

On January 20, 2025, President Trump signed Executive Order (E.O.) 14148 --Initial Rescissions of Harmful Executive Orders and Actions and E.O. 14154 – Unleashing American Energy. The E.O.s revoked E.O. 13990 – Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (January 20, 2021) and E.O. 14008 – Tackling the Climate Crisis at Home and Abroad (January 27, 2021). Subsequently on January 29, 2025, Secretary Duffy signed a Memorandum for Secretarial Offices and Heads of Operating Administrations – Implementation of Executive Orders Addressing Energy, Climate Change, Diversity, and Gender. On February 25, 2025, the Council on Environmental Quality (CEQ) published an Interim Final Rule removing the CEQ’s National Environmental Policy Act (NEPA) implementing regulations, effective April 11, 2025 (90 Fed. Reg. 10610). As a result of these actions, FHWA will not include greenhouse gas emissions and climate change analyses in the federal environmental review process. Any purported greenhouse gas emissions and climate change impacts were not considered in the federal decision. Accordingly, no greenhouse gas emissions or climate change analyses are included in this EA.

Also on January 20, 2025, President Trump signed Executive Order (E.O.) 14148 --Initial Rescissions of Harmful Executive Orders and Actions and E.O. 14154 – Unleashing American Energy. The E.O.s revoked E.O. 14096 – Revitalizing Our Nation’s Commitment to Environmental Justice for All (April 21, 2023). Subsequently on January 21, 2025, President Trump signed E.O. 14173 – Ending Illegal Discrimination and Restoring Merit-Based Opportunity. This E.O. revoked E.O. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). On February 25, 2025, the Council on Environmental Quality (CEQ) published an Interim Final Rule removing the CEQ’s National Environmental Policy Act (NEPA) implementing regulations, effective April 11, 2025 (90 Fed. Reg. 10610).

As a result of these actions, all federal environmental justice requirements are revoked and no longer apply to the federal environmental review process. FHWA, FTA and FRA’s Joint NEPA regulations (23 CFR part 771) and the agencies Interim Final Guidance on “Section 139 Environmental Review Process: Efficient Environmental Reviews for Project Decision-making and One Federal Decision” (12/17/2024) do not require an environmental justice analysis. Accordingly, no analysis of environmental justice is included in this EA. Any purported environmental justice impacts were not considered in the federal decision. Social, economic, and community impacts will continue to be disclosed where applicable in accordance with 23 CFR 771.

As a result of E.O. 14148, E.O. 14154, E.O. 14173, and the removal of the Council on Environmental Quality’s regulations, all federal environmental justice requirements are revoked and no longer applicable to the federal environmental review process. Accordingly, this EA does not consider public comments regarding environmental justice.



# PRELIMINARY GEOMETRIC ALTERNATIVES SCREENING

I-24 SOUTHEAST CHOICE LANES

November 2025

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## ISSUE AND REVISION RECORD

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	9/13/24	---	Andy Barlow, TDOT	Shane Hester, TDOT	Working DRAFT submittal review
B	12/2/24	Heather Smith Sawyer Becky Rude	Joy Riley, Brian Trotter	Eric Saggars	DRAFT submittal
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C	1/29/25	Becky Rude, Joy Riley	Brian Trotter	Eric Saggars	DRAFT submittal
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D	2/7/25	Becky Rude, Joy Riley	Brian Trotter, Erin McGehee	David Dye	DRAFT FINAL submittal
		---			
E	10/31/25	Ben Spargo	Frank DuBose	Erin McGehee	<i>Reboot submittal</i>

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# 1 INTRODUCTION

This report outlines the methodology and findings of the geometric alternatives development and screening process conducted to assess a range of alternatives for the proposed Interstate 24 (I-24) Southeast Choice Lanes (CL) project. Following the recommendations of TDOT's I-24 Multimodal Corridor Study and the Congestion Action Plan (CAP) for Middle Tennessee, the development of the alternatives described in this report was initiated. These alternatives were developed to meet the purpose and need of the proposed Project and were screened to identify a range of Reasonable Alternatives to carry forward for evaluation in the Project's Environmental Assessment. Alternatives were evaluated and refined based on three levels of screening as described in this report.

## 1.1 Project Overview

### 1.1.1 Transportation Modernization Act

In early 2023, Governor Bill Lee signed the Transportation Modernization Act (TMA) into law providing the state of Tennessee with \$3 billion in transportation revenue and authorizing the development and operation of user-fee facility projects (Choice Lanes) to address traffic congestion across the state. The TMA allows the Tennessee Department of Transportation (TDOT) to expand its alternative project delivery methods, including the utilization of

**Public-Private Partnerships (P3s)** are partnerships formed between public entities like TDOT and private companies, allowing Tennessee to better allocate the limited resources for transportation projects by leveraging private-sector innovation and capital. Private-sector partners would design, build, finance, operate and maintain Choice Lanes projects. P3s allow for shared risks, accelerated project delivery, provide access to additional capital, enable a longer-term view of asset management and can reduce public cost. Any debt from Choice Lanes projects could be privately financed without obligations to the state.

**Public-Private Partnerships (P3s)** and Choice Lanes to deliver its urban congestion reduction improvement projects. Choice Lanes are priced managed lanes that use pricing to proactively manage demand and improve travel time. Choice Lanes allow motorists to maintain consistent travel speeds even when the adjacent existing lanes are congested. Choice Lanes are new lanes and typically operate at around 45 miles per hour (mph) during rush hours.

The additional state funding provided through the TMA expands TDOT's federal dollar capabilities and accelerates urban congestion projects, including Choice Lanes. TDOT's 10-Year Project Plan identified the Interstate I-24 corridor

southeast of Nashville between I-40 and I-840 as a priority urban congestion relief project to deliver as Tennessee's first Choice Lanes project.

### 1.1.2 Project Overview

TDOT, in coordination with Federal Highway Administration (FHWA), is proposing to make improvements to I-24 between I-40 and I-840 in Davidson and Rutherford counties, Tennessee. The I-24 Southeast Choice Lanes project (proposed Project) would include widening the existing interstate to accommodate the addition of price-managed lanes (Choice Lanes) and interchange improvements. The Choice Lanes would involve a contract with a private-sector partner to design, build, finance, operate and maintain the new, optional lanes through a P3 program.

The proposed project was originally initiated in 2024. Since that time, TDOT expanded the proposed project boundaries and the corresponding Environmental Technical Study Area (ETSA) (See **Figure 1-1**, Project Location Map).





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## 2 ALTERNATIVES SCREENING & ANALYSIS

### 2.1 Transportation Planning Process

The GNRC is the federally designated Metropolitan Planning Organization (MPO) and is responsible for developing and updating the Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP) to meet federal requirements and address local needs. The proposed Project is included in the Fiscal Year (FY) 2023-2026 TIP by reference number NSH 2025-82-001.

Over the past decade, TDOT and the GNRC have undertaken a series of comprehensive studies and feasibility assessments to address explosive population growth and congestion along the I-24 corridor. These studies, summarized in the following sections, systematically evaluated a range of multimodal approaches and managed lane strategies—including High Occupancy Vehicle (HOV) and High Occupancy Toll (HOT) lanes—with an emphasis on cost-effectiveness due to limited funding.

