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1.0 Introduction

State Route 58, also known as Leavitt Road and Main Street, is a north-south transportation corridor that begins at SR 2 in Amherst and continues south to Ashland. The portion of SR 58 under study includes the segment between Middle Ridge Road in the City of Amherst and SR 113 in the Village of South Amherst. The entire study area is located within Amherst Township in Lorain County, Ohio.

This report documents the existing traffic and future operational conditions in the study area, justifies the need for improvements, and recommends measures to address the stated needs. **Figure 1, Appendix A** shows the boundaries of the study area.

Purpose and Need

The purpose and need for the SR 58 study area is to:

- Coordinate adjacent **land use** with traffic needs
- Preserve **traffic flow** and levels of service

These issues are summarized below:

Land Use

- The Comprehensive Plan for Amherst Township discourages strip development along SR 58. On the contrary, large-scale developments with consolidated access to SR 58 is recommended, and the zoning in the area has been changed to reflect the desire for future development.
- Based on the revised zoning, future mixed-used development is anticipated to replace single family homes and farmland in future years.
- Amherst Township does not have an established set of access management programs and policies to guide development. However, their Comprehensive Plan has made recommendations for future consolidation of development and access.

Traffic Flow

- With future development plans, the existing roadway network will experience increased traffic volumes, and if left in its current configuration, it will operate at below acceptable levels of service.

2.0 Existing Conditions

The following sections discuss the existing physical and traffic conditions within the study area.

2.1 Potential Red Flags

“Red Flags are points of concern that could cause revisions to: the anticipated design and construction scope of work, the proposed project development schedule, the estimated project budget (including construction, utility reimbursement, right of way acquisition and design costs) or the potential impacts of a project on the surrounding area.” (Section 1403.2 of the Ohio Department of Transportation’s *Location and Design Manual, Volume 3*)

HNTB reviewed existing data sources to compile information pertaining to potential red flag issues for the study area. Data reviewed included: record plan information, locations of landfills and cemeteries, floodways and floodplains, wetlands, rivers and streams, public recreational properties, farmland, public water supplies, and hazardous materials. **Figure 2, Appendix A** shows the potential red flags identified within the study area.

In the SR 58 study area, the National Wetland Inventory maps identified eight (8) wetlands. In addition, a 100-year floodplain area exists in the northwest portion of the study area, as well as in the area immediately adjacent to the western boundary. The Beaver Creek runs parallel to Pyle S. Amherst. In addition, 32 sites with potential hazardous material concerns were identified. According to the US Fish and Wildlife Service (USFWS), Lorain County is within the range of the federally endangered Indiana bat and piping plover; the federal candidate Eastern massasauga; and the federally threatened bald eagle. Also, nine structures are listed in Ohio’s historic inventory are located in the study area. In terms of major utilities, there is a 16” Columbia Gas Transmission HP Pipeline, a 24” Rural Lorain County Water Line, and overhead electric transmission lines are located in the study area. Much of the land in the study area was previously zoned for agricultural use, but presently, little of that land is active farmland. Much of the farmland has been rezoned for future mixed-use development.

All potential Red Flag areas must be field-verified, further agency coordination documented, and impacts must be evaluated in more detail for specific projects within the study area.

2.2 Existing Land Use

The study area includes approximately 1,000 acres portion of land whose boundaries stretch from Middle Ridge Road south to SR 113 and from Pyle S. Amherst east to SR 58. **Figure 1, Appendix A** shows the boundaries of the study area. Much of the study area is farmland, a portion of which is active or undeveloped land. The majority of the study area is zoned agricultural residential, with General Business zoning along SR 58. This area includes portions of the City of Amherst to the North and the Village of South Amherst to the south. However, the majority of the study area is contained within unincorporated areas of Amherst Township. The Ohio Turnpike (I-90/I-80) crosses the northern portion of the study area, where a new interchange at SR 58 opened in 2005. Details regarding the major roads within the study area are listed below.

