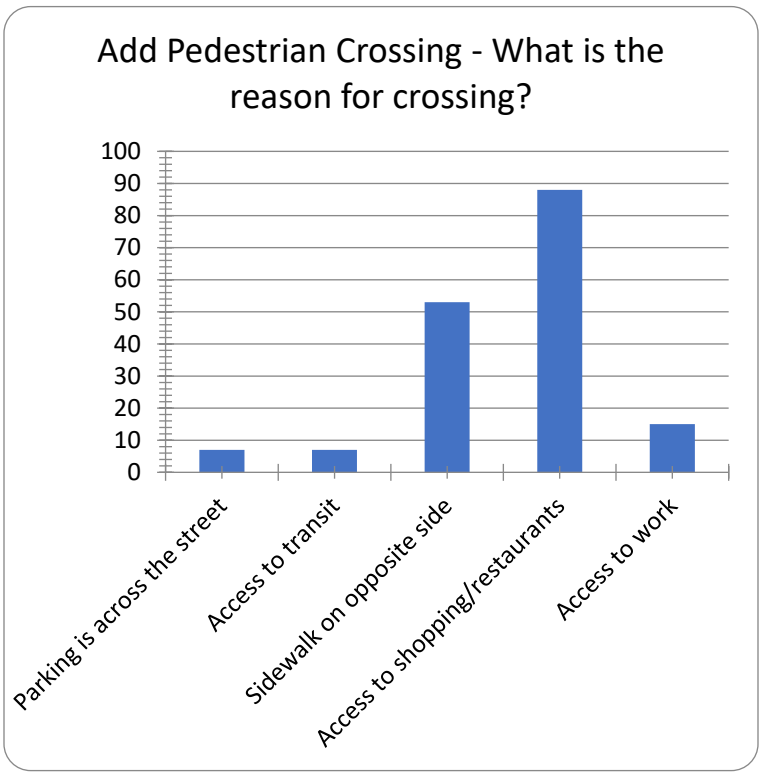
Key Takeaways:

- The most frequently placed map marker is 'Feels Dangerous' at 40%
- 164 people either walk or notice pedestrians along SR343
- Of the people that walk frequently or often along the corridor, the most common reason is access to shopping/restaurants/services
- Some 'Other' reasons for walking could be homelessness, as that was mentioned in additional comments from the public
- Sidewalks were most requested in between Brown Ave. and Mohawk St. and between Hayter Dr. and Hwy 160

Graph 7: Add Pedestrian Crossing Map Marker Question 1



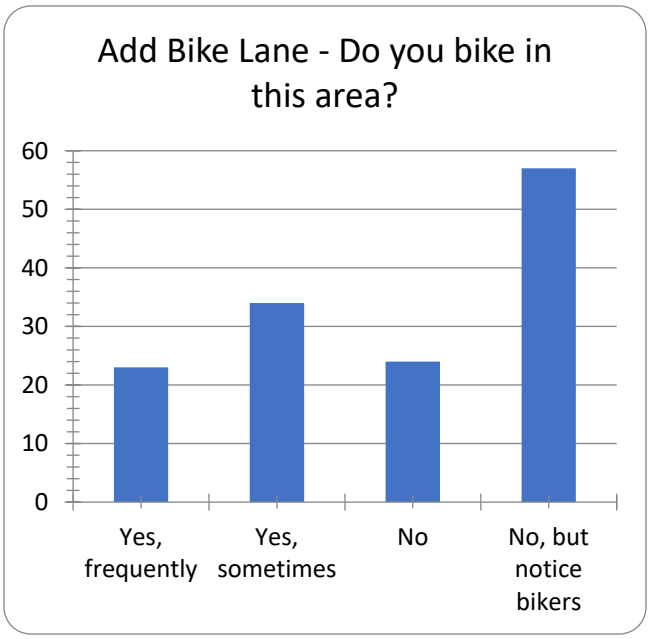
Graph 8: Add Pedestrian Crossing Map Marker Question 2