Adhering to guidance established by the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO)<sup>1,2</sup>, implementing Choice Lanes<sup>3</sup> is aligned with the region's current long-range transportation plan<sup>4</sup> and has been a recommended solution in transportation planning documents since 2014.

#### 2.1.1 I-24 Multimodal Corridor Study (TDOT, 2014)

The 2014 I-24 Multimodal Corridor Study investigated a range of multimodal solutions to address future travel demands, with an emphasis on managing congestion, improving safety, maximizing the potential for freight diversion and preserving and enhancing the corridor's economic benefits. The purpose of the study was to recommend a range of cost-effective projects and strategies that would make I-24 safer and more efficient. The study evaluated a wide range of multimodal strategies to address mobility issues along the entire I-24 corridor from the Kentucky state line to the Georgia state line.

In addition to the cost-effective recommended projects such as, on and off I-24 system capacity improvements, ramp improvements, Intelligent Transportation Systems (ITS) and bridge improvements, dedicated truck lanes, new and modified interstate access points, rock fall/slide mitigation projects and other miscellaneous projects, TDOT identified

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<sup>1</sup> FHWA | [Public-Private Partnership Oversight: How FHWA Reviews P3s \(2015\)](#).

<sup>2</sup> AASHTO's [Practitioners Handbook 3 | Managing the NEPA Process for Toll Lanes and Toll Roads \(2016\)](#).

<sup>3</sup> [TDOT Choice Lanes](#).

<sup>4</sup> [RTP 2021-2045, February 17, 2021 Update, GNRC](#).

managed lane strategies for evaluation. Much of the existing corridor includes approximately 50 miles of HOV lanes; however, the Multimodal Corridor Study recommended various strategies to improve or provide mobility and access benefits. Recommended strategies included increasing enforcement of HOV restrictions, evaluating options to transition to daily instead of peak hour HOV operation, providing direct HOV lane access and egress at selected locations, evaluating ramp metering locations, enacting legislation for managed lanes that include allowable access restrictions, express lanes and variable pricing options and determining if automated tag enforcement is allowable.

Funding is a major challenge for the I-24 Corridor improvements, as the study concluded that TDOT could not afford to continue adding lanes to interstates as the only solution to reduce congestion in urban areas. While the study identified a wide range of needed projects, most are not currently funded and will require significant new resources, innovative financing, or phased implementation.

### **2.1.2 Nashville Area MPO Managed Lanes Preliminary Feasibility Assessment (2015)**

The purpose of the 2015 Nashville Area MPO Managed Lanes Preliminary Feasibility Assessment (Assessment) was to profile potential managed lanes concepts for the Nashville area and to determine which of those concepts might be viable in the region. The Assessment introduced the concept of managed lanes, described existing managed lanes in use outside Tennessee and identified facilities and strategies for a pilot program within Tennessee. The Assessment also included data from 2012 on existing HOV lanes in the Nashville metro area (i.e., violation rates and speeds). It reviewed both high-cost (e.g., new HOV, HOT, or express lanes) and lower-cost strategies (e.g., hard shoulder running), noting that while lower-cost options are quicker to implement, they do not address long-term infrastructure needs. The Assessment also analyzed 2012 HOV lane data, described pricing mechanisms (dynamic, fixed-variable, static), and discussed P3 models, revenue sharing, and anticipated costs. Many goals and options from the Assessment were incorporated into the broader MPO policy framework, including the consideration of a managed lane system along I-24.

### **2.1.3 Tennessee Congestion Action Plan (2022)**

As a result of previous planning studies, TDOT continued studying traffic congestion and commissioned the development of Congestion Action Plans (CAP) in 2019, starting with the Middle Tennessee region (Nashville), followed by other areas including Chattanooga, Knoxville and Memphis in 2021. The purpose of the CAP was to expand on the results of the previous planning studies and develop data-driven methodologies to quantify urban congestion and eventually provide recommendations for regional managed lanes and

operational improvements. The CAP consisted of preliminary cost estimates, concept plans, summary documents for each project and stakeholder engagement.

In the Middle Tennessee CAP, deficiency scores ranked the existing levels of congestion. The metrics used to calculate the deficiency scores included congestion levels in both travel speeds and travel time, impacts of congestion for both passenger and commercial vehicles, impacts of bottlenecks, future growth projections, congestion deterioration during peak periods and throughout the day and impacts to multimodal transportation. In the Nashville region, 20 spot locations and 57 segments were identified as bottlenecks, with the majority occurring just south of the Inner Loop. Based on this analysis, a wide range of strategies—including HOT, HOV, Express Toll Lanes, Truck-Restricted Lanes, Bus on Shoulder, Hard Shoulder Running, and Ramp Metering—were recommended for further evaluation along corridors such as I-24.

However, despite the comprehensive planning, the CAPs revealed significant funding challenges. The total estimated cost for implementing the recommended roadway and transit improvements in Middle Tennessee alone exceeded \$7.3 billion. Across all four urban areas, the CAPs identified more than \$9.5 billion in capital project needs. In parallel, TDOT's Interstate Corridor Studies recommended an additional \$6.9 billion in congestion mitigation projects on urban freeway systems. After accounting for overlaps between these studies, CAP recommendations, and TDOT's current project commitments, approximately \$13.6 billion in unfunded needs remains. When combined with existing funding commitments—approximately \$3.8 billion from IMPROVE Act projects and other in-progress efforts—the total funding needed to address urban congestion in Tennessee's four major metropolitan areas exceeds \$17.5 billion.

Over the past decade, TDOT has undertaken and participated in numerous planning efforts to understand transportation needs in the state's largest urban areas. The CAPs represent a culmination of these efforts, reaffirming the need for and refining recommendations for roadway and transit improvements to address growing congestion. As documented in these efforts, managing current and future multimodal transportation demands will require significant investment. Securing supplemental federal, state, and local funding to support transit system expansion, multimodal facility development, and capital project implementation will be essential to preserving the quality of life and economic vitality of Tennessee's urban regions.

#### **2.1.4 TMA 10-Year Project Plan (2023)<sup>5</sup>**

The studies summarized earlier found that increasing congestion is affecting urban and rural areas and the continued growth requires a change in priorities and transportation

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<sup>5</sup> [TDOT 10-Year Plan](#), Accessed April 2024.

plans. Since the passage of the Transportation Modernization Act (TMA)<sup>6</sup> in 2023 acknowledging the challenges of rapid growth within the state, TDOT developed a 10-Year Project Plan that provided a roadmap for \$15 billion in state and federal funds and introduced a new project programming prioritization process balancing both urban and rural projects.

The methodology used to develop the 10-Year Project Plan included strategies such as:

1. Re-cost and fund all remaining engineering, right-of-way and construction phases of the current TDOT 3-Year Plan.
2. Fund all statewide programs at established levels.
3. Allocate funds for bridge replacements.
4. Allocate TMA funds in Regions 1, 2 and 3 for urban congestion and Choice Lanes projects as well as America’s River Crossing on I-55 in Region 4.
5. Balance TMA and federal and state formula funds to maximize the leveraging of potential partnerships and grants.

Following this methodology, TDOT developed six goals and corresponding evaluation criteria (refer to **Table 2-1**) to identify priority projects.