SR 58

- Urban Principal Arterial
- 50 mph
- 5-lane section

SR113

- Urban Minor Arterial
- 35 mph in the west
- 45 mph in the east
- 2-lane section in the west

- 3-lane section in the east
- widens to 5 lanes at intersection with SR 58

Middle Ridge Road

- Urban Minor Arterial
- 35 mph
- 2-lane section,
- widens to 3 lanes at intersections with Elyria Avenue and SR 58

Pyle S. Amherst Road

- Urban Minor Arterial
- 35 mph in the south
- 45 mph in the north
- 2-lane section

2.3 Existing (2006) Traffic

HNTB conducted 6-hour weekday turning movement counts at the following intersections:

- SR 58 & Middle Ridge Rd.
- SR 58 & Turnpike Ramp
- SR 58 & SR 113
- SR 113 & Pyle S. Amherst Rd.
- Middle Ridge Rd. & Pyle S. Amherst Rd.

The turning movement counts were conducted in October, 2006 in fifteen-minute intervals between the hours of 6:00 AM - 9:00 AM, and 3:00 PM - 6:00 PM. HNTB also performed automated tube counts at two locations: SR 113 near the South Amherst village limits and Middle Ridge Road west of Elyria Avenue. **Figure 3, Appendix A** shows the existing peak hour traffic volumes and lane use. The count data was adjusted for daily and seasonal variations, and the Average Daily Traffic (ADT) was computed. Traffic count data and analysis information is included in **Appendix B**.

Level of Service

“Level of Service (LOS) is a quality measure describing conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience (Highway Capacity Manual, 2000).” Level of service designations range from A to F. LOS A describes near-ideal traffic operations. LOS F, on the other hand, is characterized by heavy congestion and long delays. New projects are usually designed to provide a LOS C, but LOS D is often considered acceptable level of service in urban and built-up suburban area or when achieving LOS C would incur extreme costs.

A series of capacity analyses were performed to determine the existing (2006) levels of service in both the AM and PM peak periods. Highway Capacity Software (HCS+) was used to compute the LOS at signalized and unsignalized intersections. **Table 1, page 4** shows the existing (2006), peak hour levels of service for the intersections within the study area.

Table 1: Existing (2006) Peak Hour Levels of Service (LOS)

Intersection	AM Peak Hour LOS	PM Peak Hour LOS
SR 58 & Middle Ridge	C	C
SR 58 & Ohio Turnpike	B	B
SR 58 & SR 113	C	C
SR 113 & Pyle S. Amherst	B	B
Pyle S. Amherst & Middle Ridge*	B	B

*Unsignalized intersection analysis; worst approach results shown

3.0 Future Conditions

The following sections discuss the future physical and traffic conditions within the study area.

3.1 Future Land Use

In 2006, Amherst Township completed an update to their Comprehensive Plan, which included zoning changes within the study area. **Figure 4, Appendix A** shows the newly adopted zoning within the area based on the 2006 updates. Based on the new zoning, the County expects mixed use development to occur. This would include retail, residential, and office/industrial.

A proposed east-west roadway connecting SR 58 to Pyle S. Amherst between Middle Ridge and SR 113 was also included in the 2006 update to serve future development. In addition, a north-south connector was also included to link future development to SR 113. The area just to the west of the study area has been rezoned for a future residential-recreation-retail project estimated at \$1.25 billion. The “Quarries” project includes plans for golf courses, hotels, shopping, and a gated residential community. Construction has not yet begun, and negotiations are still underway for property and land acquisition.

3.2 Future Traffic Analysis

Future traffic projections are generally comprised of two components: background growth and development-specific growth. If the project is within a transportation system covered by a Metropolitan Planning Organization (MPO) model, this model is often used to estimate the background growth or expected average annual change in traffic. Development-specific traffic is normally obtained from the local municipality, county or developer. For this project, the following was determined:

Background Growth: To develop future traffic volumes, HNTB consulted the Northeast Ohio Areawide Coordinating Agency (NOACA) regional model. NOACA’s model is a regional model and does not include proposed or planned development until the project is fully committed. Therefore, the proposed development was not included. The regional model shows a slight net decrease in traffic in the study area. Because the projected decrease is so slight, the background growth was assumed to be negligible, and no background growth was assumed when developing the future projections.

