Stantec

DATE: AUGUST 2023

URBAN COLLECTOR AND CORRIDOR PLAN

MICHIGAN AVENUE ROAD / DRY VALLEY ROAD

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THANK YOU.

Thank you to all the organizations and individuals who committed their time, energy, and resources to this effort. This study would not have been possible without the support of many throughout the process.

CITY OF CLEVELAND
Greg Thomas
Corey Divel
David Sheely
Robert Varnell
Tommy Myers
Bobby Gaylor
Pete Van Dusen
Joe Fivas

CHAMBER OF COMMERCE
Doug Berry

BRADLEY COUNTY
Bently Thomas
Tom Collins

SEDEV
Marc Holcomb

YMCA
Rodney Murray

BRADLEY-CLEVELAND SENIOR ACTIVITY CENTER
Demetrius Ramsey

CLEVELAND JETPORT
Mark Fidler
Jonathan Jobe

TDOT
Chanel Hippix
Kevin Layne

01: INTRODUCTION & CONTEXT

INTRODUCTION & CONTEXT

New residential development along Michigan Avenue Road.

Michigan Avenue Road is active.

At the eastern edge of Cleveland's city limits, Michigan Avenue Road is home to a diverse group of residents – from families with children to large-scale manufacturing corporations.

For many years, Michigan Avenue Road has functioned as a largely rural road with minimal traffic, and its design reflects this history. **But Michigan Avenue Road's design no longer matches its function for the community nor the needs of its users.**

At the intersection of city and county, Michigan Avenue Road is experiencing rapid growth and change. As the corridor moves forward, this important road must balance the needs of these numerous stakeholders and users, from freight movement to school buses, and even bicyclists and pedestrians.

This study encompasses two related tasks:

1. A conceptual redesign of the existing Michigan Avenue Road that benefits without needlessly impacting its residents;
2. And an examination of alternatives for connecting the existing Michigan Avenue Road and Dry Valley Road to US 11 / North Lee Highway.

Why this Study?

Michigan Avenue Road and Dry Valley Road (its name north of the Cleveland Regional Jetport) form an important eastern edge for Cleveland. Throughout the study area, defined as **the intersection of Benton Pike NE at its southern extent and the Tasso Lane intersection at its northern extent**, the roadway profiles as a two-lane, rural roadway with narrow travel lanes (11' to 12' wide) and minimal to no shoulders, undulating grades, and no bicycle or pedestrian facilities. As the City of Cleveland has grown, the corridor increasingly is host to two types of land uses: single-family residential homes, and industrial and manufacturing businesses, leading to residential and freight traffic intermingling in the study area.

View of Drive Valley Road, near Cleveland Jetport.

This study re-examines and builds upon work previously conducted in the mid-2010s, which made recommendations for improvements to the section of Michigan Avenue Road from Benton Pike NE to **Stuart Road**, the major intersection within the study area. Since the previous study was completed, this area has seen significant growth, focused on residential development and the relocation of major employers both at its northern and southern extents. To address these changes, there is a need to renew the findings and recommendations of the prior study, and to develop new recommendations to accommodate all roadway users, including vehicles, heavy trucks, walking, and biking.

WHY THIS STUDY?

1. **Economic Development:**
   To improve freight movement and support major employers.
2. **Accessibility:**
   To improve Jetport access to and from US 11/North Lee Highway.
3. **Safety:**
   To address safety concerns, particularly near Stuart Road and 20th Street intersections.
4. **Mobility:**
   To provide safe alternatives for bicycle and pedestrian users and increase mobility options for corridor residents.

Planning Process & Timeline

The Corridor Study planning process was divided into **four distinct phases**:

Figure 1.1: Generalized Project Schedule.

1. VISIONING

The first phase centered on **data collection, preliminary study of the corridor, and developing the public engagement process**. The team worked with community representatives, local, regional, and state planning agencies to define the Study's purpose, goals, and establish the framework for development. The project website, survey, and online maps were launched to begin collecting public comments.

2. INVESTIGATION

The second phase focused on analysis. The project team analyzed plans, policies, data and qualitative feedback from online engagement to conceptualize the Corridor's strengths, problems, opportunities and constraints. **The Project Symposium was held in December 2022,** the first major public outreach event to present the results of initial analyses and obtain further feedback. **Stakeholder interviews** were conducted during this period to obtain more detailed feedback on key topics of interest along Michigan Avenue Road. Key takeaways derived from this phase culminated in the development of the Preferred Access Plan (PAP), the foundation for future design work.

3. DESIGN

The third phase began immediately following Investigation. The team condensed data, public input, and background information to **inform preliminary planning, engineering, and design recommendations**. Initial recommendations were identified by project stakeholders and were refined by project engineers into **concept designs** for the corridor through an iterative process during the Winter / Spring.

4. REPORTING & ADOPTION

The final phase documented the whole of the planning process. Using plans, materials and designs produced throughout the Study, this final planning document was prepared to reflect design recommendations, the data and analysis informing the recommendations, and the planning process itself. This document will guide the City of Cleveland, Bradley County, and TDOT in subsequent design and engineering phases. **The Final Public Meeting was held during this period**, presenting the final recommendations to the public and closing the project to set the path forward to implementation.

Background & Context

PLAN AND POLICY REVIEW

This study is a continuation of the City of Cleveland's and the Cleveland MPO's planning efforts along Michigan Avenue Road. Both in long-range and short-range planning, prior plans have developed a vision for both the corridor and its adjacent land use, aiding in contextualizing the challenges faced along the corridor and giving shape to potential recommendations. The plans documented here have all influenced the planning process.

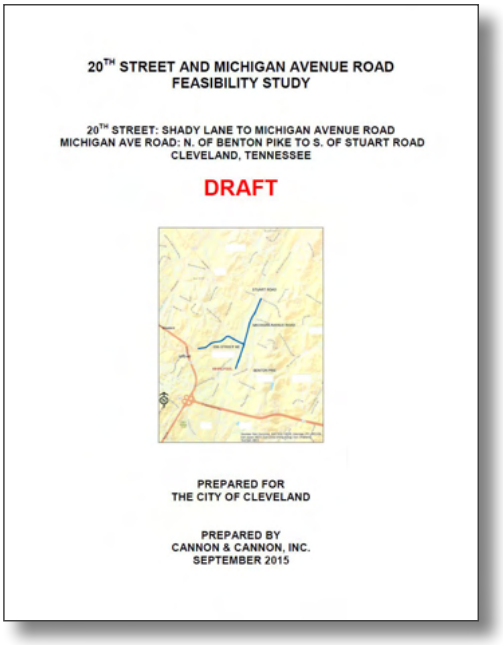
20TH STREET & MICHIGAN AVENUE ROAD FEASIBILITY STUDY (2015)

This study forms the basis for the current planning process. Along with a section of 20th Street, the study examined the *lower* section of Michigan Avenue Road from Benton Pike to Stuart Road, and found five principal needed actions, including:

1. Enhancing mobility in the study area and relieve traffic congestion resulting from development.
2. Improving traffic **safety**.
3. Supporting **economic development**, particularly freight movement on an important industrial corridor.
4. Improving **multimodal** options – this accounts for bicycle and pedestrian usage that is increasing with residential development.
5. Addressing **existing roadway deficiencies** – widen existing lanes, provision of shoulders and turn lanes, and grade improvements.

Three alternatives relevant to Michigan Avenue Road were studied:

1. **Three-lane facility:** widening to include a center two-way turn lane, with an 8' shoulder.
2. **Improved two-lane facility:** maintaining the existing two-lane cross-section but widens to include an eight-foot shoulder.
3. **Spot improvements:** targeted improvements at key locations to address acute concerns.


20TH STREET AND MICHIGAN AVENUE ROAD
FEASIBILITY STUDY

20TH STREET: SHADY LANE TO MICHIGAN AVENUE ROAD
MICHIGAN AVE ROAD: N. OF BENTON PIKE TO S. OF STUART ROAD
CLEVELAND, TENNESSEE

DRAFT

PREPARED FOR
THE CITY OF CLEVELAND

PREPARED BY
CANNON & CANNON, INC.
SEPTEMBER 2015

Recommendations from this prior study included:

1. **North of Benton Pike to Minnis Road:** three lane section preferred but may not be cost effective due to right-of-way impact. Adding a wide shoulder may alleviate safety issues.
2. **Minnis Road to 20th Street:** a three-lane section is preferred here, and the 20th Street/ Michigan Avenue Road intersection may require a traffic signal and dedicated turn lanes on approach.
3. **20th Street to Stuart Road:** a three-lane section is preferred but right-of-way impacts make it costly. Spot improvements to add turn lanes at key intersections mitigate safety issues.

CLEVELAND URBAN AREA MPO 2045 REGIONAL TRANSPORTATION PLAN (2021)

The 2045 RTP Update **aligns transportation funding with future transportation investments** based upon the needs and considerations of the Cleveland urbanized area. Michigan Avenue Road, home to a large base of industrial development and employment for Cleveland and Bradley County, as well as a location of increasing residential development, features prominently in the Plan.

Based upon community priority, 20th Street and Michigan Avenue Road improvements for safety and corridor modernization between Minnis Road and 20th Street were identified as the second-most important roadway improvement in the 2045 Update. A separate sidewalk project, from Benton Pike to Royal Oaks Drive, scored highly among bicycle and pedestrian projects.

While the Minnis Road to 20th Street project is already committed in the 2020-2023 Transportation Improvement Program, the 2045 RTP does not identify sufficient funding in the interim year (2024-2030) for further improvement. However, sidewalk infill projects along the length of Michigan Avenue Road are competitive during the Horizon period (2031 to 2045), and Michigan Avenue Road corridor projects are included as illustrative projects from 20th Street northward to the project extents. These projects call for improvements that **provide modern shoulders, improve drainage, and safe intersection crossings; add center turn lanes where appropriate, and sidewalks**.

CITY OF CLEVELAND AIRPORT ZONING ORDINANCE (2019)

The Airport Zoning ordinance regulates the height of structures and land uses within the Cleveland Regional Jetport airspace. Several runway zones limit uses and restrict building heights, reflected in the map. Prohibited uses within the runway protection zones include:

- Residential homes,
- Group homes,
- Hospitals,
- Multi-family standard or manufactured modular dwellings,
- Public, parochial or private schools,
- Storage of explosive materials or
- Uses that assemble large groups of people or
- Any other use that could produce a major catastrophe because an aircraft crash.

LAND USE & NATURAL RESOURCES

Michigan Avenue Road is home to a variety of land uses along the corridor. Towards the southern end of the study area, large industrial employers (shown in pink on Figure 1.3) including Whirlpool, Cleveland's largest employer and a major hub for freight traffic, are intermingled with established residential homes, and new residential developments (shown in orange on Figure 1.3). Manufacturers are also concentrated closer to the intersection with Stuart Road. North of Stuart Road, the development pattern is more rural, with only one residential subdivision in proximity to the Jetport.

The corridor lies between two ridges, running in a southwest-to-northeast direction, constraining development around the corridor and the location of potential future connections to US 11/North Lee Highway. Blueline streams are present on both sides of the corridor (Little Chatata Creek and its tributary), with flood hazard areas and a small number of wetlands present. Along the southern section of the corridor, Michigan Avenue Road follows a minor ridgeline, which may contribute to grade variations that affect freight travel and sight distances.

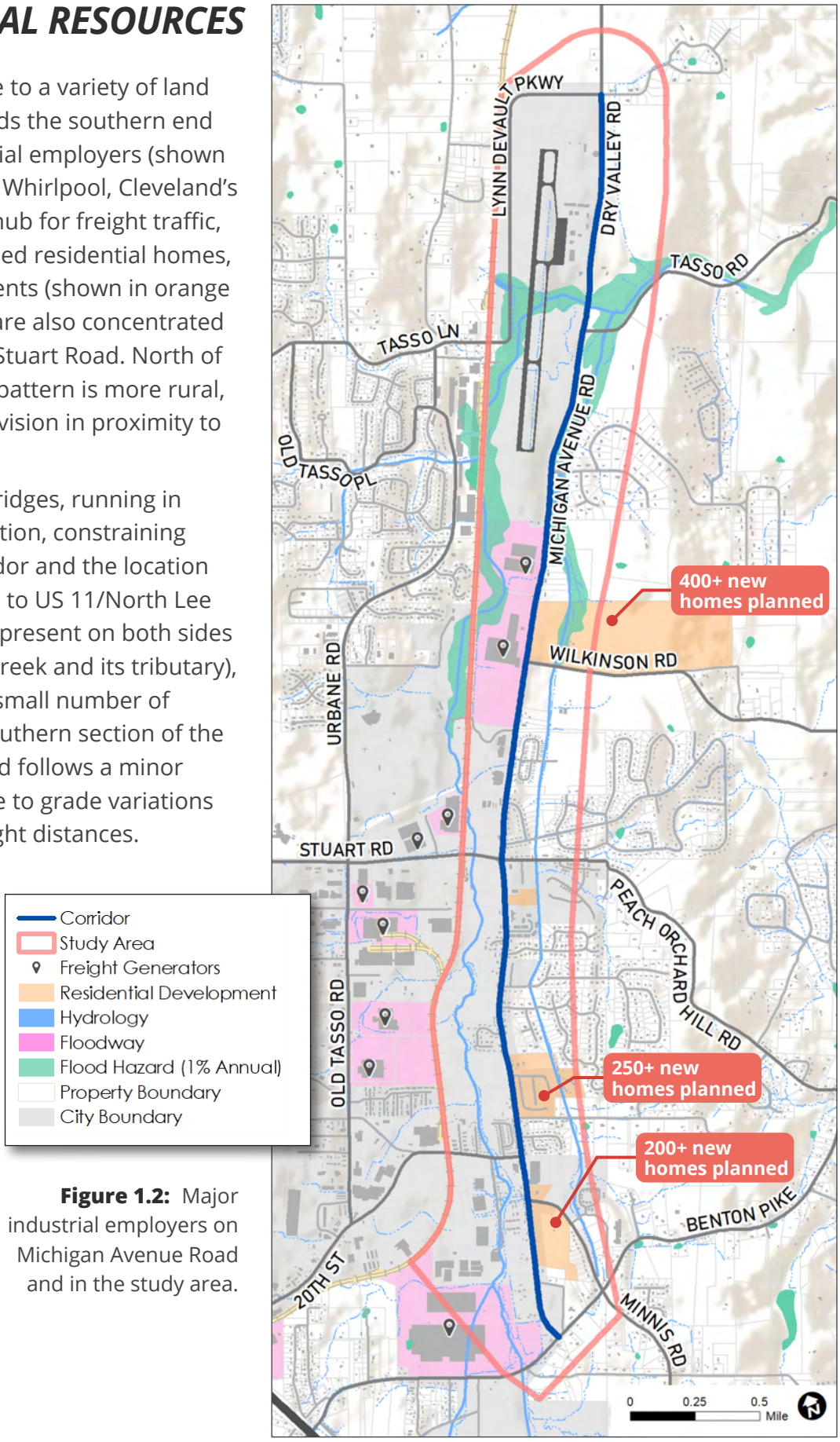


Figure 1.2: Major industrial employers on Michigan Avenue Road and in the study area.