**Table 2-1: 10-Year Project Plan Prioritization Goals and Evaluation Criteria**

GOALS	EVALUATION CRITERIA
Maximize traveler safety and system reliability	Crash Reduction
Reduce congestion and manage travel demand to support an efficient system for people, goods and services	Volume to Capacity Ratio; Travel Time Reliability
Support the state’s economy	Percent Truck; Supports Intermodal Access and Connectivity; Economic Status
Preserve and protect the transportation system	Addresses bridge or pavement need
Livability and Sustainability	Supports Integrated Multimodal Systems
Accelerate Project Delivery	Time and risk estimated to deliver a project.

Source: TDOT TMA 10-Year Plan

<sup>6</sup> [Transportation Modernization Act](#).

Based on these goals and criteria, TDOT evaluated approximately 1,000 projects that fell within key TMA investment categories: Urban Congestion, Rural Interstate Widening, Statewide Partnership Program and IMPROVE Act projects.

## 2.2 Project Development & Alternatives Screening

The additional state funding and user fee financing mechanisms provided through the TMA allowed TDOT to initiate development of the I-24 Southeast Choice Lanes Project recommended by the previous planning studies. Using these recommendations, the Project Team initiated the development of the preliminary Choice Lanes alternatives. These alternatives were evaluated and refined based on the following three levels of screening:

- Level 1 – Preliminary Alternatives were evaluated for fatal flaws, with the ability to meet the purpose and need as the primary screening criteria.
- Level 2 – Refined Preliminary Alternatives were evaluated based on the ability to meet engineering feasibility and safety considerations and environmental and social impacts. Alternatives were first evaluated based on the mainline road widening template (Level 2A) and then on access locations and access types (Level 2B).
- Level 3 – Reasonable Alternatives were evaluated based on a detailed analysis of environmental and social impacts, planning-level cost estimates and agency/public input.

The following sections describe the screening process and results. **Appendix A** includes the screening matrices. The No-Build Alternative was evaluated throughout the screening process and has been retained for further analysis to serve as a baseline. Therefore, it is not discussed further in this section.

### 2.2.1 Level 1 Screening: Fatal Flaw

The Level 1 screening was a qualitative assessment of preliminary alternatives’ ability to meet the purpose and need. **Table 2-2** lists the categories and performance measures considered. Each alternative was scored using “Yes” and “No” rankings. A ranking of “Yes” indicates that an alternative fully achieves the performance measure and “No” indicates it only partially met or did not meet desired performance. Achieving the purpose and need of the Project was paramount; therefore, if a preliminary alternative was found to not fully meet the purpose and need, it was deemed fatally flawed and an unreasonable alternative.

**Table 2-2: Level 1 Categories, Criteria and Performance Measures**

Category	Criterion	Performance Measure
Purpose & Need	Increase capacity	Throughput and modeled volumes (mph)

Category	Criterion	Performance Measure
	Improve travel time	Modeled travel times (minutes)
	Address limited funding and accelerate project delivery by leveraging funding and delivery mechanisms provided in the TMA	Utilize alternative delivery to accelerate project development

The following preliminary alternatives were evaluated in the fatal flaw screening<sup>7</sup>:

- Two additional general-purpose lanes in either direction
- Two Choice Lanes in either direction
- Single Choice Lane in either direction
- Two reversible Choice Lanes in either direction

The only preliminary alternative that fully achieves the purpose and need is the two Choice Lanes in either direction alternative. The general-purpose lanes alternative adds highway capacity which could improve congestion compared to a no-build condition, but travel time and roadway operations, mobility and access are only marginally improved without a system for congestion management. This preliminary alternative also does not leverage innovative funding and financing mechanisms called for in the TMA and would not provide the flexibility to provide a system or dedicated lane to accommodate future transit improvements more easily.

The single Choice Lane in either direction and reversible Choice Lanes alternatives both do not meet the purpose and need of the Project. Neither alternative would provide sufficient capacity and improved travel time to meet traffic demands. For the reversible Choice Lanes alternative to function, there needs to be a large directional split in traffic during peak periods of the day. Based on the Project Team’s assessment, the I-24 Southeast corridor does not have the large directional split to provide the needed improvements to travel time to meet the transportation demands related to growth in the greater Nashville region.

In developing alternatives, the Project Team also established guiding principles for P3 Choice Lanes concept development. In a demand-risk P3 procurement, the developers pursuing the Project will take a 50-plus year view of the Project focusing not only on minimizing construction cost but also optimizing revenue and life cycle costs. Developers will desire corridors that support two managed lanes in either direction to maximize

<sup>7</sup> Conversion of the existing HOV lanes to Choice Lanes was not identified as a preliminary alternative because the TMA prohibits conversion of existing HOV to Choice Lanes. Additionally, because of the constrained nature of the Project corridor and that the existing highway already crosses several creeks and abuts wetlands, no practicable avoidance alternative was identified to fully avoid all impacts to wetlands and other waters.

revenue potential, improve travel time, allow capacity to consider accommodation of larger vehicles if desired in the future and enhance safety and operations within the Choice Lanes. The single Choice Lanes and reversible Choice Lanes do not achieve these principles. Additionally, reversible Choice Lanes do not fully achieve the desired safety improvements because this alternative relies heavily on a clear signage system and public education on how the system functions, which requires further adaptation by the public.

Based on the results of the Level 1 screening, the two Choice Lanes in either direction alternative was carried forward for further refinement and analysis because it fully achieves the purpose and need. All other preliminary build alternatives were eliminated from further consideration.

### 2.2.2 Level 2 Screening: Refined Preliminary Alternatives

The Level 2 screening was performed in two steps—the first (Level 2A) identified and assessed the mainline road template and the second (Level 2B) identified and assessed corridor access points.

#### LEVEL 2A: REFINED MAINLINE PRELIMINARY ALTERNATIVES

The two refined mainline preliminary alternatives that were considered in the Level 2A screening included:

- Two Choice Lanes on the outside
- Two Choice Lanes on the inside

The evaluation of impacts included in the Level 2A screening were based on a concrete barrier separation application.

These alternatives were assessed comparatively based on a qualitative and quantitative assessment of each alternative's environmental impacts with a focus on key resources that could drive decisions (**Table 2-3**).

Quantitative measures were aimed to assess the potential environmental and social impacts of each alternative. When evaluating environmental impacts, the quantification of impacts was based only on the mainline road template and did not include all access locations, which were identified in a subsequent screening (Level 2B). Because of this, total impacts were expected to be higher than shown in the Level 2A results. To capture the potential for further environmental impacts from access point locations and interchange modifications, alternatives were qualitatively assessed based on their ability to minimize substantial interchange modification. This qualitative measure was scored on a "Yes" or "No" response, where a "Yes" indicates the alternative would require limited interchange modifications between SR 155 (Briley Parkway) and I-40—minimizing modifications in an area of the corridor with substantial constraints—and "No" indicates the alternative would require numerous interchange modifications. ROW impacts and the likelihood of

interchange modifications, which may be more disruptive to the public, were also used as an indicator of the likelihood of impacts to residential communities.

Qualitative performance measures related to the identification of potential interchange modifications and minimizing roadway disruptions during construction were also used to assess potential logistical or constructability constraints of the alternatives.