Development Traffic: Traffic will be affected by an increase in development traffic. HNTB estimated future trips for the AM and PM peak periods based on new zoning recently adopted by Amherst Township, including the proposed east-west roadway between Pyle S. Amherst and SR 58. The future estimates were based on a 1/4 build-out scenario for an opening day of 2010 and a 2/3 build-out scenario for a design year of 2030 using a mixed land use including office/industrial, retail, and residential uses. Trips were generated based on the *Institute of Transportation Engineers Trip Generation, 7th Edition*. The following assumptions were made when performing trip generation:

- Trips generated for office/industrial were based on business park land use at full acreage
- Trips generated for retail were based on shopping center land use with leasable square footage being 25% of total acreage
- Trips generated for residential were based on single family detached housing with 2.5 units per acre

Tables 2 and 3, below show future weekday trip estimates for the AM and PM peaks for opening day (2010) and design year (2030) respectively. After trips were generated, they were distributed across the roadway network using existing traffic patterns and future traffic pattern projections. **Figure 5, Appendix A** shows the trip distribution percentages used for each movement throughout the study area. The development traffic was then added to the existing traffic to reach future traffic volumes for both opening day (2010) and design year (2030) within the study area. **Figures 6 and 7, Appendix A** show the future traffic volumes.

Table 2: Opening Day (2010) Trip Generation

Land Use	Size	AM		PM	
		Enter	Exit	Enter	Exit
Office/Industrial	66.75 Acres	1,139	201	225	899
Internal Capture		-57	0	0	-135
Pass By		0	0	0	0
Retail	996,435 Square Feet	379	242	1,370	1,484
Internal Capture		0	0	-411	-148
Pass By		0	0	-273	-296
Residential	222.5 Units	41	124	139	82
Internal Capture		0	-6	-42	-25
Pass By		0	0	0	0
Total		1,502	561	1,008	1,861

Table 3: Design Year (2030) Trip Generation

Land Use	Size	AM		PM	
		Enter	Exit	Enter	Exit
Office/Industrial	178 Acres	3,124	551	599	2,396
Internal Capture		-156	0	0	-359
Pass By		0	0	0	0
Retail	2,657,160 Square Feet	683	437	2,618	2,836
Internal Capture		0	0	-785	-284
Pass By		0	0	-392	-425
Residential	593 Units	106	318	335	197
Internal Capture		0	-16	-101	-59
Pass By		0	0	0	0
Total		3,757	1,290	2,274	4,302

A series of level of service analyses were conducted to determine future traffic operational conditions within the study area. Although the study area is currently rural in nature, with the addition of the proposed development, it will more likely resemble an urban roadway network in character. Therefore, LOS D was targeted as the minimum acceptable level of service in the future. However, the traffic development for this study is preliminary in nature since it is based solely on proposed land use, not site-specific development plans. Therefore, the improvements and costs listed below are merely a guide as to what might be needed as the study area develops. A traffic impact study should be performed for specific developments to determine actual capacity requirements and costs.

Tables 4 and 5, page 8 summarize the opening day and design year AM and PM peak hour levels of service based on 1/4 build out and 2/3 build out, respectively. **Figure 8, Appendix A** provides a schematic showing existing and future recommended lane use based on this planning level traffic analysis.

Table 4: Opening Day (2010) Peak Hour Levels of Service

Intersection	Existing Lane Use		Recommended Lane Use	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
SR 58 & Middle Ridge	C	E	C	D
SR 58 & Ohio Turnpike/proposed road	D	F	C	C
SR 58 & SR 113	C	C	C	
Pyle S. Amherst & Middle Ridge	C*	E*	B	B
Pyle S. Amherst & proposed road	B*	C*	B*	C*
Pyle S. Amherst & SR 113	B	C	B	C

*Unsignalized intersection analysis; worst approach results shown

Table 5: Design Year (2030) Peak Hour Levels of Service

Intersection	Existing Lane Use*		Recommended Lane Use	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
SR 58 & Middle Ridge	F	F	C	D
SR 58 & Ohio Turnpike/proposed road	F	F	C	D
SR 58 & SR 113	D	D	D	D
Pyle S. Amherst & Middle Ridge	B	B	B	B
Pyle S. Amherst & proposed road	F	F	C	D
Pyle S. Amherst & SR 113	C	F	C	C

*The design year (2030) existing land use condition included roadway improvements recommended for the opening day (2010) condition.

To maintain LOS D, the following improvements would be necessary on opening day:

- New traffic signal at Middle Ridge & Pyle South Amherst
- Northbound right turn lane at Middle Ridge & SR 58
- Southbound right turn lane at SR 58 & Turnpike & the proposed development

Based on the preliminary analysis, it is likely additional turn lanes, through lanes, and traffic signals would be necessary to maintain acceptable levels of service for the design year. At that point, additional access points may be required to minimize impacts and costs.