Study Goals

Through stakeholder outreach, public involvement and committee collaboration, the following guiding principles were developed to guide the design team throughout the planning and design process.

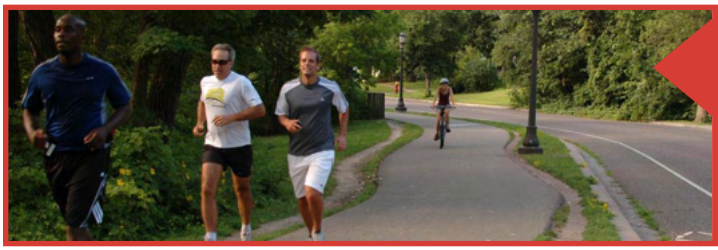
This planning process...

 # 1:
Initiates local, regional, and state coordination.

 # 2:
Provides direction, and a path to future design and construction.

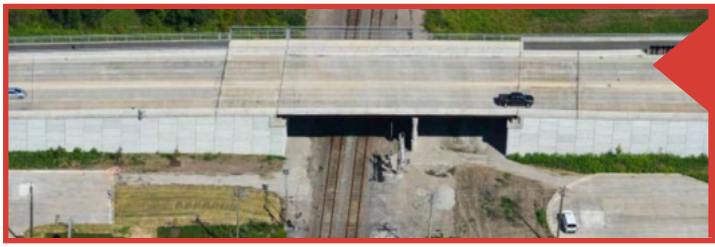
The future corridor will...

 # 1:
Supports both economic and residential development of the region.



 # 2:
Prioritizes safety for all users while supporting new modes of travel.

 # 3:
Improves north-south travel in the region.



 # 4:
Identifies a new east-west connection that avoids potential environmental impact.

02: EXISTING CONDITIONS

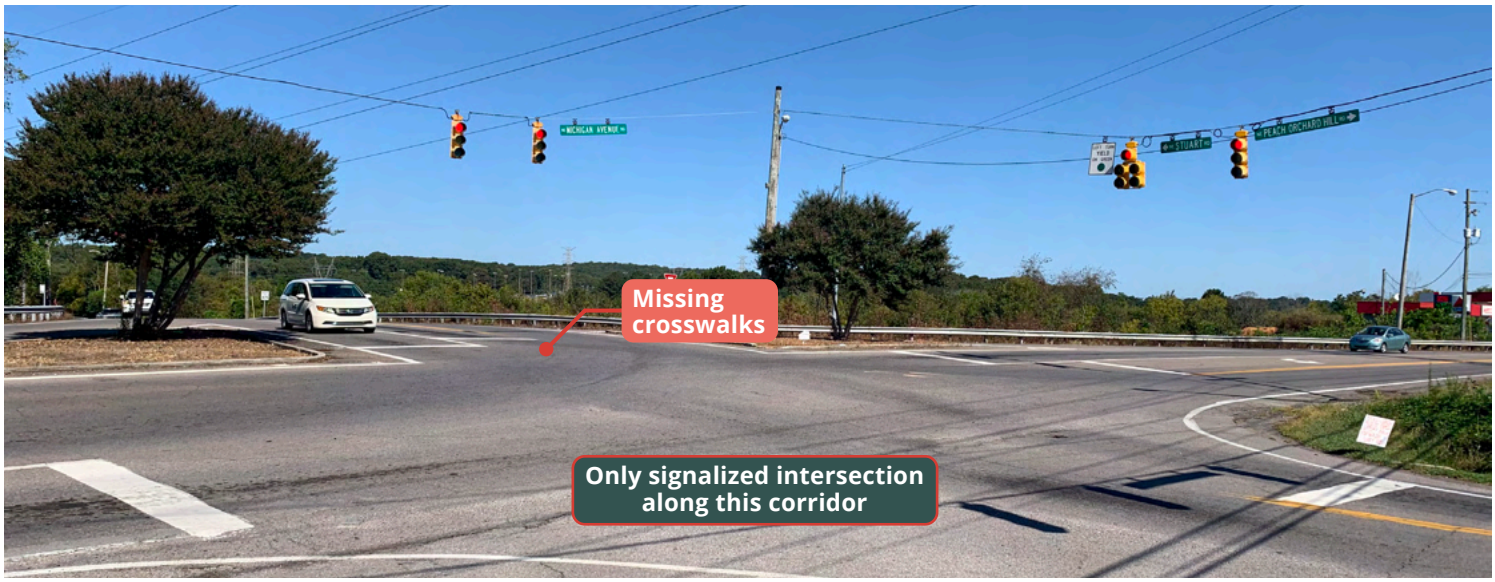
EXISTING CONDITIONS

Rolling topography along this corridor is common, with elevated roadside slopes in some location.

Recommendations come from the combination of a robust understanding of community values and objectives, and an understanding of Michigan Avenue Road's challenges, opportunities, strengths, and weaknesses.

This chapter examines the corridor from a multimodal perspective, looking at travel conditions across all modes – for motor vehicles, bicycle and pedestrian users, and freight. These data, complemented by an understanding of Cleveland's plans and visions (Chapter 2) and public outreach (Chapter 3), demonstrates current corridor uses, and some of its current limitations. Only through understanding the existing conditions and level of performance of its infrastructure and operations can challenges and opportunities be properly addressed, and thoughtful, implementable recommendations be produced.

Michigan Avenue Road intersection with Benton Pike, looking northwest.



Michigan Avenue Road intersection with Stuart Road, looking northwest.

Michigan Avenue Road near the Cleveland Regional Jetport, looking north.

Corridor Profile

Michigan Avenue Road's Corridor Profile in Figure 2.1 on the following page weaves together current conditions and data points to reveal patterns and trends in Michigan Avenue's design, operations, and land use that highlight areas of concern.

AREAS OF CONCERN:

Despite being the eastern border between Cleveland and rural Bradley County, Michigan Avenue Road has a significant number of physical constraints that will make improvements a challenge.

1. Narrow, Constrained Right-of-Way

As a two-lane roadway, Michigan Avenue Road features a narrow existing right-of-way that precludes opportunities for introducing wider shoulders, bicycle and pedestrian facilities, or drainage improvements, particularly upon the west (southbound) side of the corridor. Beyond the right-of-way, utility poles and an electrical substation on the east (northbound) side of the roadway further limit potential improvements.

2. Steep Grades and Crashes

Michigan Avenue Road features a number of undulations along its path – short, steep grades of 5% or more – that stem from the regional terrain and its rural nature. These grades pose visibility issues for all users, from freight to bicyclists and pedestrians, by limiting sight distance and creating short stopping opportunities. This problem is most notable near 20th Street NE and Minnis Road, where these grades may be contributing to a higher concentration of fatal and severe crashes.

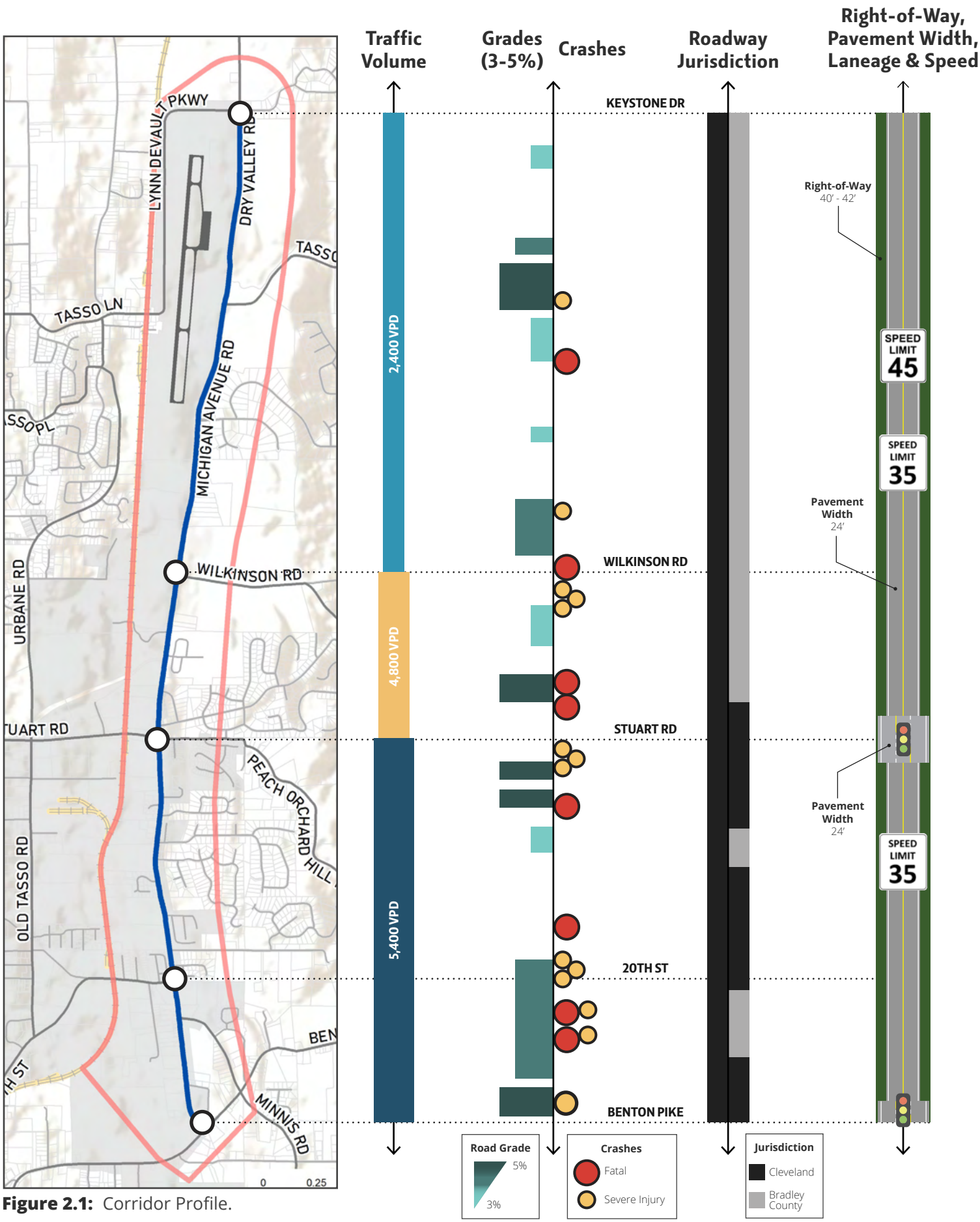


Figure 2.1: Corridor Profile.

Travel Conditions

Examining travel conditions gives us tools to understand corridor functionality for motor vehicles, bicyclists, and pedestrians. Based on a factors including congestion, infrastructure, speed and volume, roadway capacity, sidewalks, bike lanes, street crossings, among others, travel conditions analyses simplify these data to categorize users' perceived satisfaction with the facility. These categories correlate with traditional level-of-service analysis, but are not the same. Satisfaction with local street performance may differ from expectations for highways.

VEHICLE CONDITIONS

Drivers and passengers on Michigan Avenue Road experience reasonable conditions traveling along the corridor. The two-lane configuration accommodates an average daily traffic of between 2,400 to 5,400 vehicles, most of which are concentrated in the section of the corridor south of Stuart Road. During morning and evening peak periods, minor traffic congestion is possible near unsignalized intersections. However, before a capacity-improvement redesign is necessary this 2-lane corridor is capable of handling closer to 16,000 to 19,000 vehicles per day. Only two intersections, at Benton Pike and Stuart Road, are signalized or have dedicated turn lanes which may contribute to queuing vehicles at neighborhood entrances. The regional travel demand model anticipates future traffic volumes between 7,000 to 9,000 vehicles per day, a number that the current two-lane cross-section can accommodate.

MULTIMODAL CONDITIONS

Bicycle and pedestrian users face a different set of conditions than drivers along Michigan Avenue Road. Lacking sidewalks or bike facilities, whether on-street or above-the-curb, **non-motorized users must travel with mixed traffic, creating a high level of discomfort for all but the most experienced users**. Long block lengths and a high number of driveways and curb cuts also introduce many opportunities for unexpected turning movements (and points of conflict) by motor vehicles. For pedestrians, the lack of sidewalks and narrow right-of-way prevent most walking activity. Wide intersections at Benton Pike and Stuart Road also increase crossing distances, and a lack of crosswalks discourages walking *across* streets. With important nearby destinations like the YMCA and grocery stores accessible only via Stuart Road or 20th Street, increased pedestrian connections to these streets can help encourage more multimodal activity.