**Table 2-3: Level 2A Screening Criteria**

Criterion	Performance Measure
<b>Interchange Modifications</b>	Does the alternative minimize interchange modifications or improvements needed, which reduces the likelihood of additional environmental and social impacts beyond the mainline road?
<b>Right-of-Way</b>	Potential land acquisition required (nearest acre)
	Number of parcels intersected by the alignment
<b>Historic Properties</b>	Number of historic properties intersected by the alignment
<b>Section 4(f) Resources</b>	Number of Section 4(f) resources intersected by the alignment
<b>Section 6(f) Resources</b>	Number of Section 6(f) resources intersected by the alignment
<b>Wetlands &amp; Streams</b>	Potential wetlands and open water impacts (nearest acre)
	Linear feet of stream intersected (nearest 100 linear feet)
	Does the alternative provide flexibility to reduce direct stream impacts through the incorporation of bridges?
<b>Floodplains</b>	Potential floodplain impacts (nearest acre)

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From a constructability perspective, the Choice Lanes on outside alternative reduces maintenance of traffic complexity during construction. When considering the northern section of the Project corridor from SR 155 (Briley Parkway) to I-40, constructing Choice Lanes on the inside would require substantial interchange modifications. This would greatly complicate construction and increase the likelihood of traffic disruptions to the public.

As noted above, the Choice Lanes on the inside alternative would require substantial interchange modifications from SR 155 (Briley Parkway) to I-40 as compared to the other alternative. While most of its initial environmental impacts appear lower as compared to the Choice Lanes on the inside alternative, the Project Team concluded that impacts would greatly increase with the Choice Lanes on the inside once interchange modification and improvement needs were incorporated. While both alternatives had meaningful potential to impact streams, the Choice Lanes on the outside alternative provided more flexibility from a constructability standpoint to accommodate future refinements such as elevated structures that could reduce direct stream impacts.

Ultimately, it was concluded that neither alternative would be carried forward in its entirety. Rather, based on the constraints along the corridor, it was determined that design refinement to develop reasonable alternatives must include a combination of Choice Lanes on the inside and the outside. This provided the most flexibility for design to accommodate the varied constraints along the corridor, including a reduction of interchange modification needs, Section 4(f) impacts, and a reduction in direct stream impacts through the use of bridges. As part of future refinements, it was also concluded that flexible delineators with a 4-foot buffer would be incorporated rather than a concrete barrier with a full shoulder cross section separating the Choice Lanes from the general-purpose lanes. This change would reduce the Project footprint, minimize ROW acquisition, and reduce construction costs. The delineator separation also allows for operational flexibility in the Choice Lanes. Refer to **Appendix A** for the results of the Level 2A screening.

## **LEVEL 2B: ACCESS POINT COMPLEMENTARY CONCEPTS**

Following assessment of mainline alignment alternatives, a refined mainline template was developed using a combination of Choice Lanes on the inside and outside, a flexible delineator with a 4-foot buffer and elevated structures for Choice Lanes depending on ROW needs and other constraints. Using the refined template, access point locations were developed and evaluated. The process to identify and screen potential Choice Lanes access points along the I-24 Southeast corridor used an approach that included considerations to forecast Choice Lanes demand along the corridor, geometric feasibility of interchange modifications and consideration to potential traffic and revenue drivers inherent within P3 projects. The Project Team initiated this process by identifying all the potential access locations and evaluating the feasibility of access at each location. The feasibility was

evaluated based on travel demand in annual average daily traffic (AADT), adjacent land uses, potential future growth in land uses and physical and environmental constraints. The cost and complexity of construction were also considered as a secondary factor in the initial evaluations.

A tiered approach to identifying potential access points on the corridor for Choice Lanes was utilized in the screening process:

1. **Tier 1** access would include direct connection access to Choice Lanes with exclusive ramps in the interstate system-to-system interchanges. Tier 1 access would allow Choice Lanes users to experience improved travel times and operations through these interchanges within the Choice Lanes exclusive ramps.
2. **Tier 2** access would include new ingress and egress points from the interstate corridor Choice Lanes to the arterial streets at locations that currently have general purpose access through dedicated Choice Lanes ramps within the existing interchange. This allows Choice Lanes users to make the decision on the arterial street to access the Choice Lanes system and enter the Choice Lanes access ramp within the interchange. The user would enter the Choice Lanes system directly without having to mix with general purpose traffic through the interchange.
3. **Tier 3** access includes creating new exclusive Choice Lanes direct connection ingress and egress points from arterial streets that currently intersect with the interstate at existing overpasses or underpasses where there is currently no interstate access. In this access scenario, a new interstate interchange would be created that would be signed for direct access to Choice Lanes. Users entering the interstate at these locations would enter the Choice Lanes system directly and would not have access to the general-purpose lanes until the next Choice Lanes exit opportunity within the Choice Lanes system.
4. **Tier 4** access includes access points within the Choice Lanes system that allow opportunities for users to exit or enter the Choice Lanes directly from the general-purpose lanes along the mainline of the interstate.

The revenue drivers considered as part of this screening process included access spacing or frequency of access, types of access that provide more efficient entry and exits into the Choice Lanes system and consideration to reducing potential congestion within the Choice Lanes system. The developers will also desire adequate access to the Choice Lanes with access points every 2-3 miles along the corridor. Access points that drive revenue should align with travel demand, but the Project Team is working closely with the traffic and revenue study team to ensure alignment with the access point recommendations based on the revenue studies. Operationally, there is a preference for dedicated Choice Lanes access as opposed to access from the general-purpose lanes. Additionally, there is a preference to connect or terminate Choice Lanes in areas that are not heavily congested to reduce opportunities for traffic to back up into the Choice Lanes. While this is challenging in some sections, the concepts provide options for Choice Lanes users in exiting the Choice Lanes

system that position them for making those movements without requiring multiple lane changes.

As each potential access point location was identified and assigned a tier, preliminary design concepts were developed and evaluated for potential feasibility based on the factors described above. During this process, the operational viability of the potential interchange or intersection was screened using a preliminary traffic analysis at each location.

The Level 2B screening evaluated 26 access locations. Following screening, 17 access locations were carried forward for further consideration as summarized below.

- Two locations were exclusive Choice Lane system-to-system interchange access (Tier 1)
- Six locations were new ingress/egress points for Choice Lane access from the interstate to an arterial street that currently has general purpose lane access (Tier 2)
- Two locations were new exclusive Choice Lanes ingress/egress access points from the interstate to an arterial street where there is no current general purpose lane access (Tier 3)
- Seven locations were at-grade access points from general purpose lanes to Choice Lanes (Tier 4).

**Appendix A** includes the results of the access point complementary concepts screening, and further narrative is provided in the access location discussions in **Section 3, Reasonable Alternatives Development**.



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### 3 REASONABLE ALTERNATIVES DEVELOPMENT

Following the identification of the mainline alignment and access points, two reasonable alternatives (Alternative 1 and Alternative 2) were developed for detailed analysis. An overview of the Recommended Reasonable Alternatives that were provided to the public, stakeholders and agencies for public input during the 2024 Public Information Meetings are summarized in **Table 3-1** below.

The objective of the Choice Lanes (CL) alternatives is to provide two additional travel lanes in each direction along the interstate system. In locations approaching termini, the two lanes would taper to a single lane and then to only general purpose (GP) lanes. To enter or exit the CL, access points were developed at logical locations along the alignment such that they work in conjunction with existing infrastructure. Throughout the alignment, alternatives were evaluated for traffic performance, impacts to the surrounding areas, construction feasibility, and design attributes.