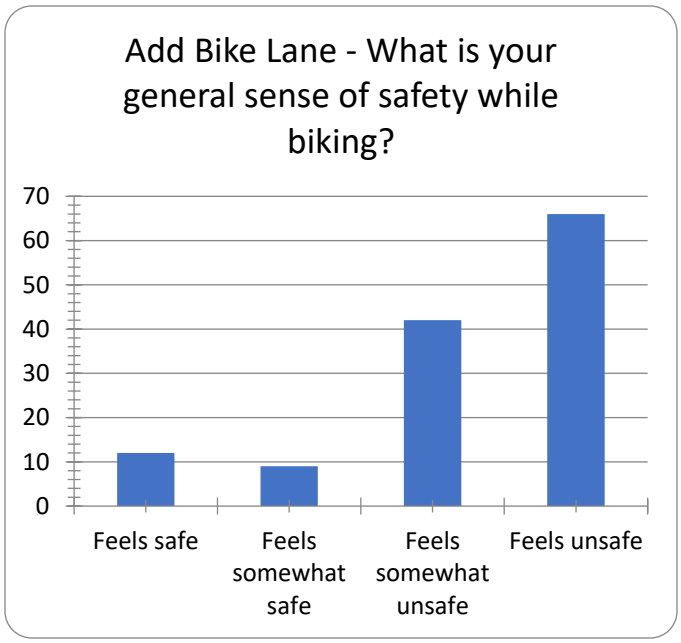
Key takeaways:

- 65% of participants characterized traffic as heavy in the places they requested a crosswalk
- 52% of people want a crosswalk for better access to shopping/restaurants and 31% want a crosswalk to reach a sidewalk on the opposite side of the street
- The most requested locations for a crosswalk are at the Lincoln Ave./Algonquin Dr. intersection and the Louise Ave intersection

Graph 9: Add Bike Lane Map Marker Question 1



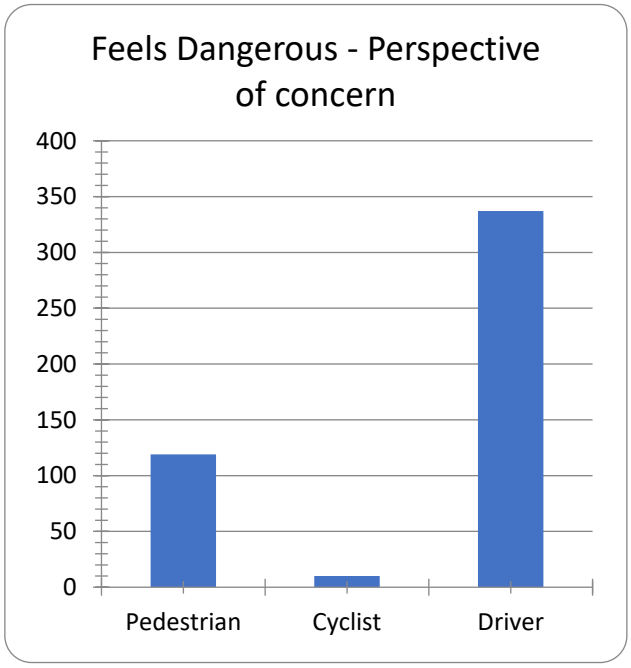
Graph 10: Add Bike Lane Map Marker Question 2



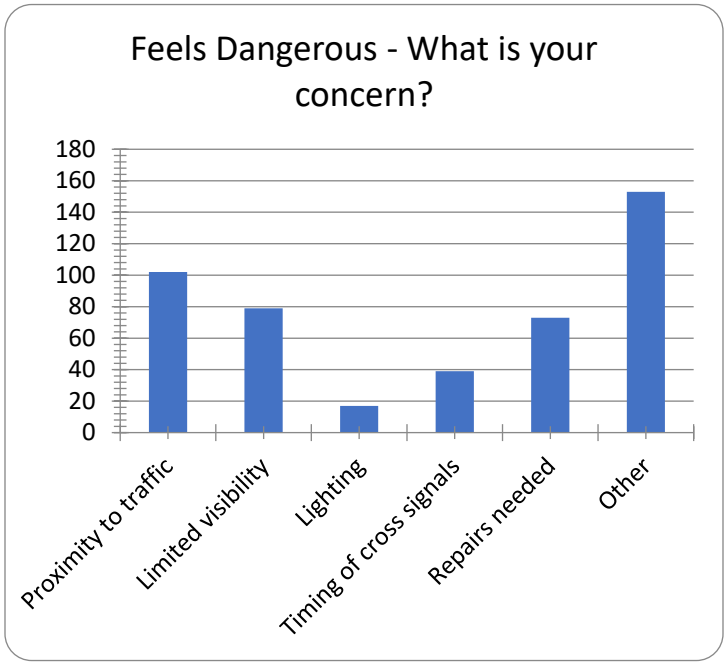
Key takeaways:

- 114 people either bike or notice bikers along SR 343
- Of those that bike sometimes or frequently, 79% feel somewhat unsafe or unsafe while biking
- The request for bike lanes was evenly distributed along the corridor, but the most popular location requested was in between Lincoln Ave. and Montrose Ave.