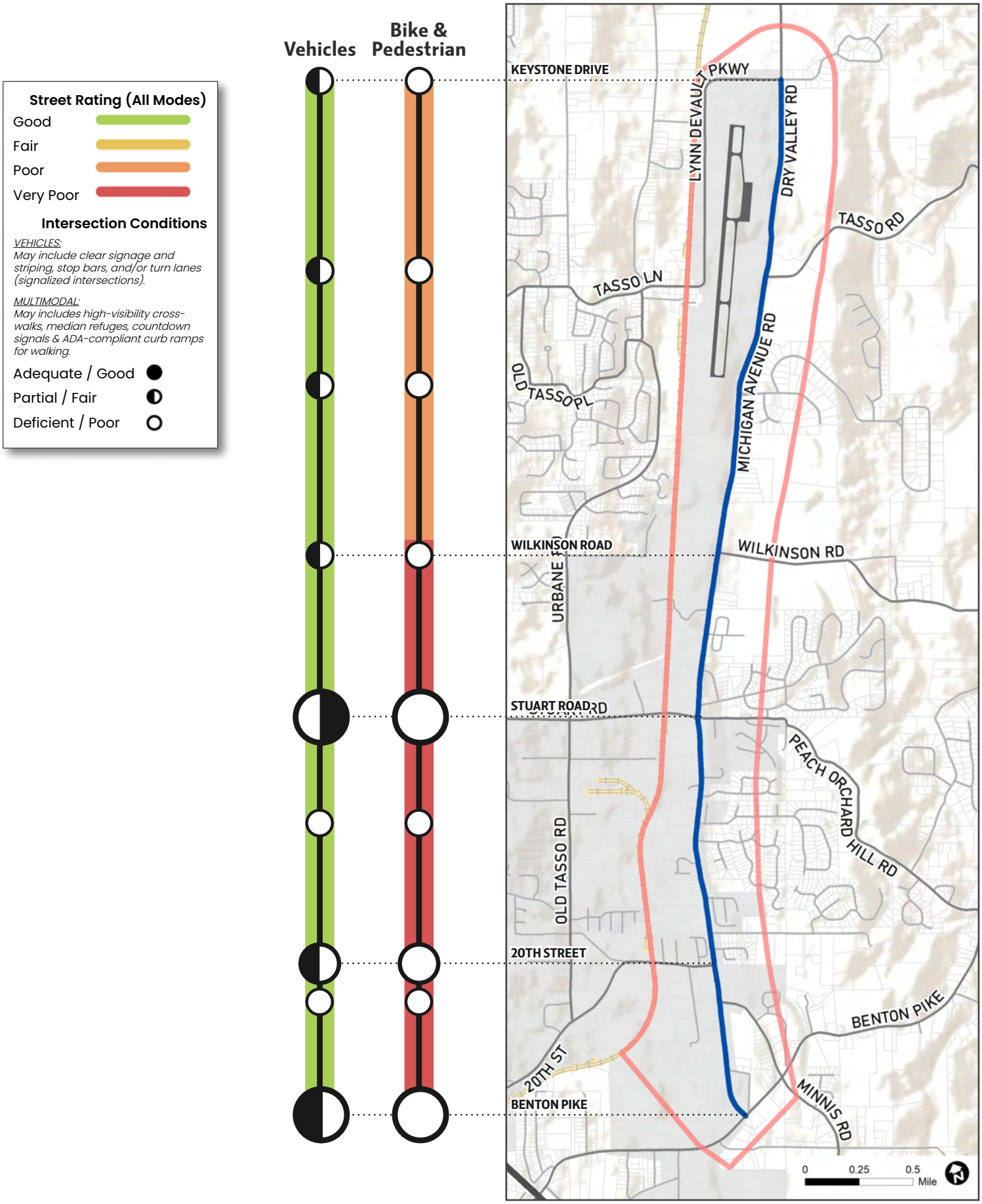


Figure 2.2: Travel conditions, Michigan Avenue Road.

Crashes & Safety

Crash analysis summaries tell us about broader safety trends along the corridor. Geospatial analyses highlight locations of particular concern, revealing specific intersections or corridors where roadway deficiencies may contribute to concentrations or patterns of crashes. Both are critical to understanding a roadway and how it serves, or fails to serve, its community.

Fatal and Severe Injury (FSI) crashes are shown in Figure 2.3. There have been 789 crashes along the corridor since 2002, an average of 38 per year, with 9 Fatal and 18 Severe Injury crashes. Trends in crashes reveal the workday nature of the corridor: crashes drop significantly on weekends and display prominent peaks during morning (7 to 8 AM) and afternoon (3 to 5 PM) commute periods.

FSI crash data reveal other insights into Michigan Avenue Road. **Severe injury crashes have increased in recent years,** with 10 occurring since 2019; this may be related to increased exposure rates (more homes and more vehicles), or unsafe driving behaviors (distracted). The corridor's cross-section may also play a role, as 10 of the 27 FSI crashes involved vehicles leaving the roadway or impacting a ditch, culvert pole, tree, or mailbox. A cluster of these crashes occur in areas where road grades are steeper than 3%. Creating a consistent cross-section, improving sight distances, and modernizing grades provides the opportunity to create a safer Michigan Avenue Road for all users.

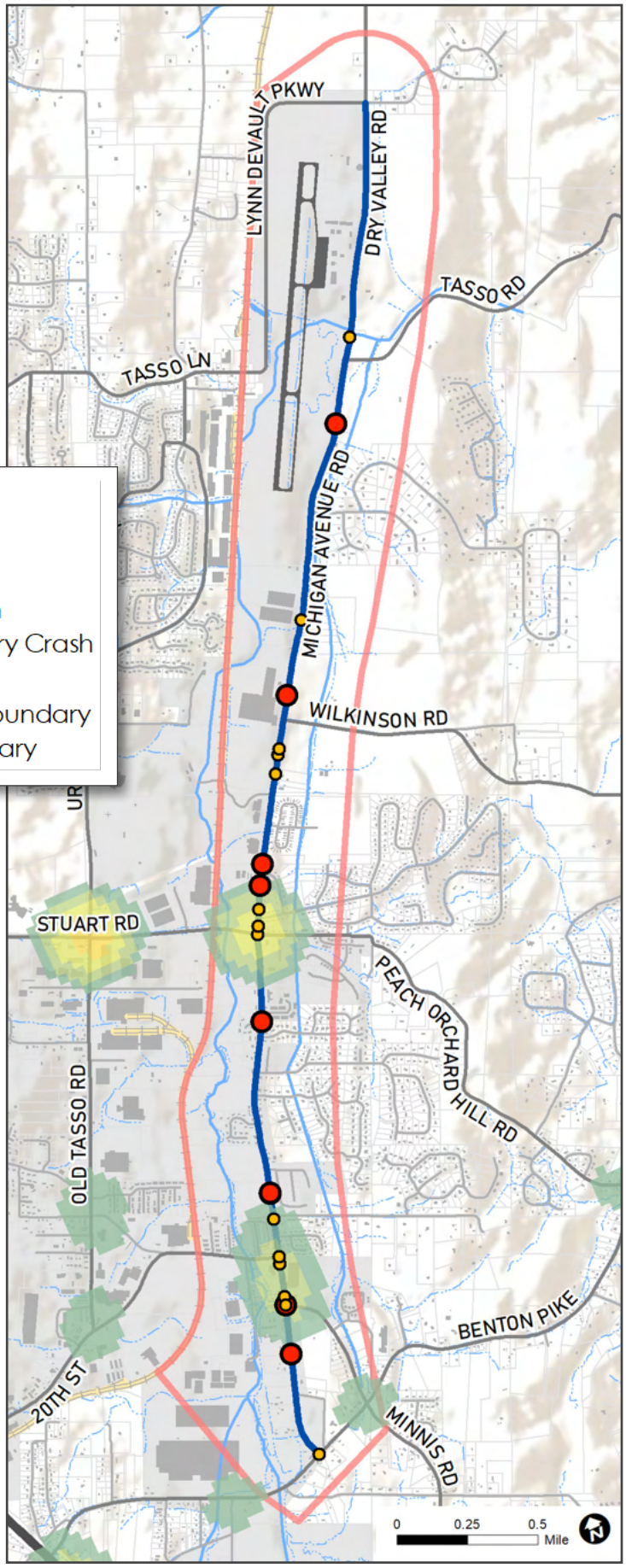
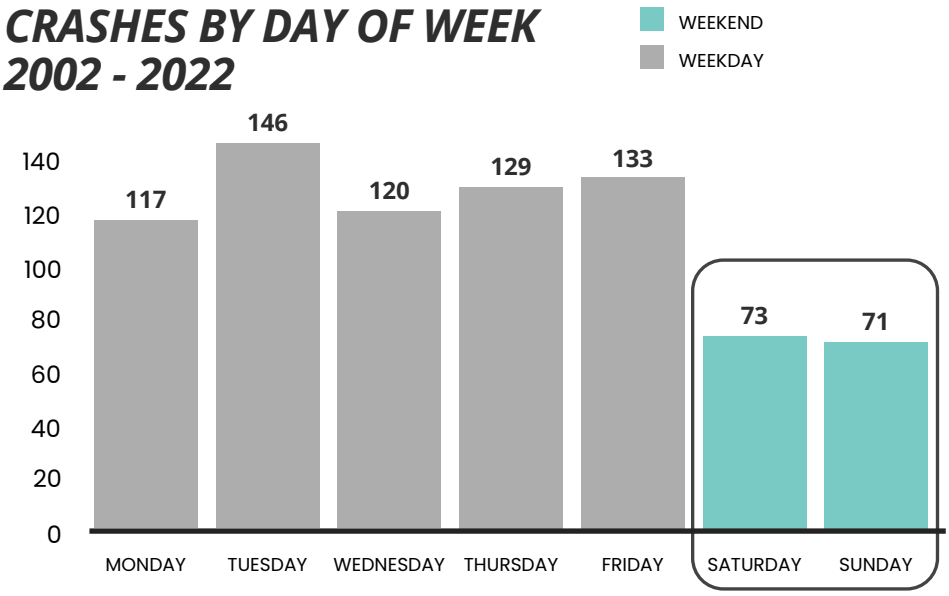
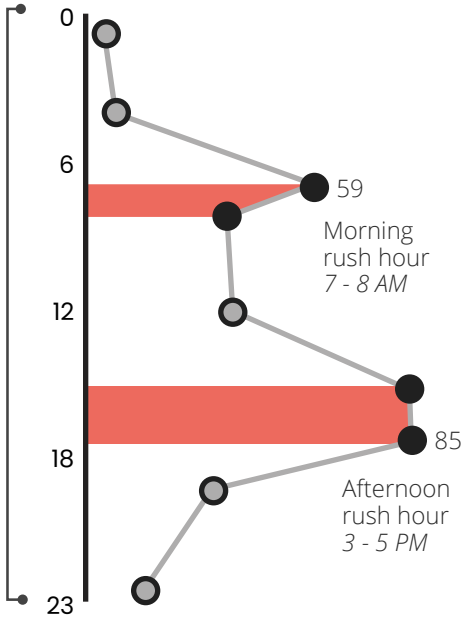


Figure 2.3: Fatal & Severe Crashes.