4.0 East-West Connector

In addition to analyzing existing and future traffic conditions, HNTB was asked to develop alternative alignments for a new through connection between SR 58 and Pyle S. Amherst. Amherst Township's Comprehensive Plan 2004 Update recommended that a new road system be developed to adequately manage anticipated increased traffic in the area. The update went further to say that the road segments should be constructed off of SR 58 such that construction facilitates coordinated development and avoids fragmented development "stripped" along SR 58.

New roadway configurations were developed and recommended as part of the Comprehensive Plan. From a planning and traffic management perspective, it is important that the new east/west road connect SR 58 and Pyle S. Amherst and serve the proposed development anticipated by the Township. It is anticipated that this east-west road will extend westerly to connect to the Quarries project, but the final determination of the traffic need for this connection will be based on a development-specific traffic study. Analysis for this study did not include the anticipated growth related to the Quarries project.

HNTB built upon the concepts presented in the Comprehensive Plan and developed three conceptual alternatives for a new connector roadway. The purpose for developing these alternatives was to identify the most feasible location for an east-west road to connect SR 58 and Pyle S. Amherst as part of the County Thoroughfare Plan. The recommended location of the east-west roadway is meant to guide the inevitable future development in the area.

4.1 Conceptual Alternatives

HNTB developed three alternatives for a new connector road that began at the SR 58/Turnpike interchange and terminated at Pyle S. Amherst. They all originated at the intersection of SR 58 and the Ohio Turnpike based on recommendations in the Comprehensive Plan and input from County and Township officials. Alternative 1 (purple) was the most direct route, Alternative 2 (pink) had the northern most terminus, and Alternative 3 (green) combined elements of both Alternatives 1 and 2. (See **Figure 9, Appendix A**)

In preliminary meetings regarding this project, ODOT and the OTC indicated that to consider allowing a break in the limited access right of way at the SR 58/Turnpike interchange, the proposed roadway must be a public road that connects SR 58 to Pyle S. Amherst. In other words, to be public road, the roadway must be a thoroughfare, not just an access road to the development. As such, the Amherst Township's Comprehensive Plan included a roadway that originated at the Turnpike interchange and extended west to Pyle S. Amherst. The proposed roadway must also be in accordance with the state access management requirements of ODOT and the OTC.

The proposed roadway includes four lanes, and accommodations for bike and pedestrian access. Crosswalks will be constructed at the intersections to provide designated crossings. The sample typical section (**Figure 10, Appendix A**) shows a sidewalk in both directions. Given the setback requirements for future development - at least 30 feet from edge of pavement - it may be possible to have a separate facility to accommodate bicycles. The proposed roadway also includes a wide median with grass and plantings and a tree lawn between the road and the sidewalks.

The conceptual alternatives also include preserving the Lake Shore rail right-of-way within the SR 58 study area. Based on the recommendations of the Comprehensive Plan, growth will require a supportive and efficient transportation system. Future development should create the opportunity to develop a true mixed use "township center" if the market demand supports such a concept. Providing opportunity for transportation choices not only enhances the economic vitality of this area, but of the surrounding communities as well. There are preliminary concepts for a future station in the study area, and the concept of multi-modal access in the study area will improve access to the proposed Quarry project and lay the ground work for additional connections with nearby cities.

All three of the conceptual alternatives would impact one residential structure on SR 58. At the time this study was being completed, this home was vacant. The project stakeholders favored alternatives that minimized undevelopable land fragments, blue line stream and wetland impacts.

Some stakeholders suggested an additional concept similar to Tower Boulevard, which is a roadway in the City of Lorain that has electric transmission lines located in the median. The stakeholders recommended paralleling the overhead transmission lines within the study area with the new east-west connection.

HNTB subsequently developed two tower alignment concepts, which are shown in **Figures 11 and 12, Appendix A**. One alignment was developed with the towers running in the median. The second alignment had the towers running parallel to the sidewalks. Neither alignment was the most beneficial in promoting economic development due to the proximity of the Turnpike. With the towers parallel to the sidewalk, development on both sides of the roadway would not be possible decreasing the total frontage available for development. With the towers in the median, approximately 176 feet of right-of-way was required, compared to 150 feet with the alternatives south of the towers. In addition, the median section with the towers would need to be 40 feet wide, opposed to the 14 foot median within the 150 foot right-of-way in the other conceptual alternatives. Because the tower alignment alternatives used more right-of-way and limited development, they were therefore eliminated from further study.