Graph 11: Feels Dangerous Map Marker Question 1



Graph 12: Feels Dangerous Map Marker Question 2



Key takeaways:

- 72% of survey respondents that feel in danger are drivers, while 26% are pedestrians
- Drivers feel that the corridor is dangerous mostly due to limited visibility and needed repairs
- Pedestrians and Cyclists feel that the corridor is dangerous mostly due to proximity to traffic
- Survey respondents identified the Morris Blvd. intersection and the Lincoln Ave./Algonquin Dr. intersection as where they feel most in danger
- The Feels Dangerous map marker was the most commonly placed over any of the others

Other Comments:

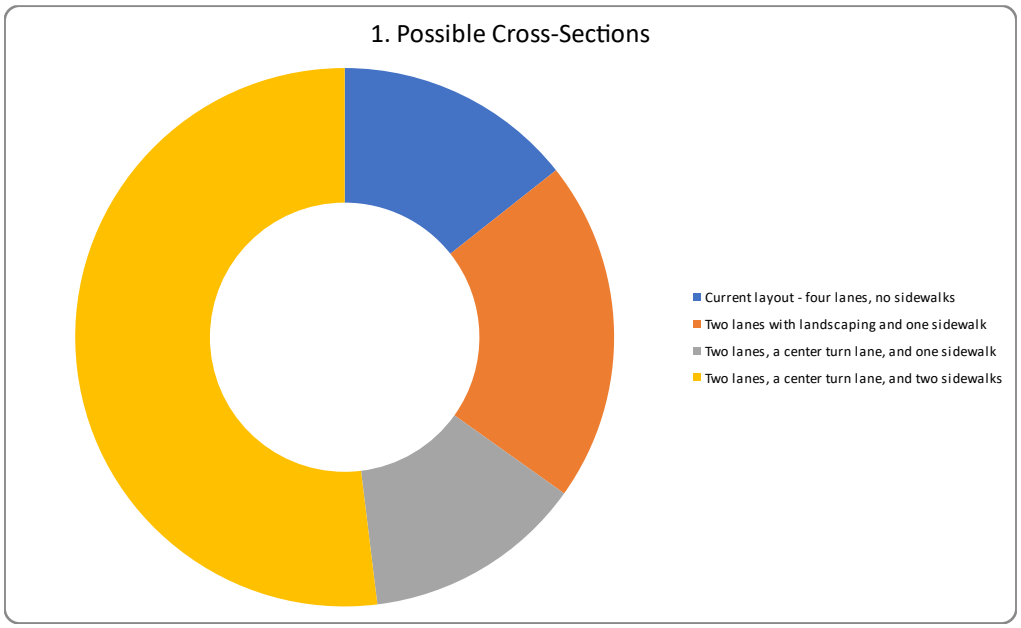
- Residents are noticing significant traffic at Morris Blvd. due to no turn lane and poor signals. A bus stop was also requested at this location.
- Highly requested center turn lane along the whole corridor
- Confusing lane layout heading North from Highway 160
- Traffic and poor lane layout at the Lincoln Ave./Algonquin Dr. intersection
- Improve roadway signage and markings
- Improve drainage along the whole corridor (flooding reports)
- Multiple requests to pave the whole corridor
- More green space
- Low-cost transit options to accommodate the whole community

- Speed enforcement

Slide 4: If you had to choose….

This survey section allowed participants to choose visual preferences on cross-sections, bike lanes, and crosswalks. A series of images was presented and participants chose the one they preferred.