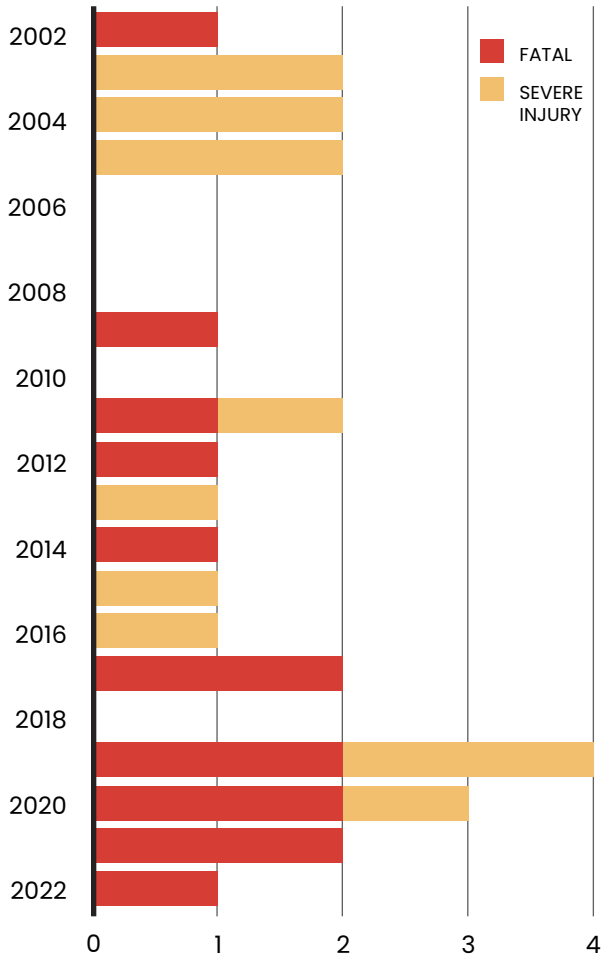
CRASHES BY DAY OF WEEK 2002 - 2022



CRASHES BY TIME OF DAY



FATAL & SEVERE INJURY (FSI) CRASHES MICHIGAN AVENUE ROAD, 2002-2022



FAST FACTS: Fatal & Severe Injury Crashes

27 Total FSI crashes (2002-2022)

18 FSI crashes occurred along the roadway (9 at intersections)

10 Crashes where the vehicle **ran off the road** (ditch, tree, culvert)

10
Total fatal & severe injury crashes, 2019-2022

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03: PUBLIC ENGAGEMENT

PUBLIC ENGAGEMENT

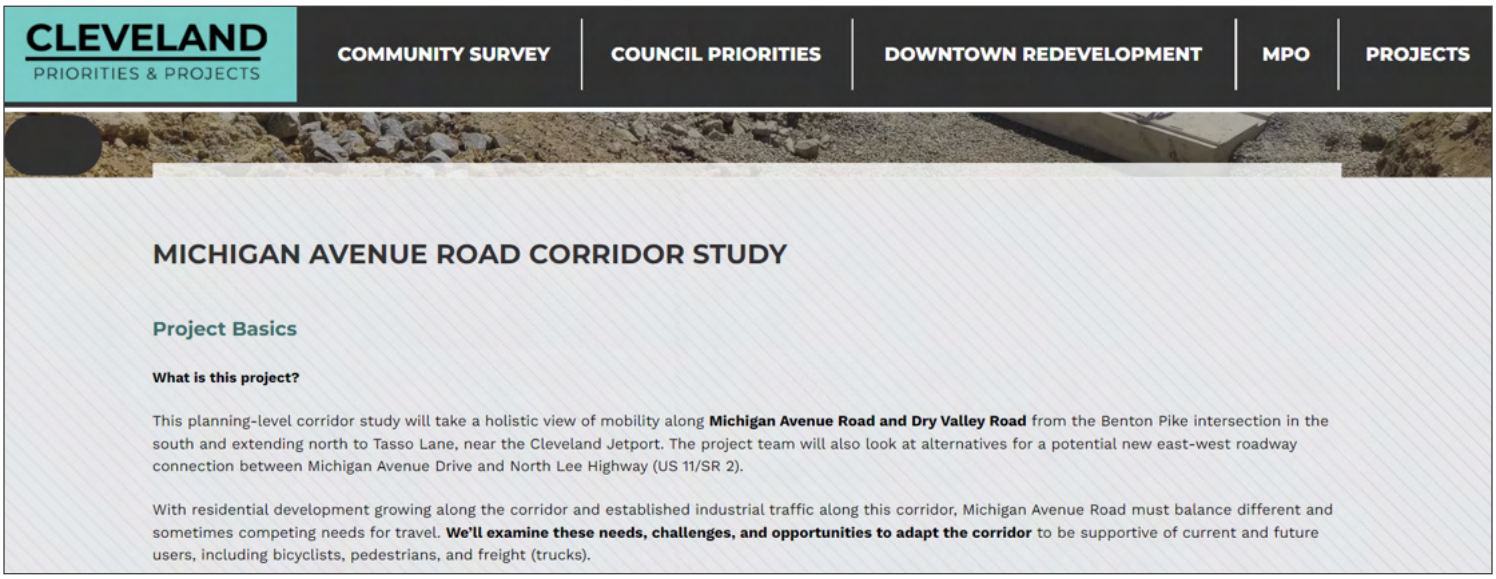
Public engagement plays an integral role in any design or study. Soliciting feedback from the public is critical, as the roadway improvements will impact the daily lives of community members and local businesses. Planning for a community is not as successful as planning WITH the community; meaningful engagement means stronger results, tighter community bonds, and plan implementation is more likely.

This chapter documents the public engagement process and planning process activities. For Michigan Avenue Road, online engagement methods, public meetings (virtual and in-person), and stakeholder discussions complemented technical analyses, revealing critical insights not captured through data alone. These perspectives aided in creating a more complete picture of the corridor, defining community values, and establishing priorities and preferences for how a re-envisioned Michigan Avenue Road looks, feels, and operates.

"This is one of the oldest roads in Cleveland & we have inherited its [topography] problems!"
- Symposium Attendee

"We have seen more speeding since the new developments have been built."
- Focus Group Stakeholder

Online Engagement

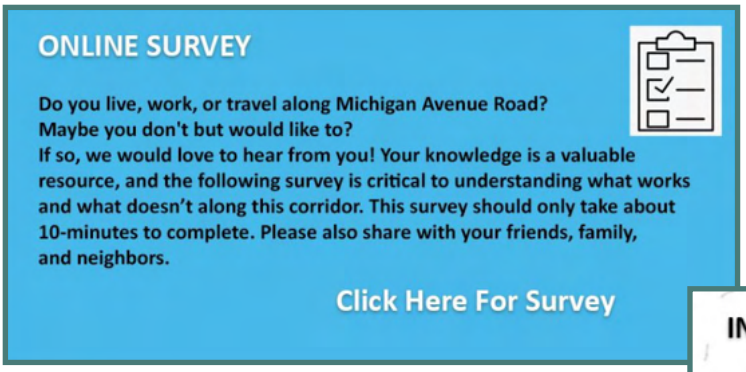


View of the Michigan Avenue Road Corridor Study project website.

PROJECT WEBSITE

Early in the process, the City of Cleveland created a project website to act as a gathering point and single source for public information on the project. Residents, property owners, business owners and additional stakeholders accessed information and provided input on the discussions surrounding the corridor study.

The website featured information on the project's purpose, the dates and locations of upcoming meetings, meeting summaries, related documents, and ways to get involved with the project. These combined efforts led to significant engagement, with hundreds of people learning about and participating in the study while it was in progress.



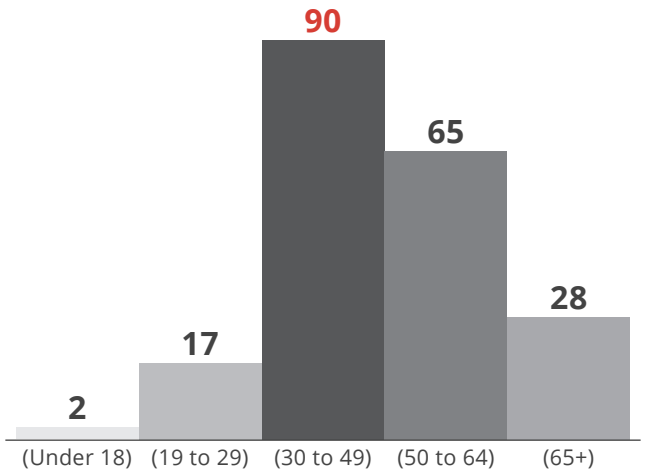
ONLINE SURVEY

The online survey was live between November 2022 and February 2023, featuring a series of questions related to traveling conditions, needed improvements, safety concerns, and residential growth and redevelopment. Broad, general survey questions and their responses complemented specific, targeted discussions with focus groups. Major takeaways from the survey are summarized below.

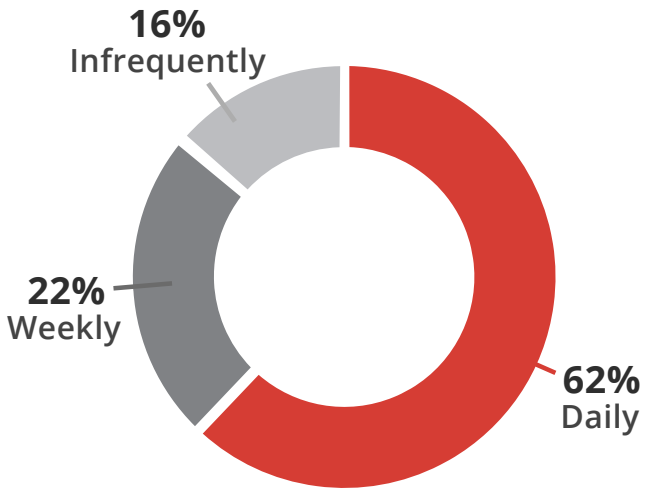
250

Total Responses

46% of respondents are 50+ years old.



Most participants travel along the corridor daily.



Priority for *potential* improvements would include...

1. **Adding / widening shoulders** (78%)
2. **Adding more lanes (3-lanes)** (57%)
3. **Traffic signals at intersections** (56%)
4. **Sidewalks (or sidepaths)** (45%)

Safety is the #1 issue for users of this corridor:

***90-97%** feel unsafe walking or biking along this corridor (day or night)*

INTERACTIVE MAP

The interactive map to the right illustrates the public's collectively-identified problem areas and points of interest along the corridor. Using the ArcGIS Online platform, respondents identified a variety of features, including needed intersection improvements, safety hazards, flooding issues, and barriers to walking or biking, among others. These features are portrayed as geo-referenced points of interest on the map.

The web map provides a different and needed perspective on these corridor-level issues that could not be fully captured through traditional survey methods or focus group discussions. Representative comments can be seen below. A detailed report of the map and survey responses are included in the digital appendices to this Study.

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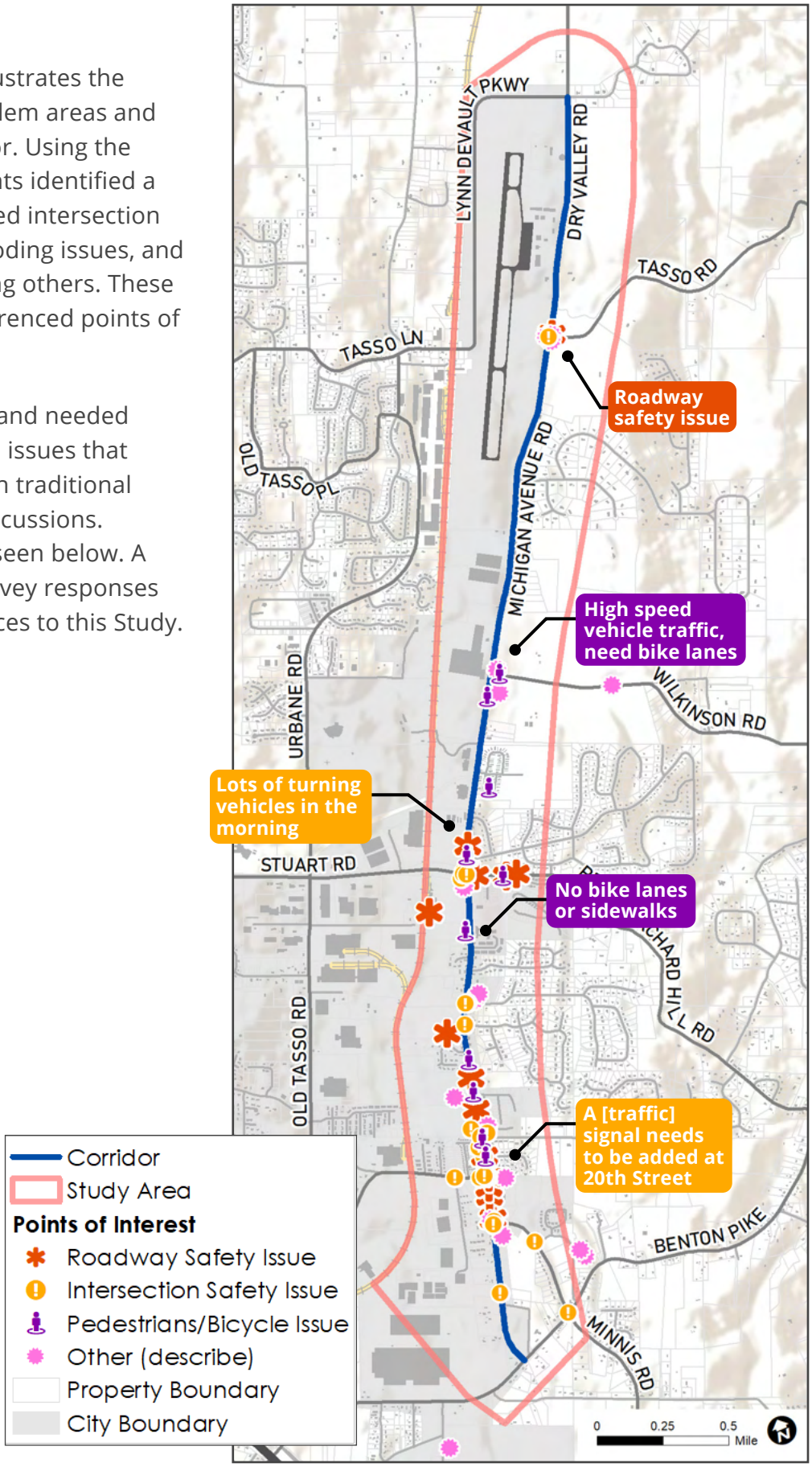
Points of Interest added



Stakeholder Discussions

ADVISORY COMMITTEE

Early in the planning process, MPO staff formed an Advisory Committee to guide this Study's progress. This core group of local government officials, agency representatives, stakeholder organizations and community members worked closely with the team to drive broader public engagement, provide guidance on goals, objectives, and priorities, and clarify study recommendations. The team met virtually at regular intervals during the process to stay updated on project progress and schedule, from initiation to conclusion.