4.2 Feasible Alternatives

Based on the evaluation of the conceptual alternatives, two alternatives were carried forward as feasible alternatives. Although the three conceptual alternatives were similar in terms of benefits and impacts, the best attributes of each were combined into two feasible alternatives for further study. The revised alignments were shifted away from the overhead transmission lines at the eastern end and shifted south in the middle to avoid wetland impacts. These alternatives best met the goals and objectives defined for this project and were recommended by further study by the project stakeholders.

Both of the alternatives originated at the Turnpike/SR 58 intersection and terminated at Pyle S. Amherst. Alternative #2 intersects with Pyle S. Amherst north of Alternative #1. Conservative right-of-way was shown for both of the alternatives, including sidewalks on both sides, a landscaped median to facilitate bike and pedestrian access, and setbacks recommended in the Comprehensive Plan. **Figure 13, Appendix A** shows the feasible alternatives. **Table 6, page 11** provides a summary of the advantages and disadvantages for each.

4.3 Planning-Level Cost Estimates

HNTB used a combination of estimated quantities and preliminary estimating techniques to estimate roadway costs for the feasible alternatives. ODOT's Procedure for Construction Budget Estimating was used as the framework for the estimates (see **Figure 14, Appendix A**). The feasible alternatives were very similar in terms of length, impacts and cost. Both alternatives were estimated at a total, including contingency, inflation preliminary engineering, construction engineering and inspection, of approximately \$25 million in 2010. The opening day recommended roadway improvements are estimated to cost \$2.1 million. These costs are included in the \$25 million estimate.

The detailed cost estimates are included in **Appendix C**. These cost estimates are considered to be preliminary, and will be updated as needed throughout the next phase of study. Cost estimates for improvements beyond the opening day build-out were not developed as part of this study.

Table 6: Feasible Alternatives Analysis

	Advantages	Disadvantages
Alternative #1	<ul style="list-style-type: none"> ▪ No wetland impacts ▪ Fewer floodplain impacts than Alt #2 	<ul style="list-style-type: none"> ▪ Moderate utility impacts ▪ Slightly higher cost ▪ Creates minor land fragments ▪ One residential structure impact ▪ Potential drainage issues at western terminus
Alternative #2	<ul style="list-style-type: none"> ▪ Slightly lower cost ▪ Preferred by public ▪ No land fragments ▪ Better meets goals & objectives of the Township 	<ul style="list-style-type: none"> ▪ More wetland impacts than Alt #1 ▪ One residential structure impact

5.0 Public Involvement Summary

The public involvement for the SR 58 Corridor Study included a kick-off meeting, two Stakeholder Meetings and a public meeting. Meeting notices were sent to over 140 people for all three of these meetings. A copy of the project mailing list and meeting notices are included in **Appendix D**. Information and materials from these meetings has been provided to Amherst Township for posting on the Township's website.

The study stakeholders included:

- Lorain County Community Development
- Amherst Township
- City of Amherst
- Village of South Amherst
- Northeast Areawide Coordinating Agency (NOACA)
- The Ohio Turnpike Commission (OTC)
- Ohio Department of Transportation (ODOT)
- Lorain County Engineer
- Lake Shore Railway Association

5.1 Kick-off Meeting

The project kick-off meeting was held on September 26, 2006 at the Amherst Township Town Hall. The HNTB team presented an overview of the study, identified the study area, project stakeholders, the project scope, and the estimated schedule. This presentation was made as part of the Township Trustees regular meeting. Those in attendance were asked for input on the purpose and need of the project as well as the goals and objectives. A copy of the presentation and sign-in sheets from this meeting are included in **Appendix E**.

Concerns have been raised by residents worried about new development and new traffic patterns. One configuration that has caused concern in a neighboring area is the use of frontage or marginal roads. Residents want a traffic pattern that works with the development but is also easy for all drivers to understand so that drivers and pedestrians can travel safely on adjacent facilities.