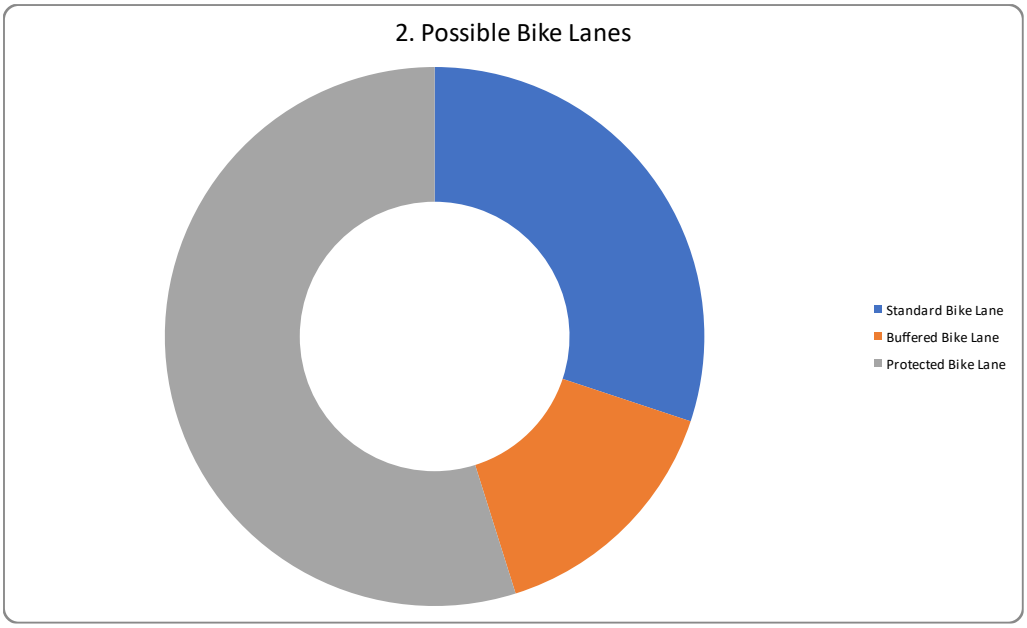
Graph 13: Cross-Section Preferences



Key Takeaways:

- 52% of survey participants prefer two lanes, a center turn lane, and sidewalks on both sides of the street
- Several comments mentioned the corridor is too congested to shift from 4 to 2 lanes

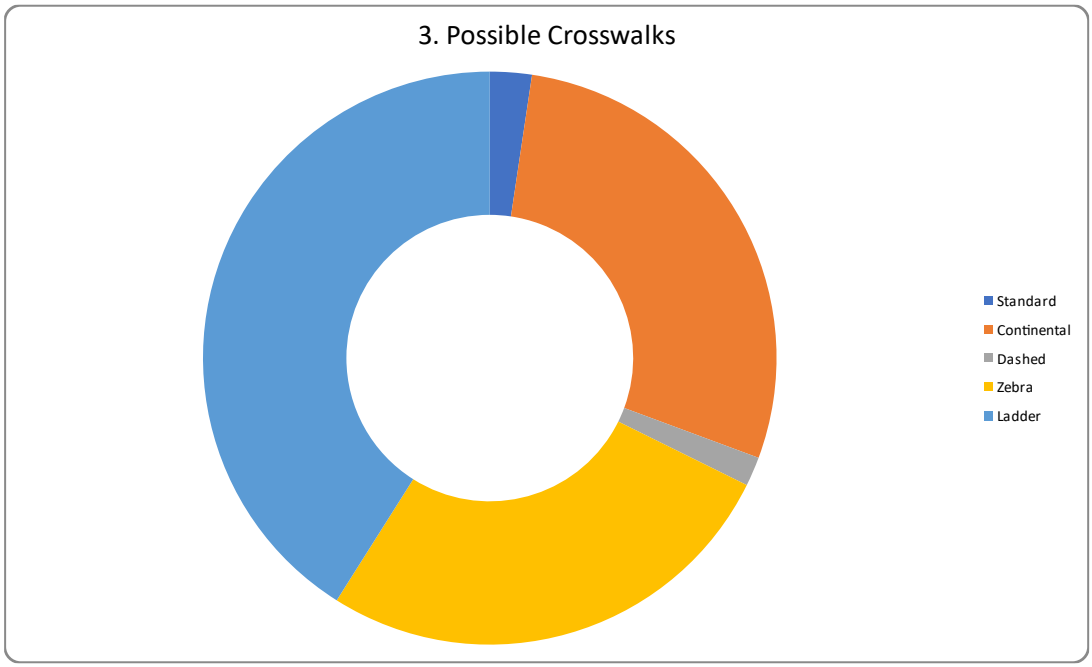
Graph 14: Bike Lane Preferences



Key Takeaways:

- 55% of survey participants prefer protected bike lanes with bollards or armadillos
- Several comments requested that bike lanes should not be added to the corridor

Graph 15: Crosswalk Preferences



Key Takeaways:

- 41% of survey participants prefer a ladder style crosswalk
- The least preferred style was dashed at 2%
- General comments requested bright and visible crosswalks to accommodate persons with disabilities and the homeless community

The images used for the visual preference examples are available if requested.