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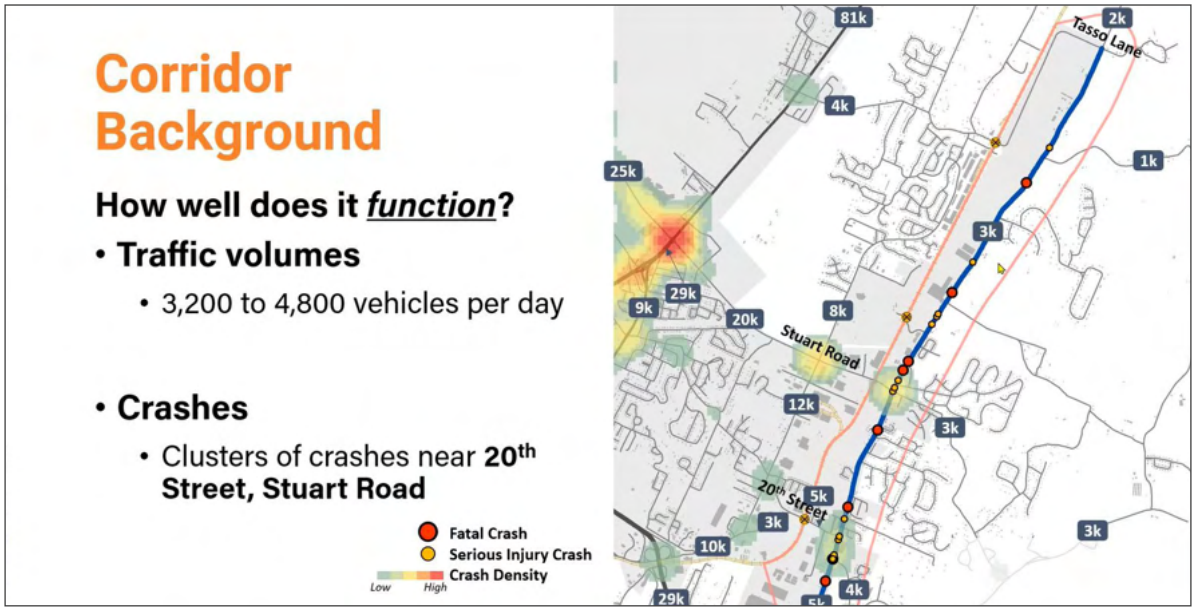
Committee Members

ORGANIZATIONS INVOLVED:

- City of Cleveland, TN
- Bradley County, TN
- Chamber of Commerce
- Southeast Tennessee Development District (SEDEV)
- YMCA of Cleveland
- Senior Activity Center
- Cleveland Jetport
- TDOT - Transportation Planning Group



Sample of Advisory Committee presentation slide.

Focus Group Attendees

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Some of the topics covered during the Focus Group discussion.

FOCUS GROUPS

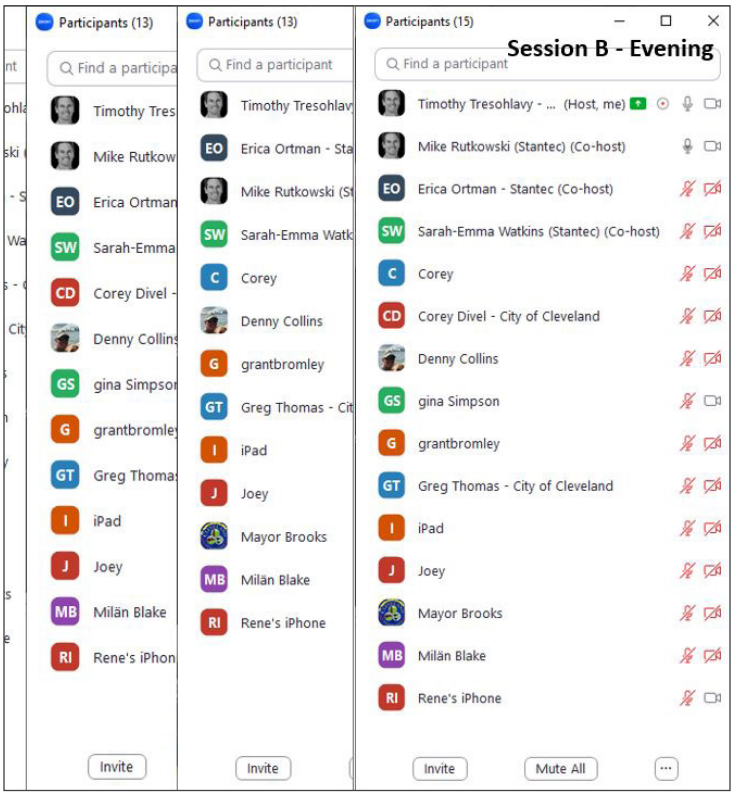
Focus group meetings, conducted during investigation phase, offered an opportunity to obtain qualitative feedback on issues, goals, and potential strategies for improvements among different users of the corridor. Meetings were held as a series of one-hour virtual interviews and centered on a single topic. Focus group members were identified by members of the Advisory Committee and MPO staff for inclusion based on their ability to provide different perspectives and representation of different facets of the community. In contrast to the volumes of quantitative data produced during the initial investigation phase of the project, these 'listening sessions' with community members allowed the project team to verify data and set priorities with group perspectives, and provide an outlet to supplement the data with local insight and perspectives not captured through data.

1. Safety issues and speeding are influenced by ROADWAY and DRIVER behavior challenges.

Many driveway access points (and mailboxes) ◄ **2. Roadway infrastructure is old, deficient, or lacking.**

525+ planned new developments ◄ **3. More residential development is planned.**

Public Meetings



PROJECT SYMPOSIUM

The virtual Project Symposium offered the first opportunity for the public to directly collaborate with the project team. The team received vital feedback on project principles and objectives, which refined key themes and principles to guide subsequent design phases of the planning process. The Project Symposium was held virtually via Zoom on **December 19th, 2022**, with two sessions (lunchtime and evening), and quality attendance: more than 25 members of the public participated.

25

Symposium Attendees

OPEN HOUSE

The final public meeting of the planning process, the Open House, was **May 18, 2023**. As with the Symposium, the meeting was held at Cleveland Jetport, located along the project corridor. Key feedback from those in attendance included support for 2-lane and 3-lane sections, as well as improved intersection crossings. This feedback on the final design helped inform final decisions on implementation and phasing of subsequent design and construction.

30

Open House Attendees

Takeaways

This investigation chapter examined the public perception of Michigan Avenue Road, providing the project team with insight on how the corridor serves its residents and businesses.

From this feedback, a select number of important issues and observations emerged. These issues, summarized below, represent the key takeaways of this investigative phase.

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04: RECOMMENDATIONS

RECOMMENDATIONS

The recommended conceptual design of this corridor has been directly influenced by public feedback gathered during the previous six months of outreach.

We've generated vision for a safe, convenient, multimodal corridor, working together with input from our partners: the Tennessee Department of Transportation (TDOT), City of Cleveland staff, Bradley County staff, and stakeholders from adjacent commercial properties.

Improving safety at intersections and along the corridor is essential and several strategies have been identified to address the physical characteristics of the road as well as driver behaviors that both contribute to unsafe conditions, outlined below:

- ☑ Most notably improving visibility of vehicles and pedestrians will be addressed by leveling the roadway grades to less than 3% (flattening the peaks-and-valleys along the corridor ridge).
- ☑ Intersections will receive turn lane enhancements, enhanced pavement markings, improved geometry (alignment) and traffic operations for large truck turning radii.

Talking with partners during a field visit to assess corridor challenges.

Gathering stakeholder feedback during a public open house.

Context Zones

This corridor traverses two distinct land uses, each with different development patterns. The southern context zone is within the City of Cleveland jurisdiction, and the northern context zone is primarily within Bradley County. Influenced by these differences, there are different engineering design recommendations.

Southern / Urban Context Zone: The existing 35 mph posted speed is retained. Surrounding development is mostly residential, and this portion of the corridor accommodates weekday drivers (passenger vehicles) and school buses. Some light industrial / manufacturing facilities are located along this portion of the corridor.

Existing Conditions: Southern/Urban Context Zone

Northern / Rural Context Zone: consider reduction of posted speed to 40 mph (or 35 mph), particularly south of Wilkinson Road. The Cleveland Regional Jetport facility generates large truck traffic, in addition to the light industrial / manufacturing sites that receive and generate commercial-sized truck trips.

Existing Conditions: Northern/Rural Context Zone

Preferred Access Plan (PAP)

The PAP forms the conceptual basis for the redesign of the corridor. At a high level, this perspective reflects how all elements work together — connectivity, access management, and key nodal points for pedestrian activity. Looking at the corridor holistically, the PAP transforms key takeaways, guiding principles, and design considerations from corridor analyses into an actionable framework which potential designs can be prepared and tested through review and public engagement.

Corridor Considerations of the PAP

It is important to note that the PAP suggests median locations. These are conceptual and subject to refined engineering design. The use of medians is a strategy to manage dangerous left turning movements and reduce vehicle speeds (traffic calming), while simultaneously improving safety and predictability of traffic.

The PAP also identifies potential roadway connections that are parallel to the corridor, which allow for vehicles to use alternatives roads within the transportation network and relieving some traffic from Michigan Avenue Road.

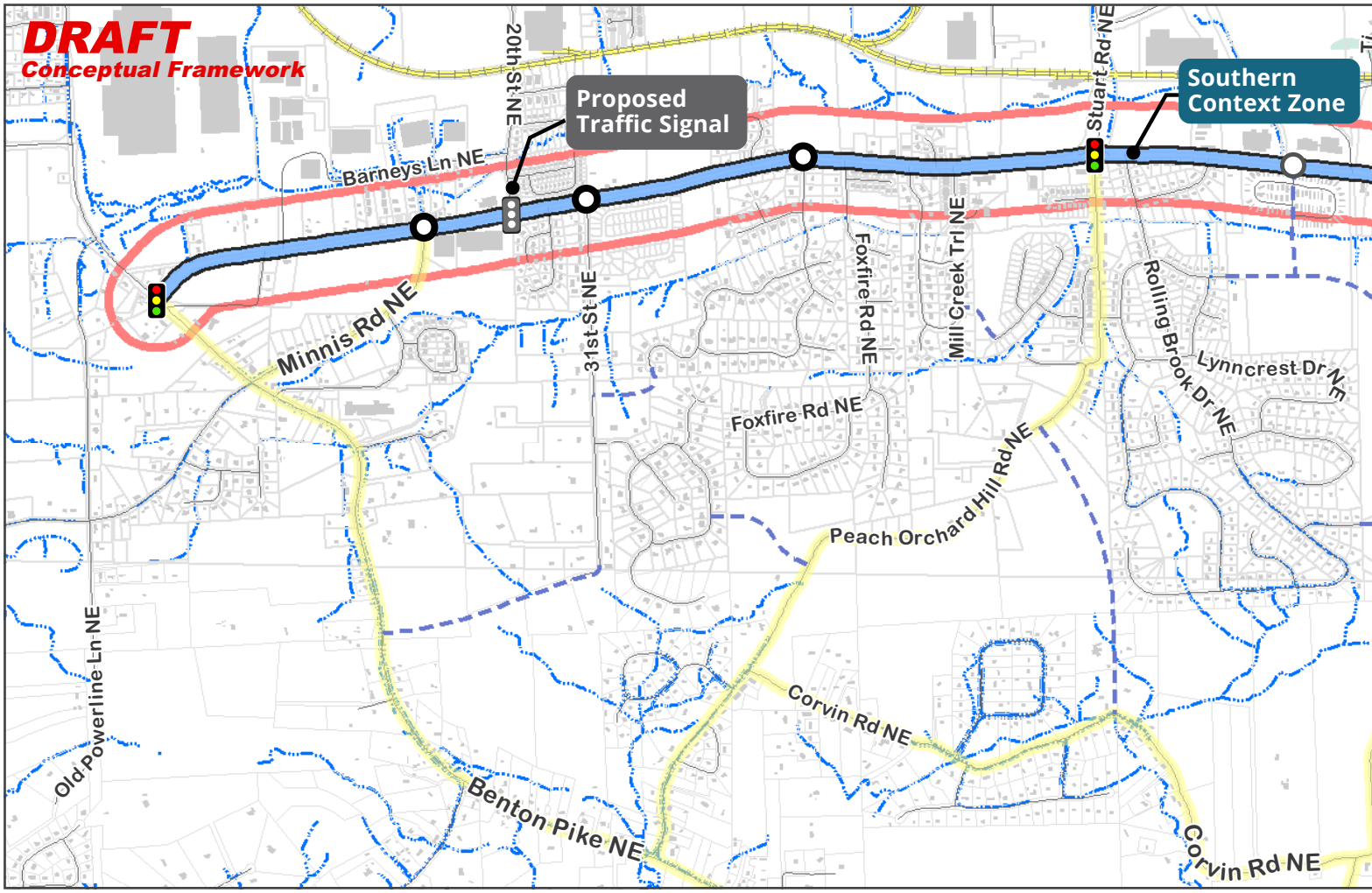
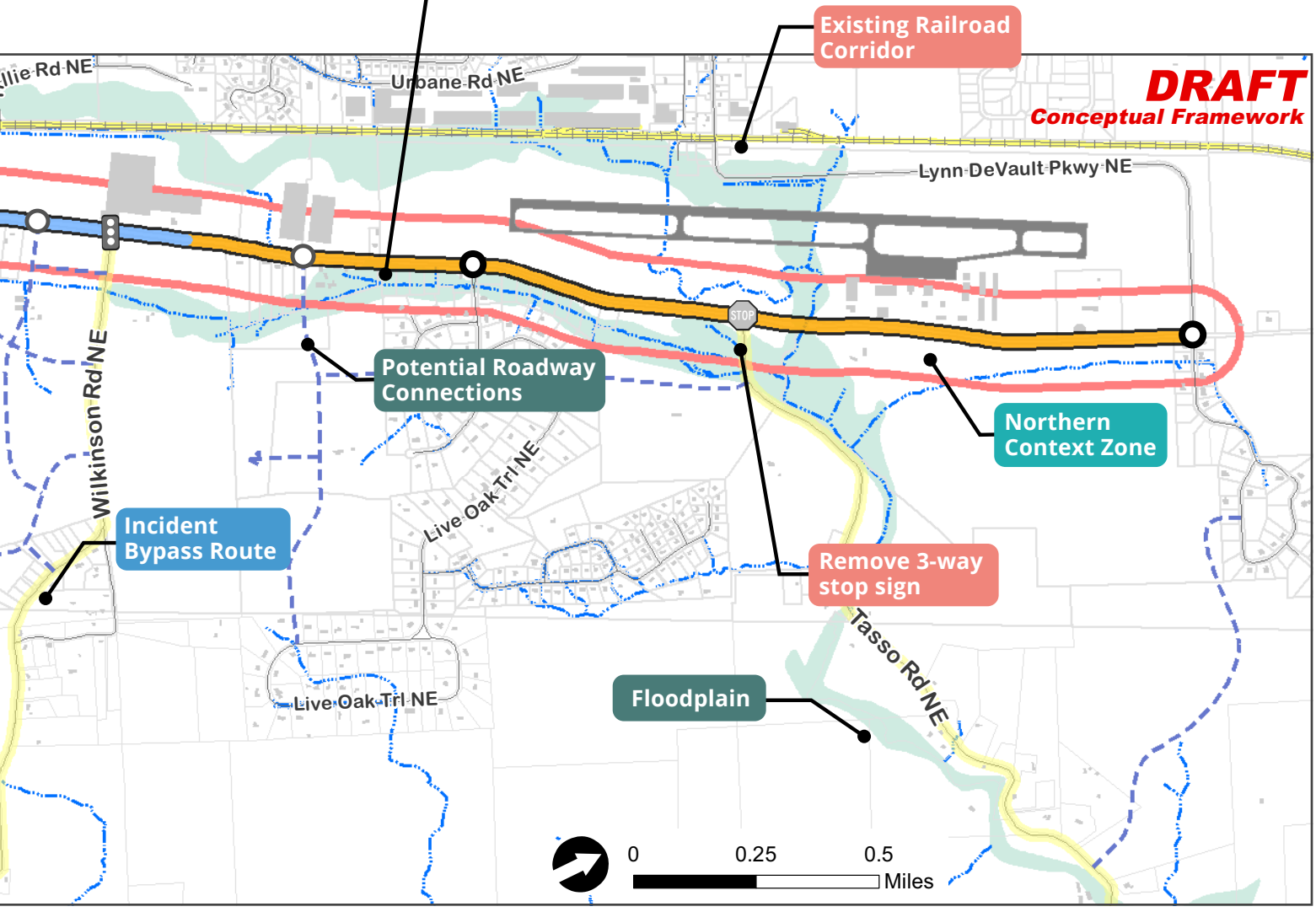