Within the CL corridor, the identified constraints informed the development of the alternatives. The constraints include limiting the impact of the project on the local community including residences, local businesses and industry, as well as avoiding impacts to floodplains and other environmentally sensitive areas such as churches, cemeteries or other historical sites. Typical of infrastructure design and development, topographic features and existing development influence the decision-making process while developing alternatives.

In general, the preference is to design and construct the CL at-grade to the inside of the existing alignment. In some areas, this would result in construction of the CL within an existing grass median. In other areas, the existing alignment would be widened to facilitate the construction of CL to the inside while pushing the GP lanes to the outside. The at-grade CL would be separated from the GP lanes by a 4-foot buffer with flexible delineators. Significant portions of the alignment are elevated due to either floodplain restrictions or conflicts with existing GP lanes. Access points are a combination of dedicated, direct access ramps at both existing and new interchanges, as well as at-grade merges. The initial placement of new ROW limits was based on a 50-foot offset from the edge of pavement and a 20-foot offset from the edge of elevated structures. In many locations, the use of retaining walls is recommended to avoid unnecessary ROW encroachments or judgment applied to limit the potential ROW needs.

**Table 3-1: Recommended Reasonable Alternatives Overview**

Reasonable Alternative #1	Reasonable Alternative #2
<p><b>I-24/I-40 alignment to West</b> is <u>elevated on the inside</u> between I-24 and Elm Hill Pike interchange towards downtown Nashville and terminates with a direct merge on the inside just east of Fesslers Lane; includes replacement of the CSX RR bridge over I-24/I-40.</p>	<p><b>I-24/I-40 alignment to West</b> is <u>elevated on the outside</u> between I-24 and Elm Hill Pike interchange towards downtown Nashville and terminates with a direct merge on the outside just east of Fesslers Ln.</p>
<p><b>I-24/I-40 @ Elm Hill Pike</b> proposes a new partial exclusive CL access interchange providing an alternative access point for entering CL traveling east and exiting the CL traveling west; includes replacement of the Elm Hill Pike bridge over I-24.</p>	<p><b>I-24/I-40 @ Elm Hill Pike</b> proposes a new partial exclusive CL access interchange providing an alternative access point for entering CL traveling east and exiting the CL traveling west; includes replacement of the Elm Hill Pike bridge over I-24; ramp configurations differ slightly in this alternative due to alignment of the CL on the outside in the approaches.</p>
<p><b>I-40 alignment to East</b> is <u>elevated to the outside</u> positioning CL terminus closer to exits at Briley Pkwy and Nashville International Airport (BNA); CL terminates with a direct merge on the outside just west of the Briley Pkwy interchange; includes replacement of the I-40 mainline bridge over Mill Creek.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>
<p><b>I-24 mainline between I-440 and I-40</b> is <u>elevated in both directions to the west side</u> of the mainline reducing ROW impacts and taking advantage of state property.</p>	<p><b>I-24 mainline between I-440 and I-40</b> is <u>elevated to the outside</u> of the existing mainline between I-440 and I-40 and alters the configurations of the system-to-system interchanges slightly in this alternative.</p>
<p><b>I-440 interchange</b> CL ramps are to the <u>inside</u> on I-440 to terminate CL with a direct merge on the inside just west of the I-440 bridge over the CSX Railroad (RR) and Glenrose Ave. These improvements include replacement of the South Lyle Ln</p>	<p><b>I-440 interchange</b> CL ramps are <u>elevated to the outside</u> on I-440 and are elevated over the South Lyle Ln overpass and the bridge over the CSX RR &amp; Glenrose Ave terminating CL with a direct merge on the outside of I-440 just east of Foster Ave.</p>

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Reasonable Alternative #1	Reasonable Alternative #2
<p>overpass and the I-440 over RR/Glenrose Ave mainline bridge.</p>	
<p><b>I-24 mainline</b> between I-440 and East Thompson Ln/Briley Pkwy interchange CL are <u>elevated to the outside</u> of the mainline; this section of widening would require realignment of a residential community street (Joplin Drive) adjacent to I-24.</p>	<p><b>I-24 mainline</b> between I-440 and East Thompson Ln/Briley Pkwy interchange are <u>elevated to the outside</u> of the mainline; this section of widening would require realignment of a residential community street (Joplin Drive) adjacent to I-24; includes replacement of the East Thompson Ln bridge over I-24 to accommodate the CL.</p>
<p><b>I-24 interchange @ East Thompson Ln/ Briley Pkwy</b> is a <u>new CL exclusive diamond interchange</u> at the existing East Thompson Ln overpass; includes replacement of the East Thompson Ln bridge overpass; CL are elevated over Briley Pkwy; also includes a direct merge just south of Briley Pkwy in the median.</p>	<p><b>I-24 interchange @ Briley Pkwy</b> is modified to provide CL access ramps within the existing interchange using a <u>CL plaza-style interchange</u>; also includes a new directional GP flyover ramp; includes replacement of the Briley Pkwy over I-24 bridge and removal of the existing loop ramps; also includes a direct merge on the eastern side of the interchange.</p>
<p><b>I-24 mainline</b> between Briley Pkwy and the CSX RR bridge just south of Antioch Pike CL are <u>elevated to the outside</u>; The CL transition to the median at-grade just south of the CSX RR overpass; CL are at-grade in the median through the Harding PI interchange with minor ramp adjustments; includes replacement of the Harding PI bridge over I-24 but no CL access or change in GP access at this interchange.</p>	<p><b>I-24 mainline</b> between Briley Pkwy and Harding PI interchange CL are <u>elevated to the outside</u> of the mainline. No CL access at the Harding PI interchange.</p>
<p><b>I-24 mainline</b> between Harding PI and Haywood Ln interchange are <u>at-grade in the median</u>.</p>	<p><b>I-24 mainline</b> between Harding PI and Haywood Ln interchange are initially elevated over Harding PI and transitions to <u>at-grade in the median</u> just south of the interchange.</p>

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Reasonable Alternative #1	Reasonable Alternative #2
<p><b>I-24 interchange @ Haywood Ln</b> is modified to provide CL access using a <u>CL plaza-style interchange</u>; includes modifying the existing GP interchange from a partial cloverleaf to a diamond interchange and replacing the twin I-24 mainline bridges over Haywood Ln.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>
<p><b>I-24 mainline</b> between Haywood Ln and Bell Rd are initially <u>at-grade in the median</u>, but transition to <u>elevated on the outside</u> approximately 1 mile south of Haywood Ln.</p>	<p><b>I-24 mainline</b> between Haywood Ln and Bell Rd interchange are <u>at-grade in the median</u>; includes replacement of the bridge over Mill Creek and raising the mainline grade to address flooding issues; includes replacement of the Blue Hole Rd overpass bridge to accommodate CL.</p>
<p><b>I-24 interchange @ Bell Rd</b> is modified to provide dedicated CL access using new <u>CL exclusive direct connection ramps</u> that provide connection over the CSX RR to the proposed transit center on the mall property; no modification to the existing GP diamond interchange.</p>	<p><b>I-24 interchange @ Bell Rd</b> is modified to provide CL access using a <u>CL plaza-style interchange</u>; also includes modifying the existing GP ramps and replacing the I-24 mainline bridge over Bell Rd and the adjacent CSX RR bridge over Bell Rd to address operational issues; includes displacement of all the businesses between the RR and I-24 north of the interchange due to loss of access.</p>
<p><b>I-24 mainline</b> between Bell Rd and Hickory Hollow Pkwy (HHP) are <u>elevated on the outside</u> initially and then transition to <u>at-grade in the median</u> just west of the HHP bridge; includes replacements of the HHP bridge over I-24 to accommodate the CL in the median.</p>	<p><b>I-24 mainline</b> between Bell Rd and Hickory Hollow Pkwy (HHP) are <u>at-grade in the median</u>; includes replacements of the HHP bridge over I-24 to accommodate the CL in the median.</p>