5.2 Stakeholder Meetings

The first stakeholder meeting was held on October 24, 2006 at the Amherst Township Town Hall. During this meeting, HNTB presented an overview of the study, study area limits, project scope, estimated schedule, the purpose and need, and the goals and objectives. HNTB also provided information obtained from traffic counts that were conducted in September 2006, including Level of Service (LOS), and Average Daily Traffic (ADT). During this meeting, the team also presented potential red flags and areas that needed to be considered when developing the conceptual alternatives. The team also discussed the next steps in the project and outlined the time frame for the next stakeholder meeting, as well as the public meeting. A copy of the meeting presentation and sign-in sheet are included in **Appendix E**.

The second stakeholder meeting was held on January 23, 2007 at the Amherst Township Town Hall. HNTB reviewed the purpose and need of the study and presented three (3) conceptual alternatives for review and discussion. These alternatives were developed based on the goals and objectives and purpose and need of this study. During this meeting, the group was given an evaluation matrix that identified some of the advantages and disadvantages of each of the

alternatives. The group was asked for additional advantages and/or disadvantages to be included in the matrix. The group was then asked to rank the alternatives from the most preferred to the least preferred. Not all attendees were comfortable doing this as a group exercise, so they were given the option of marking up their handouts and submitting them anonymously at the end of the meeting. A copy of the evaluation matrix and the input collected at the meeting are included in **Appendix E**.

During this meeting, the HNTB team reviewed the recent changes in the zoning within the study area. The HNTB team also discussed the next steps for the study, including the refinement of the alternatives based on comments received at this meeting and the timing for the public meeting.

5.3 Public Meeting

The public meeting for this project was held on March 27, 2007 at the Amherst Township Town Hall. The HNTB team presented an overview of the study, reviewed the purpose and need and goals and objectives of the study, what tasks have been completed, and the tasks that remain. The purpose of this public meeting was to present the refined alternatives based on comments from the January 23rd meeting and get input on which alternative should be recommended for further study in the next phase. A copy of the informational handout and comments received are included in **Appendix E**.

6.0 Summary and Recommendations

The purpose and need for the SR 58 study area is to:

- Coordinate adjacent **land use** with traffic needs
- Preserve **traffic flow** and levels of service

To maintain LOS D, the following improvements would be necessary on opening day:

- New traffic signal at Middle Ridge & Pyle South Amherst
- Northbound right turn lane at Middle Ridge & SR 58
- Southbound right turn lane at SR 58 & Turnpike & the proposed development

Based on the preliminary analysis, it is likely additional turn lanes, through lanes, and traffic signals would be necessary to maintain acceptable levels of service for the design year. At that point, additional access points may be required to minimize impacts and costs.

However, the traffic developed for this study is preliminary in nature, since it is based solely on proposed land use, not site-specific development plans. Therefore, the recommended lane use and signalization described above are intended merely as a guide as to what could be needed when the study area develops. It is recommended that a traffic impact study be performed prior to site approval for any development to determine actual capacity requirements and costs.

Preservation of the Lake Shore rail right-of-way within the SR 58 study area is also recommended for possible future transit oriented development. Based on the recommendations of the Comprehensive Plan, and the goals and objectives of this study, growth will require a supportive and efficient transportation system. Future development should create the opportunity to develop a true mixed use “township center” if the market demand supports such a concept. Providing opportunity for transportation choices not only enhances the economic vitality of this area, but of the surrounding communities as well. There are preliminary concepts for a future station in the study area, and the concept of multi-modal access in the study area will improve access to the proposed Quarry project, and lay the ground work for additional connections with nearby cities.

East-West Connector

Based on the input from the public and project stakeholders, Alternative #2 is recommended for further study as part of future development plans. This alternative avoids the potential drainage issues associated with Alternative #1 and results in fewer land fragments. Alternative #2 also leaves larger parcels of land in tact for development and minimizes the number of property owners impacted.

The proposed east-west connector should provide accommodations for bike and pedestrian access. With a wide median, pedestrians will have a safe waiting area to cross to the other side. Crosswalks should be constructed at the intersections to provide designated crossings. The sample typical section (**Figure 10, Appendix A**) shows a sidewalk in both directions. Given the setback requirements for future development, it may be possible to have a separate facility to accommodate bicycles.

Funding Requirements

For this preliminary study to progress into preliminary engineering and final design, additional funding needs to be identified. Based on the planning level-cost estimates developed for this study, the recommended preferred alternative is estimated to cost \$25 million, including \$2.1 million for existing roadway network improvements. These costs will need to be re-evaluated during the next steps due to site-specific development, changes in cost of materials, inflation rates, and ROW costs.