Figure 4.1: Preferred Access Plan used as the initial design framework for recommendations.

Example of a Non-Signalized Intersection

Development along the corridor is within Cleveland City limits as well as Bradley County.



Design Recommendations

Because the corridor has an *inadequately* narrow 40’ wide existing right-of-way, any improvement to the roadway will require the acquisition of right-of-way from adjacent property owners. Asymmetrical widening to the east or west is recommended to minimize potential right-of-way impacts on adjacent properties, to the greatest extent possible.

During the public review of the draft conceptual design, it was suggested that roundabout alternatives at some intersections should be considered. Research has demonstrated that roundabout treatments reduce driver speed, improve safety, maintain traffic flow, and minimize delay — all positive outcomes for this corridor. The conceptual design includes traditional intersection design with the potential alternative for roundabouts at several intersections.

Conceptual design elements for each context zone are described in more detail on the following pages.

32% of survey respondents noted **Safety** as a major problem facing the corridor.

“We have seen more speeding since the new developments have been built.”
- Focus Group Stakeholder

Southern Zone: Design treatments include 11’ travel lanes, with a center turn lane or pocket median (where practical) to reduce operating speeds and manage dangerous left turns; curb-and-gutter with 10’ wide shared use sidepath; accommodate the planned 3-lane cross section between 20th Street and Minnis Road intersections; Avoid disruption of overhead utility (electrical transmission lines) in several locations.

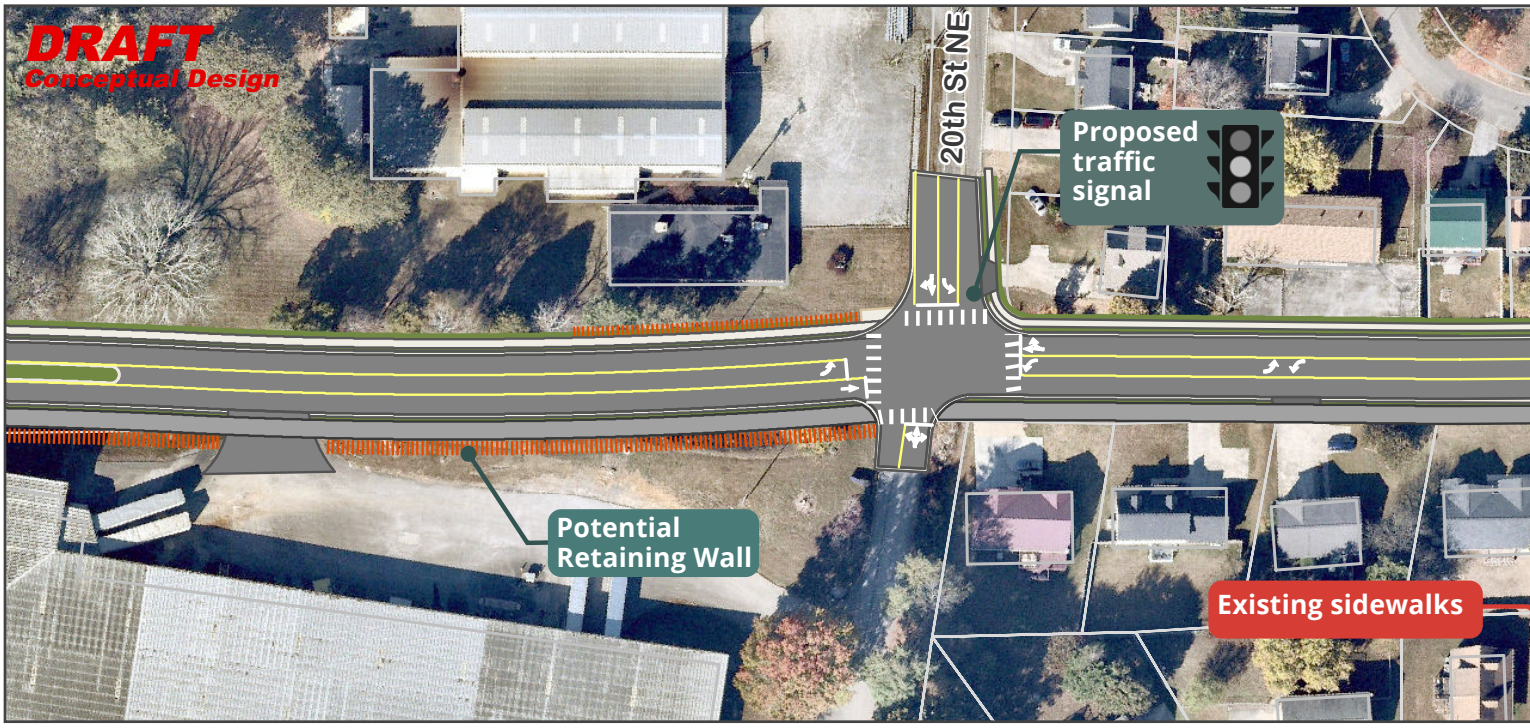


Figure 4.2: Conceptual Design for Southern Context Zone near 20th Street intersection.

> ***"Thank you for sharing these plans with the public. Please continue the conversation."***
>
> *- Open House Stakeholder*

> ***"Flatten the hills at 20th Street."***
>
> *- Survey Respondent*

> ***"Cars rarely drive 35 mph."***
>
> *- Focus Group Stakeholder*

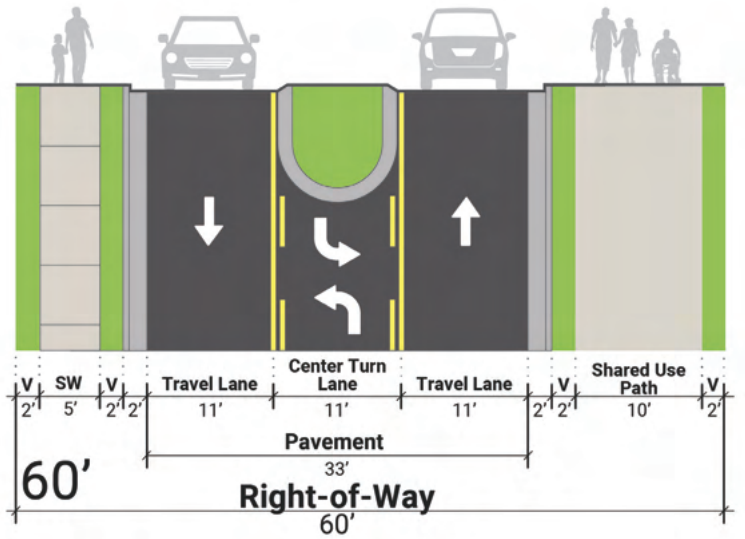
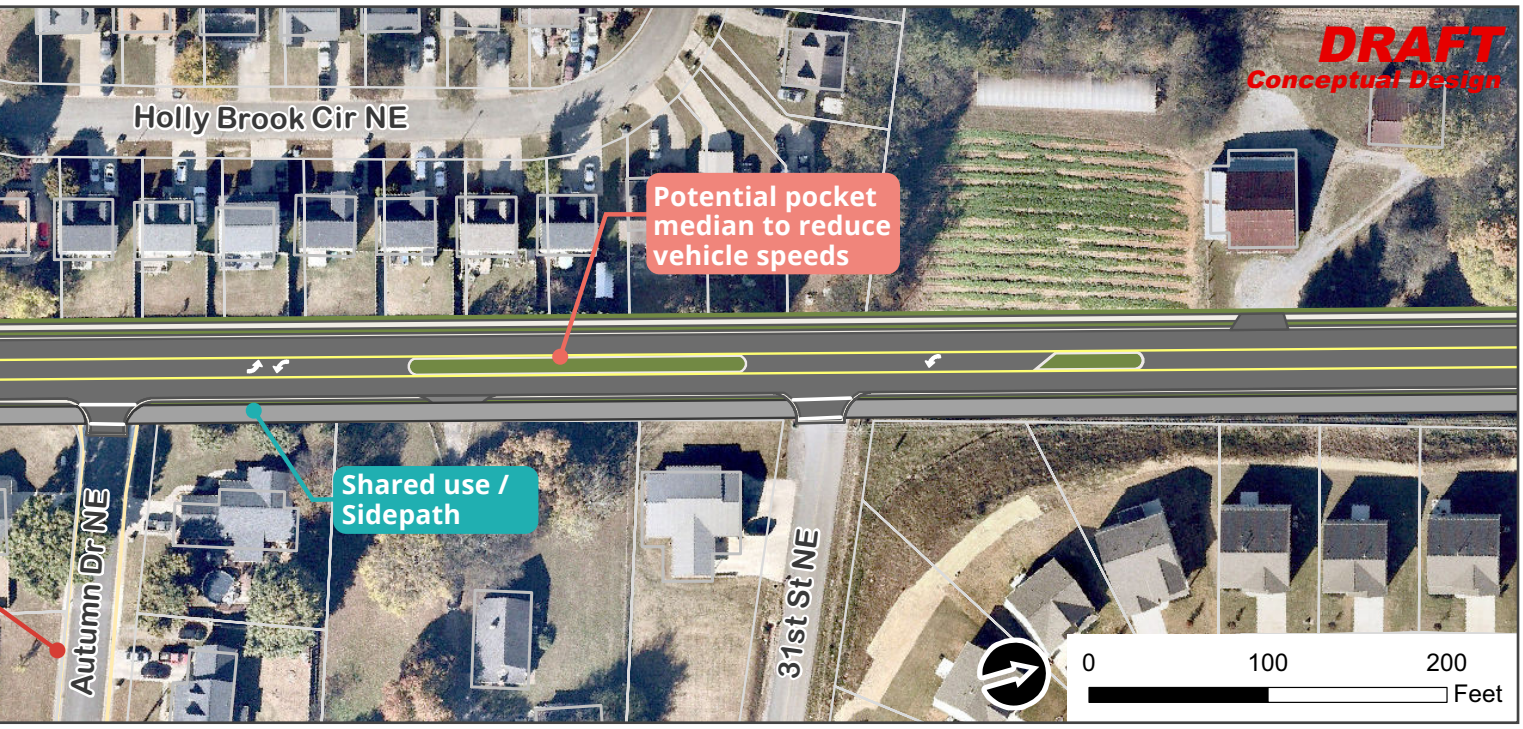


Figure 4.3: Proposed 3-lane cross section, with pocket medians, and shared use sidepath



Northern Zone: Design treatments include ditch and swale for stormwater conveyance; 10' wide multiuse path along the west side of the corridor, with Pedestrian Hybrid Beacon (PHB) crossing near Wilkinson Road, where the shared use sidepath crosses from the east side to the west side of the corridor; improve driveway access and turning movements for large trucks; avoid flood hazard and bridge crossing; avoid or minimize potential impact to existing electrical substation and water tower utility near the Jetport; conversion of existing all-way stop intersection at Tasso Road to a Yield condition for Dry Valley Road traffic.