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Reasonable Alternative #1	Reasonable Alternative #2
<p><b>I-24 mainline</b> between HHP and Old Hickory Blvd (OHB) are <u>at-grade in the median</u>; includes overpass bridge replacement at Old Franklin Rd and bridge replacement of OHB over I-24 to accommodate CL; no CL access at the OHB interchange but includes a direct merge just south of the Old Franklin Rd overpass.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>
<p><b>I-24 mainline</b> between Old Hickory Blvd and Waldron Rd are <u>at-grade in the median</u>.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>
<p><b>I-24 interchange @ Waldron Rd</b> is modified to provide CL access using a <u>CL plaza-style interchange</u>; includes removing the existing loop ramp to convert to a GP diamond interchange; includes replacement of the Waldron Rd bridge over I-24.</p>	<p><b>I-24 interchange @ Waldron Rd</b> is modified to accommodate CL under the bridge; includes modifying the existing GP loop ramp and westbound exit ramp; includes replacement of the Waldron Rd bridge over I-24 to accommodate CL.</p>
<p><b>I-24 mainline</b> between Waldron Rd and Sam Ridley Pkwy (SRP) are <u>at-grade in the median</u>.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>
<p><b>I-24 interchange @ Sam Ridley Pkwy</b> is modified to provide CL access using a <u>CL plaza-style interchange</u>; includes removing the existing loop ramp to convert to a GP diamond interchange; includes replacement of the Sam Ridley Blvd bridge over I-24.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>

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Reasonable Alternative #1	Reasonable Alternative #2
<p><b>I-24 mainline</b> between Sam Ridley Pkwy and Almaville Rd are <u>at-grade in the median</u>; includes replacement of the I-24 mainline bridge over Rock Springs Rd and replacement of Rocky Fork Rd overpass over I-24; includes a direct merge in the median to CL just southeast of Rocky Fork Rd and reduces to one CL in each direction.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>
<p><b>I-24 interchange @ Almaville Rd</b> is preserved for future plans to construct a diverging diamond interchange (not included in this proposed Project); no CL access is planned directly at the interchange, but a direct merge would be included just east and west of the interchange; includes I-24 mainline bridge widening to accommodate the CL over Almaville Rd.</p>	<p><b>I-24 interchange @ Almaville Rd</b> is modified to provide CL access using a <u>CL plaza-style interchange</u> for eastbound exit and westbound entry only; includes I-24 mainline bridge widening to accommodate the CL access.</p>
<p><b>I-24 mainline</b> between Almaville Rd and I-840 are <u>at-grade in the median</u> and terminate approximately 2 miles before the I-840 interchange ramps with a direct merge; includes I-24 mainline bridge replacement over Stewart Creek and Baker Rd bridge overpass over I-24 to accommodate CL.</p>	<p><i>Alternative 2 is the same as Alternative 1.</i></p>

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Figures of the alternatives are included to provide a visual reference of the described area. The following legend provides guidance on the line color and feature shown.

LEGEND	
	GENERAL PURPOSE - OUTER EDGE OF TRAVELED WAY
	GENERAL PURPOSE - INNER EDGE OF TRAVELED WAY
	GENERAL PURPOSE - LANE LINES
	GENERAL PURPOSE - EDGE OF SHOULDER
	GENERAL PURPOSE - TAPER/MERGE LINES
	CHOICE LANES - EDGE OF TRAVELED WAY
	CHOICE LANES - LANE LINES
	CHOICE LANES - EDGE OF SHOULDER
	CHOICE LANES - TAPER/MERGE LINES
	PROPOSED BRIDGES
	PROPOSED CONCRETE BARRIER
	PROPOSED RETAINING WALLS
	PROPOSED ROCK CUTS
	PROPOSED RIGHT-OF-WAY
	ROADWAYS TO BE REMOVED
	POTENTIAL HISTORICAL OR ARCHAEOLOGICAL PROPERTIES
	PRESENT R.O.W. (PER FIELD SURVEY)
	PRESENT R.O.W. (PER PLANS)

### 3.1 Descriptions of the Reasonable Alternatives

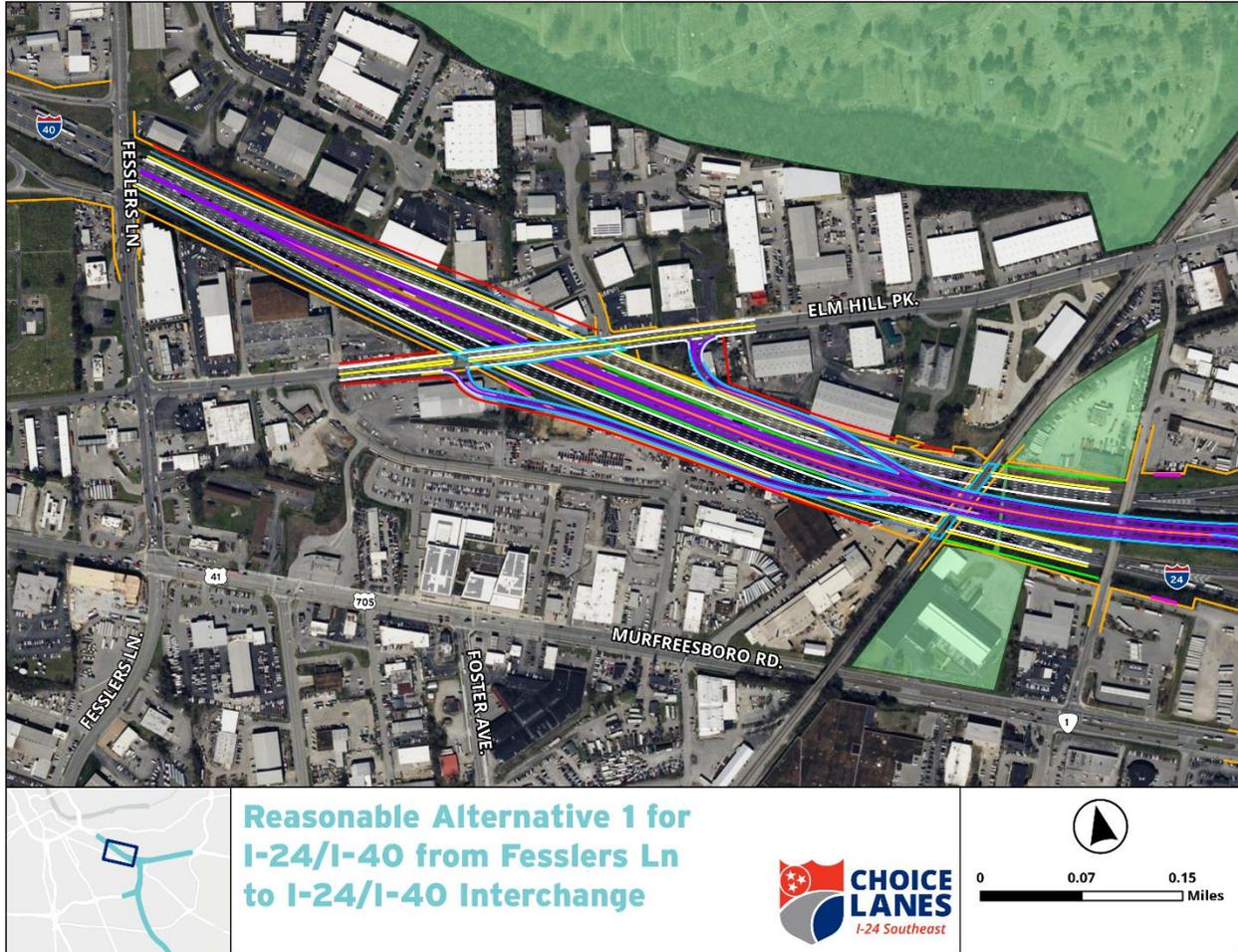
#### 3.1.1 I-24/I-40 from Fesslers Lane (MP 212.0) to I-24/I-40 Interchange (MP 213.0)