Slide 5: Wrap Up/Thank You

This survey section simply collected demographic information. It was noted as optional, so not every participant completed this section.

Key Takeaways:

- The age group with the most participants was 35-44 years, while the lowest number of participants fell in the Under 18 years age group.
- A significant majority of females took the survey over males.
- 81% of participants that completed the final slide identify as White or Caucasian with Hispanic, Latinx, or Spanish residents following at 6%.
- The survey responses represented 20 zip codes, but 37814 and 37813, the areas surrounding SR 343, accounted for 85% of respondents that completed the final slide.

Appendix C: COST ESTIMATES

COST ESTIMATE SUMMARY

Route:	SR 343 Cumberland
Description:	City of Morristown
	3-Lane Section (Road Diet) - Planning Level Estimate
County:	Hamblen
Length:	3.00 Miles
Date:	January 14, 2022

DESCRIPTION	LOCAL 0%	STATE 100%	FEDERAL 0%	TOTAL	% Contribution
Construction Items					
Pavement Removal	$0	$291,600	$0	$291,600	3.09%
Asphalt Paving	$0	$1,724,700	$0	$1,724,700	18.25%
Concrete Pavement	$0	$0	$0	$0	0.00%
Drainage	$0	$2,809,800	$0	$2,809,800	29.73%
Appurtenances	$0	$2,963,400	$0	$2,963,400	31.35%
Structures	$0	$0	$0	$0	0.00%
Fencing	$0	$0	$0	$0	0.00%
Lighting	$0	$797,900	$0	$797,900	8.44%
Railroad Crossing or Separation	$0	$0	$0	$0	0.00%
Base Material	$0	$533,100	$0	$533,100	5.64%
Clearing and Grubbing	$0	$0	$0	$0	0.00%
Landscaping / Sodding	$0	$133,800	$0	$133,800	1.42%
Rip-Rap or Slope Protection	$0	$0	$0	$0	0.00%
Guardrail	$0	$0	$0	$0	0.00%
Signing	$0	$45,000	$0	$45,000	0.48%
Pavement Markings	$0	$28,300	$0	$28,300	0.30%
Maintenance of Traffic	$0	$124,000	$0	$124,000	1.31%
Mobilization (5%)	$0	$472,600	$0	$472,600	
Other Items = 10%	$0	$992,400	$0	$992,400	
Const. Contingency = 20%	$0	$2,183,300	$0	$2,183,300	
Construction Estimate	$0	$13,099,900	$0	$13,099,900	
Interchanges & Unique Intersections					
Roundabouts	$0	$0	$0	$0	
Interchanges	$0	$0	$0	$0	
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 100%**	**FEDERAL 0%**	**TOTAL**	
Right-of-Way	$0	$0	$0	$0	
Utilities	$0	$5,018,400	$0	$5,018,400	
Preliminary & Construction Engineering and Inspection					
Prelim. Eng. 7%	$0	$1,268,300	$0	$1,268,300	
Const. Eng. & Inspec. 10%	$0	$1,811,800	$0	$1,811,800	
Total Project Cost	$0	$21,198,400	$0	$ 21,198,000	

Per Mile Cost	
$	7,066,000.00

S.R. 343 SIGNALIZED SIGNAL ESTIMATE

City of Morristown

SIGNAL GROUP	
BUFFALO TRAIL/CUMBERLAND STREET (S.R. 343)	**COST**
1. N. Liberty Hill Drive	$ 100,000.00
2. Medlin Road	$ 50,000.00
3. Fairview Road	$ 210,000.00
4. Davis Street	$ 155,000.00
5. Cherokee Drive	$ 155,000.00
6. W. 3rd N. Street	$ 195,000.00
7. W. 2nd N. Street	$ 175,000.00
8. W. 1st N. Street	$ 175,000.00
9. Main Street	$ 150,000.00
10. Morris Boulevard	$ 225,000.00
11. Louis Avenue	$ 150,000.00
12. Brown Avenue	$ 150,000.00
13. Lincoln Avenue/Algonquin Drive	$ 150,000.00
TOTAL ESTIMATED COST	**$ 2,040,000.00**

TDOT
Department of Transportation