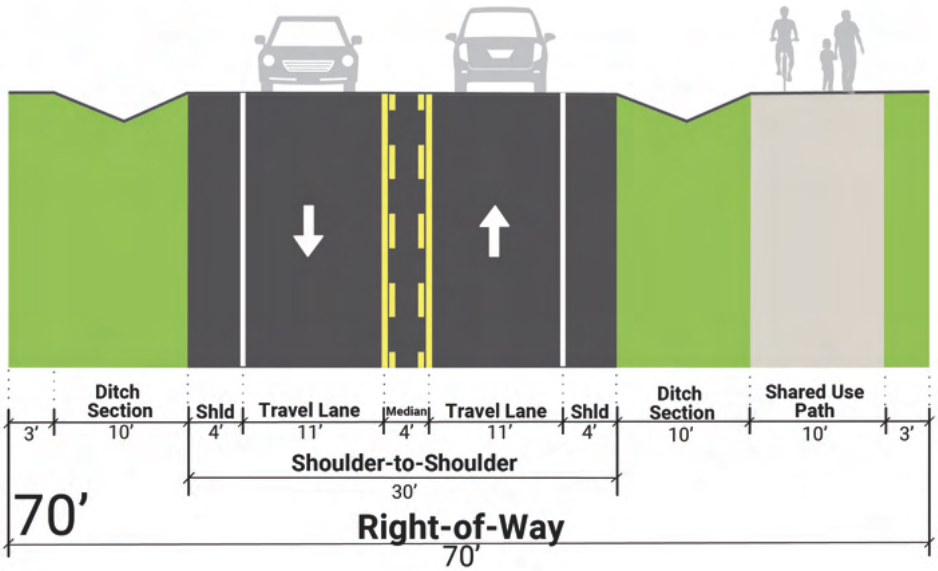


Figure 4.4: 2-lane cross section, with ditch-and-swale, 4' wide shoulders, and shared use sidepath.

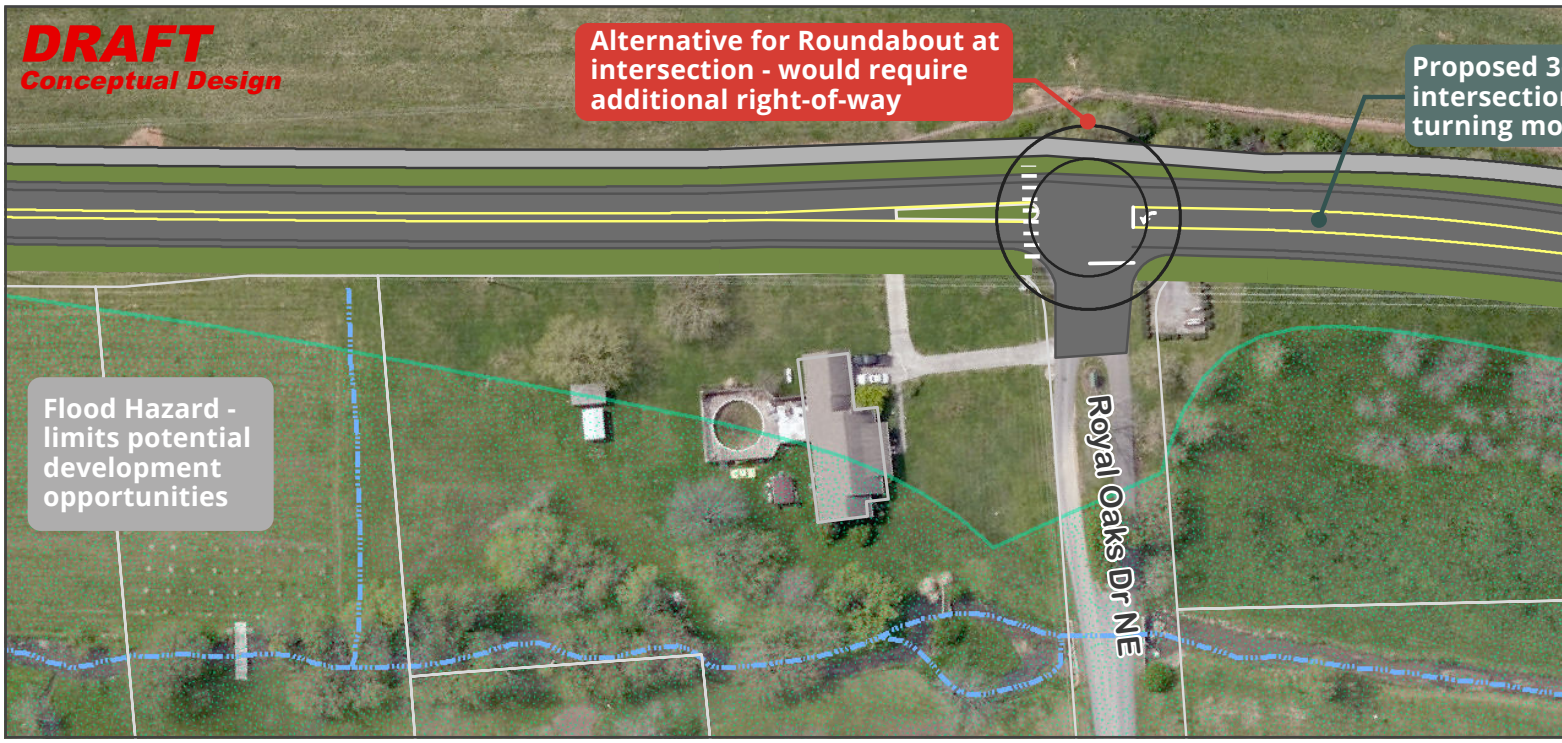


Figure 4.5: Conceptual Design for Northern Context Zone near Royal Oaks Drive NE intersection.

Feedback from Survey Participants...

"Add roundabouts instead of traffic signals"

"Add shoulders"

"Walk / Bike paths are needed"

"People absolutely fly in this area"

31%

of survey respondents noted **reducing crashes** as the most important issue.

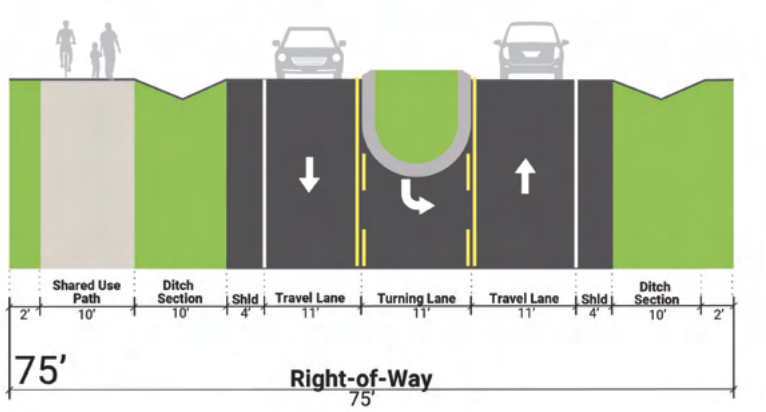
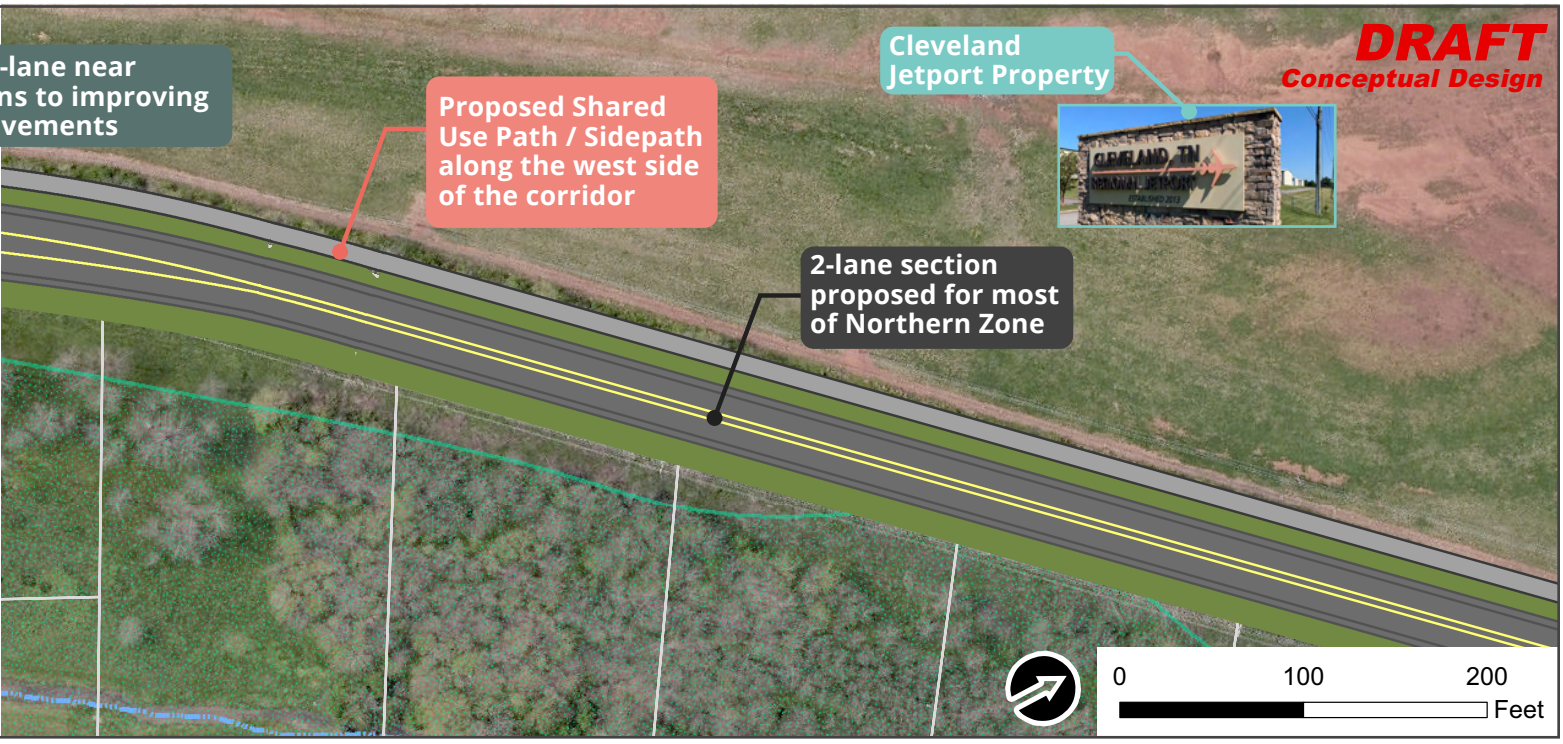


Figure 4.6: 3-lane cross section, with near intersections, with pocket median, 4' wide shoulders, and shared use sidepath.



New Alignment

In addition to the corridor improvements, we examined the potential for a new east-west connection from the Jetport to US 11 N Lee Highway. This section identifies the existing environmental features within or adjacent to the project study area, documenting their presence ahead of a future NEPA process. Environmental features such as the presence of endangered species, wetlands and watersheds, and agricultural land were evaluated.

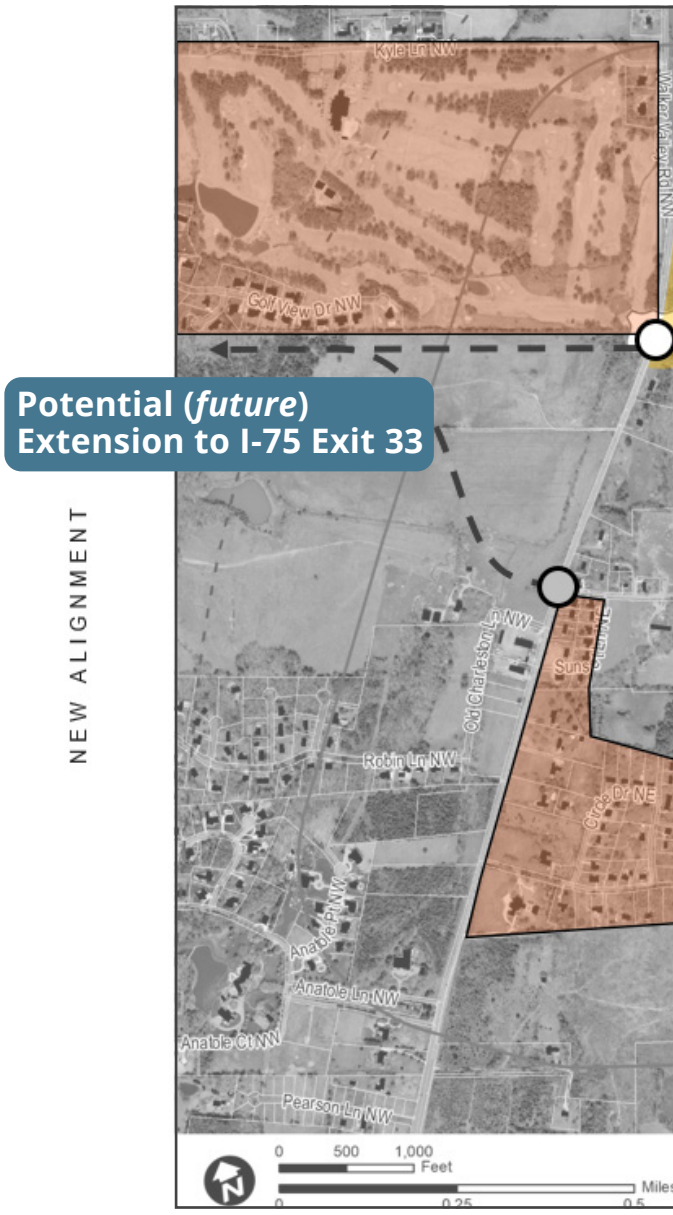
HUMAN RESOURCES SCREENING

There are no section 4(f) properties within the immediate study area. However, there are several located *beyond* the study area that may be considered for further planning efforts to preserve connectivity and minimize adverse impacts:

- Bradley County Recreational Park
- Chickamauga Wildlife Management Area
- Candies Creek and South Moose Creek
- Hardwick Farms
- Rattlesnake Spring – National Register of Historic Places
- Charleston Cumberland Presbyterian Church
- Ramsey Cemetery
- Michigan Avenue Cemetery
- Tasso Cemetery

NATURAL SYSTEMS RESOURCES SCREENING

- Endangered Species within Bradley County (5)
- Migratory Bird Species within Bradley County (10)
- Known Wetlands (7)
- Watersheds for Little Chatata Creek, Rattlesnake Branch, and Five Mile Branch



US Army Corp of Engineers

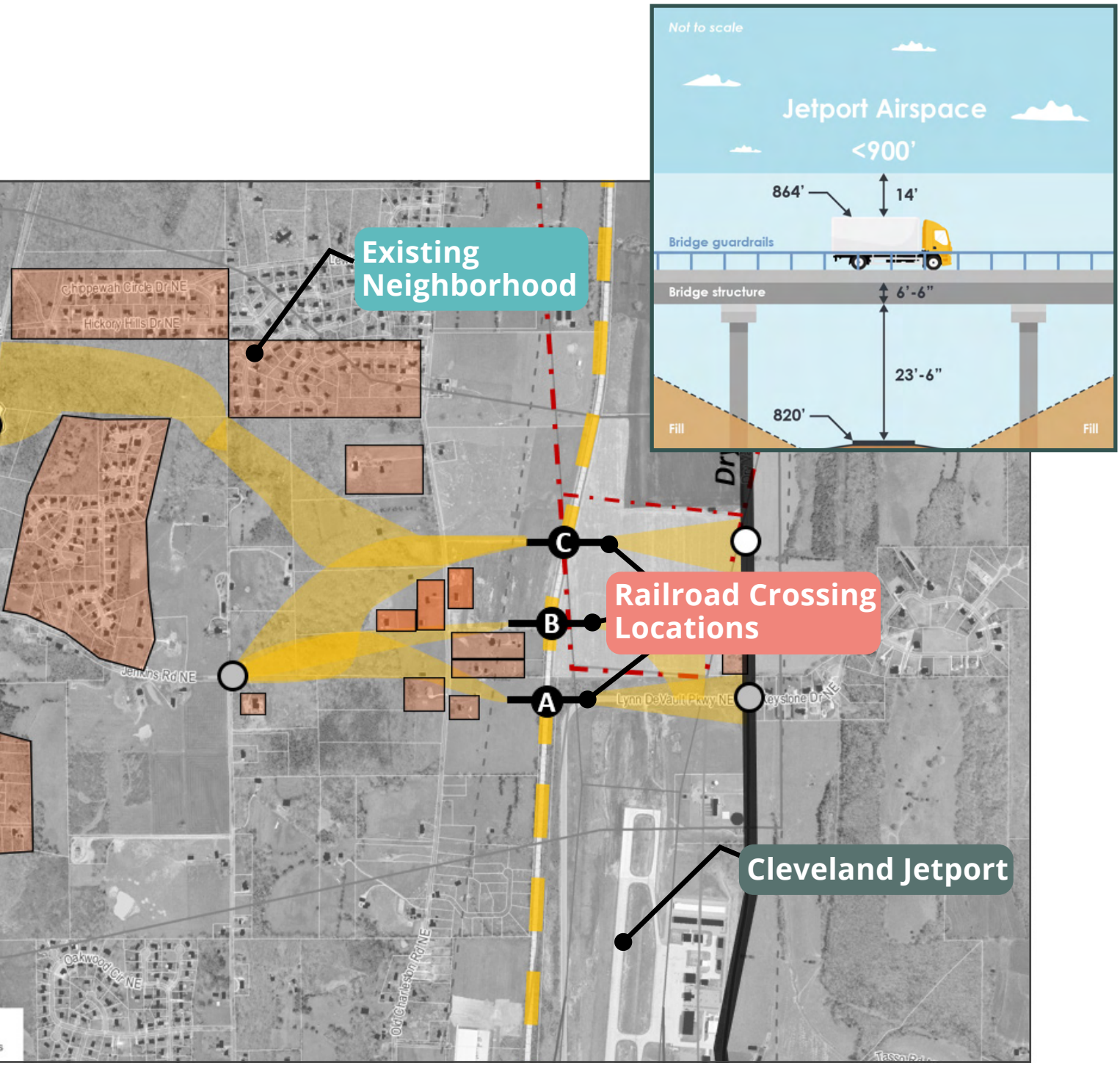
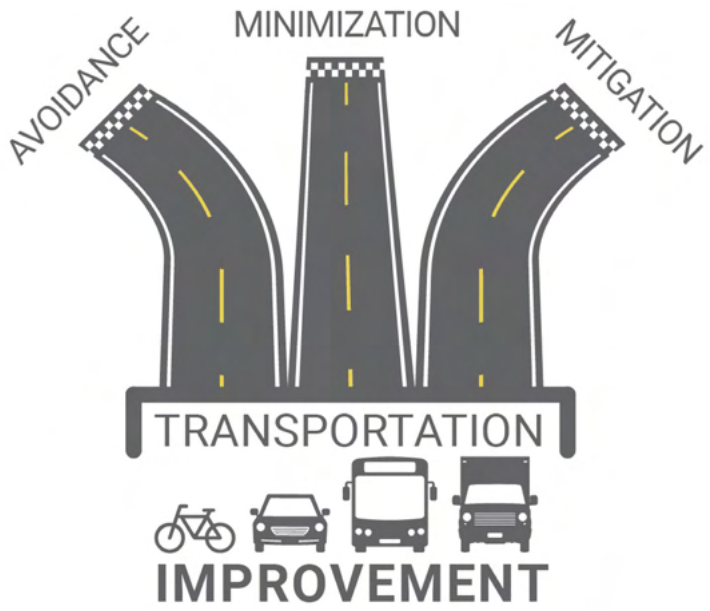


Figure 4.7: Desktop Screening of four (4) potential New Alignment Options.

i. Purpose Statement

Prior planning efforts, including the 2045 Regional Transportation Plan, identified the need for additional connections between Michigan Avenue Road and US 11 / N Lee Highway. This connection is needed to improve freight connectivity from the Cleveland Regional Jetport, balance traffic congestion at intersections along Dry Valley Road, Michigan Avenue Road, and Stuart Road, and minimize potential right-of-way impacts to surrounding property owners.



ii. Alternatives & Screening

During the planning process, four (4) potential alignments between the Dry Valley Road corridor and the US 11 N. Lee Highway corridor were identified and developed through a planning-level desktop screening of existing GIS data resources. Further delineation of wetlands and exploration of potential impacts will occur during the *next phase* of the project (engineering design and environmental assessment).

Several key elements impact the potential location of this new alignment:

- **Railroad:** Regulations require that any overpass must maintain a minimum 24' clearance (maintain operation of double-stacked railcar)
- **Jetport:** FAA regulations mandate airspace (ceiling limitation) clearance for planes approaching the runway
- **Adjacent Properties:** existing residential properties should be avoided or impacts mitigated where possible
- **Connectivity:** align, where possible, with Jenkins Road and US 11 intersection
- **Environment:** potential impacts to environmental resources should be avoided, minimized, or mitigated

» https://www.fmcsa.dot.gov/safety/rail-crossing/highway-rail-grade-crossing-safe-clearance

Evaluation Matrix

Impact Potential: Very Low | Low | Neutral | High | Very High

	Factors	Alignment A	Alignment B	Alignment C1	Alignment C2 (Locally Preferred)
	Improve Existing Road (feet)	4,800	4,000	3,300	**0.0**
	New Roadway (feet)	3,800	5,200	5,800	**9,000**
	New Intersection (1,600' north of Keystone Dr.)	No	No	**Yes — 1**	**Yes — 2**
	Total Distance (miles / Minutes	1.64 Miles / 4.9 min	1.75 miles / 5.2 min	**2.03 miles** / 6.1 min	**2.01 miles** / 6.0 min
CONSTRUCTIBILITY	**Property / Landowners Impacted**	6	7	6	7
CONSTRUCTIBILITY	**ROW Purchase** (acres: 60' ROW x New Road length)	5.2	7.2	8.0	12.4
CONSTRUCTIBILITY	**Topography Challenge**	Minor	Minor	Minor	Yes
CONSTRUCTIBILITY	**Electrical Transmission Lines**	No	No	No	Yes
	Clearance (Airspace - Elevation)	34'	45'	86'	86'
	New Development Opportunity / **Airport Expansion**	No	No	**Yes**	**Yes**

Table 4.8: Evaluation Matrix of four (4) potential New Alignments.

iii. Locally-Preferred Alternative

To select a preferred alternative, the above evaluation matrix was created. The matrix uses objective evaluation criteria based upon constructibility to create a relative scoring system among similar projects. Factors used include parcel and property (structure) impacts, topography and infrastructure constraints, and new roadway construction. The goal of the matrix was to identify the project that was legally and technically feasible, while avoiding property impacts to existing structures and landowners if possible, minimizing impacts only where they were unavoidable.

☑ *WHY THE C2 ALIGNMENT?*

Option C2 was identified as the locally-preferred alternative.

- ✓ *It minimizes potential impacts* to existing residential properties (front yards along Jenkins Road), while adding a minimal amount of additional drive time (1-minute).
- ✓ *It requires no changes* to the existing roadway.
- ✓ *Exceeds the requirements* for clearance within the Jetport airspace.
- ✓ *Provides opportunity* for new development and airport expansion.

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05: IMPLEMENTATION

Phase & Cost Estimates

During the planning process, constructible project sections with logical termini were identified to implement the proposed roadway design in phases. The suggested project sections (see figure at right) also align with the two context zones.

As these sections were identified, projected construction quantities were developed based on the concept design, using measurements take through CAD (design) details. These quantities formed the basis for construction cost estimates, using standard unit cost values from similar corridor projects.

A WORD OF CAUTION:

There will be unforeseen site conditions, right-of-way acquisition costs, and additional material costs identified during the engineering design stage. Right-of-way acquisition costs may vary greatly based on local real estate conditions and individual property owners, and were not included. A 10% design fee and 35% contingency are assumed. These estimates are for 2022 costs and subject to change following full surveys and final design computations.

Section 5 — Northern: Bridge to Tasso Lane

- Length: 0.82 miles
- Est. Cost: $6.2M - $6.9M

Section 4 — Northern: Wilkinson Avenue to Bridge

- Length: 1.25 miles
- Est. Cost: $8.6M - $9.2M

Section 3 — Southern: Stuart Road to Wilkinson Avenue

- Length: 0.93 miles
- Est. Cost: $9.0M - $9.6M

Section 2 — Southern: Minnis Road to Stuart Road

- Length: 1.33 miles
- Est. Cost: $12.6M - $13.4M

Section 1 — Southern: Benton Pike to Minnis Road

- Length: 0.56 miles
- Est. Cost: $5.2M - $5.6M

Funding

To implement this Corridor Plan, funding for engineering design and construction must be secured. State funds are available through the Tennessee Department of Transportation (TDOT) including several potential grant funding programs (each requiring a local match) that are potential options for Michigan Avenue Road / Dry Valley Road. These grants are competitive, evaluated with and against similar projects from all across the State.

GRANT OPPORTUNITIES

State Industrial Access (SIA) Program

The State Industrial Access (SIA) Program provides funding and technical assistance for highway access to new and expanding industries across the state. The Tennessee Department of Transportation contracts with local governments for projects that will be developed under the SIA Program.
https://www.tn.gov/tdot/strategic-transportation-investments/state-industrial-access-program.html

Multimodal Access Grant (MMAG) Program

TDOT's Multimodal Access Grant is a state-funded program created to support the transportation needs of pedestrians, bicyclists, and transit users through infrastructure projects that address existing gaps along state routes. Multimodal Access Grant projects are state-funded at 90 or 95 percent, depending on the economic status of the project county, up to a total project value of $1,250,000.
https://www.tn.gov/tdot/multimodal-transportation-resources/bicycle-and-pedestrian-program/multimodal-access-grant.html

Transportation Alternatives Program

The TDOT Transportation Alternatives Program (TAP) supports various transportation and multimodal improvements with the overarching goal to improve a city's travel choices, experience, history, and culture, creating a foundation for equitable access. Grant projects are funded through a competitive selection process, with a typical local share of 20% of net costs.
https://www.tn.gov/tdot/program-development-and-administration-home/local-programs/tap.html

MUNICIPAL FUNDING OPPORTUNITIES

Transportation projects can also be funded through issuance of municipal bonds. These bonds, which can be either revenue-backed (in the case of tolling projects or other revenue-generating projects) or general obligation, backed by the municipality's full faith and credit, can be used to finance all of a transportation project, or provide the local share with matching state or federal funds. For projects with significant community interest or support, bonds can be a means of accelerating development and construction.

OTHER FUNDING OPPORTUNITIES

Public-Private Partnerships (P3s)

Public-Private Partnerships are designed to accomplish a combination of goals related to economic and community development efforts, some of which have been identified in this plan. Public funds must only be made available to those projects determined otherwise unfeasible or unachievable "but for" the combined efforts of public and private participation.

Next Steps

1. **Endorse** this Plan ☑
2. **Update** the RTP ☑
3. **Confirm** Grant Eligibility & Secure Local Match ☑
4. **Obtain** Letters of Support ☑

APPENDIX

AVAILABLE DIGITALLY

1. PUBLIC OUTREACH

A. ONLINE SURVEY
B. INTERACTIVE WEBMAP
C. FOCUS GROUP DISCUSSIONS
D. PUBLIC MEETING #1
E. PUBLIC MEETING #2 / WORKSHOP

2. ADVISORY COMMITTEE MEETINGS

3. CONCEPTUAL DESIGN