This section is one of the western endpoints for the CL, is nearest to downtown Nashville and in this phase of development provides a connection between the CL and the GP lanes. The proposed improvements have been developed to ultimately provide two, 12-foot CL in each direction along I-24/I-40, west of the I-24/I-40 interchange. This proposed alternative would reduce the number of CL and provide a direct, at-grade connection to the I-24/I-40 GP lanes. The posted speed for the mainline is 55 mph, with all proposed ramps being designed at either the mainline speed or according to the purpose of the ramp.

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## REASONABLE ALTERNATIVE 1

**Figure 3-1: Reasonable Alternative 1 for I-24/I-40 from Fesslers Ln (MP 212.0) to I-24/I-40 Interchange (MP 213.0)**



In Alternative 1, I-24/I-40 motorists enter or exit the proposed CL via an at-grade access or termination point of the CL. These CL expand to two CL east of Elm Hill Pike and begin to elevate up and over the CSX Railroad (RR) tracks and Arlington Avenue, before entering the I-24/I-40 interchange area. The proposed improvements would also provide a second access point for the CL users at Elm Hill Pike. This access is provided by a half-diamond interchange, on the eastern side of Elm Hill Pike. The interchange would only allow for movements to and from the CL east of Elm Hill Pike. These elevated ramps then connect to the mainline CL just west of the CSX RR bridge merging into two CL in each travel direction.

Where the proposed CL are at-grade along I-24/I-40, the interstate would require widening to the outside in both directions to accommodate the existing number of GP lanes. There is no reduction in the number of GP lanes due to the proposed CL. As the CL begin to elevate, the GP lanes would begin to shift back to their existing alignments and tie in as they

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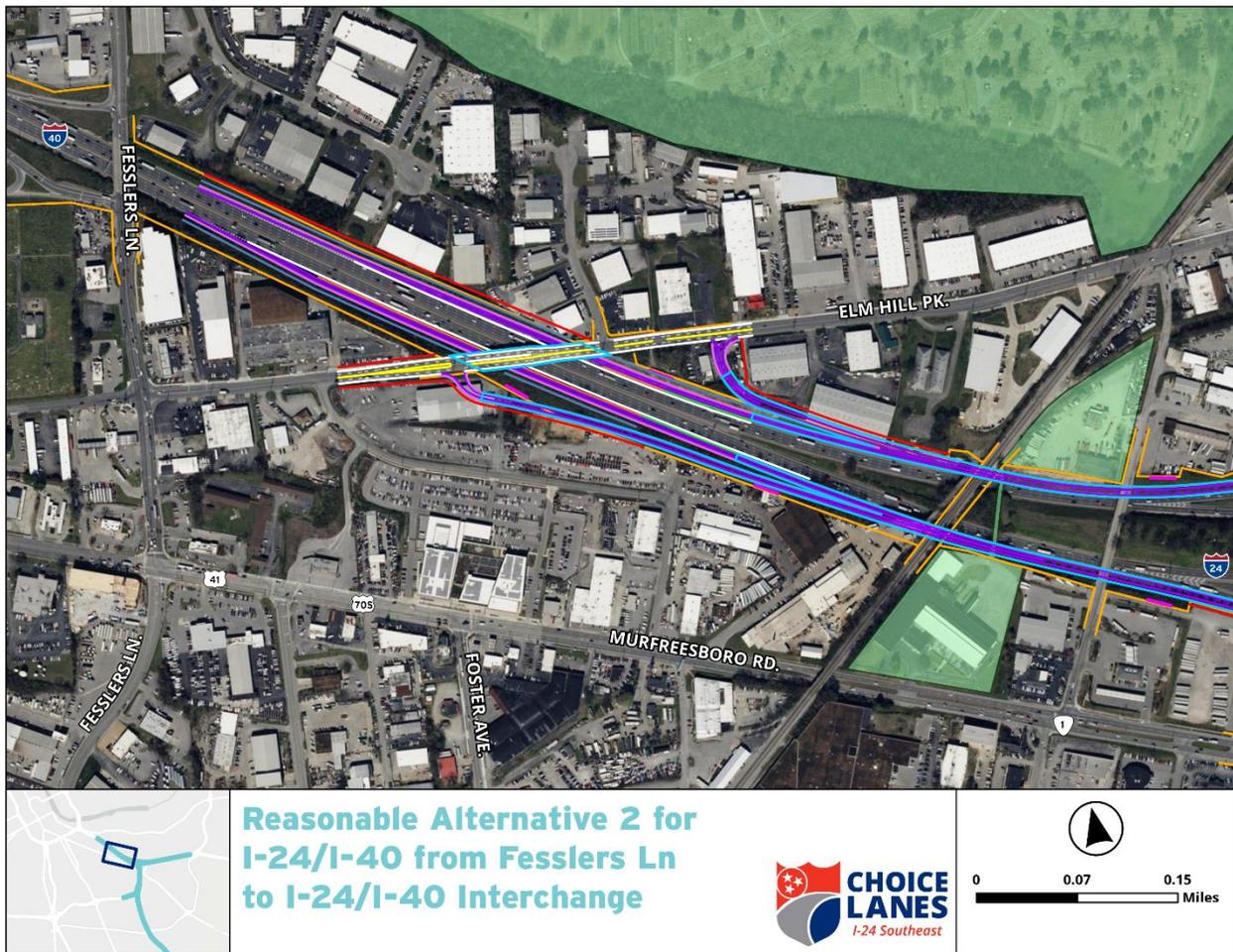
approach the Arlington Avenue overpass. This widening would likely require rock excavation along both sides of I-24/I-40 and additional proposed ROW to encompass the additional width.

The proposed improvements in this section would require multiple new bridges and retaining walls. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 1-6
- Retaining Walls: 1-4

## REASONABLE ALTERNATIVE 2

**Figure 3-2: Reasonable Alternative 2 for I-24/I-40 from Fesslers Ln (MP 212.0) to I-24/I-40 Interchange (MP 213.0)**



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Similar to Alternative 1, Alternative 2 is intended to provide two CL, in each travel direction, in the ultimate configuration. Due to the proposed CL terminating with this section for the current proposed Project, the two CL would reduce to one in this area and eventually

merge into the GP lanes. This alternative provides the proposed CL to the outside edges of I-24/I-40 and would be elevated in the ultimate configuration. For this current proposed Project, the proposed CL would be elevated over the CSX RR bridge and Arlington Avenue, but then come down to meet I-24/I-40 at-grade as they near Elm Hill Pike. In this alternative, the two CL would split to provide one lane to/from I-24/I-40 and one lane to/from Elm Hill Pike. These proposed ramps would be elevated structures and require additional proposed ROW to accommodate.

This alternative minimizes the number of changes to the existing GP lanes in the section but does require some additional widening to accommodate the CL as they come down to grade and merge in/out of the I-24/I-40 GP lanes. This widening would likely encounter existing rock material and require additional rock excavation.

Multiple proposed bridges and retaining walls would be required to accommodate this alternative. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 1-5, 8 & 11
- Retaining Walls: 1 & 2

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

During the Level 2B screening, several other access point alternatives were considered at this location.

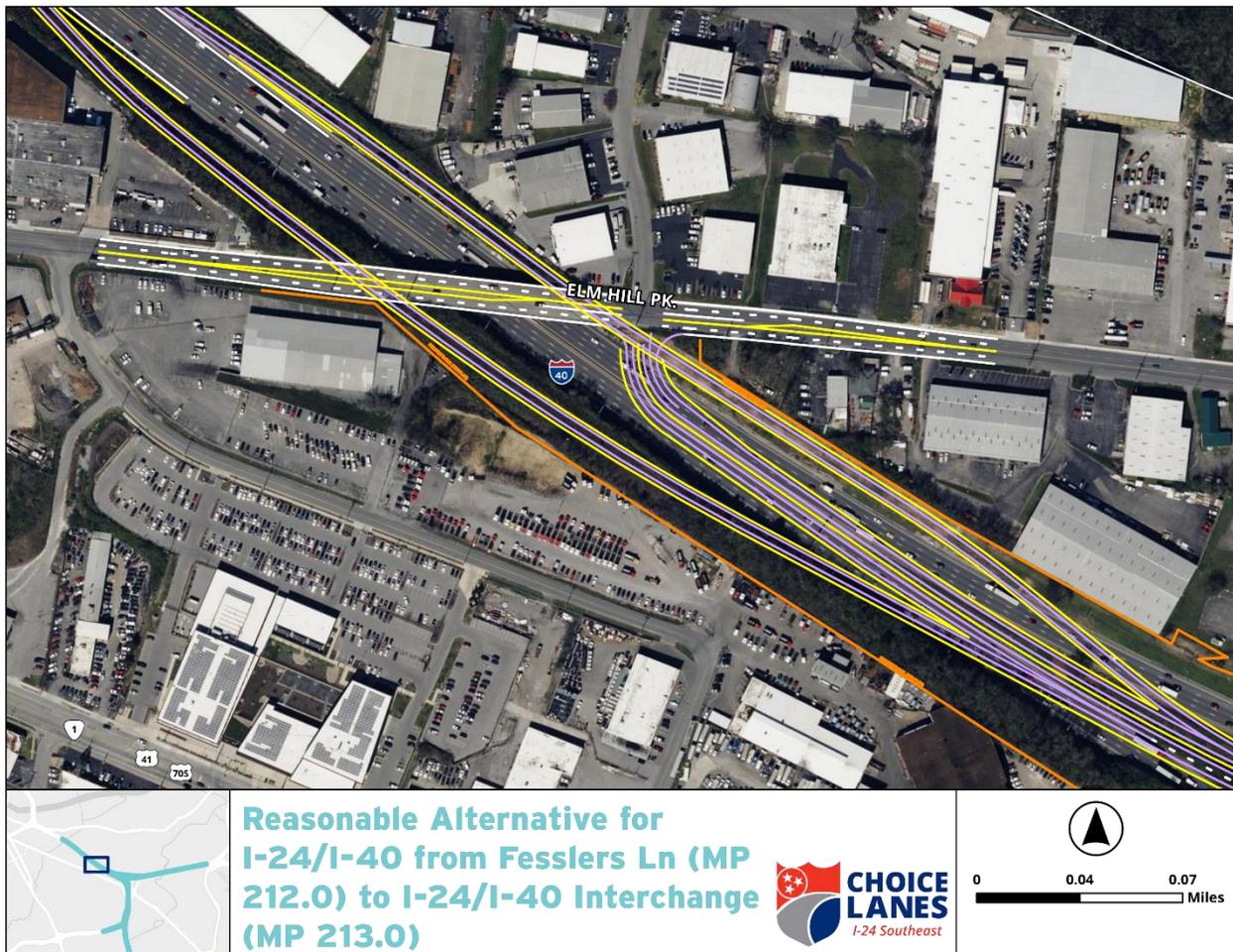
Multiple existing overpass and interchange locations were initially considered for a potential access point including Arlington Avenue, Elm Hill Pike and Fesslers Lane. In addition to an at-grade direct merge along the mainline within this section, a secondary access point that would provide an alternative access point directly to a crossing route was desired to provide CL users with several options in this heavily congested area. Arlington Avenue was eliminated quickly due to the close proximity to the I-24 at I-40 system-to-system interchange and the condition of this roadway to handle additional traffic volumes from a new CL interchange access point. Fesslers Lane was also considered but eliminated as a feasible option due to the number of historic properties in close proximity and the complexities required with introducing CL-exclusive ramps into an existing partial GP interchange. Elm Hill Pike interchange overpass was identified as the most reasonable location for CL-exclusive ramps and various configurations of the proposed direct connections for the CL to Elm Hill Pike were investigated.

The first of these configurations was a single T-intersection at Elm Hill Pike over the centerline of I-24/I-40. This intersection requires the elevation of the proposed CL along the center of I-24/I-40 to connect with Elm Hill Pike, as well as additional CL at-grade with I-24/I-40 to provide a direct connection to the I-24/I-40 GP lanes. With the GP lanes shifting

outwards to accommodate the proposed CL, the distance required to safely transition back to the existing I-24/I-40 alignment pushes the improvements approximately 2,500 feet west of Fesslers Lane. This alternative was eliminated based on the additional impacts (ROW, Fesslers Lane bridge and existing I-40 ramps at Fesslers Lane) being considered excessive as compared to the other alternatives for this stage of the proposed Project. No layouts were developed for this alternative as it was eliminated prior to conceptual layouts.

A second configuration for the direct connection to Elm Hill Pike was a proposed single intersection north of I-24/I-40, tying to Elm Hill Pike across from an existing side road intersection. This alternative required a large grade raise (>8 feet) along Elm Hill Pike and was eliminated based on poor constructability.

**Figure 3-3: Additional Alternative for I-24/I-40 from Fesslers Ln (MP 212.0) to I-24/I-40 Interchange (MP 213.0)**



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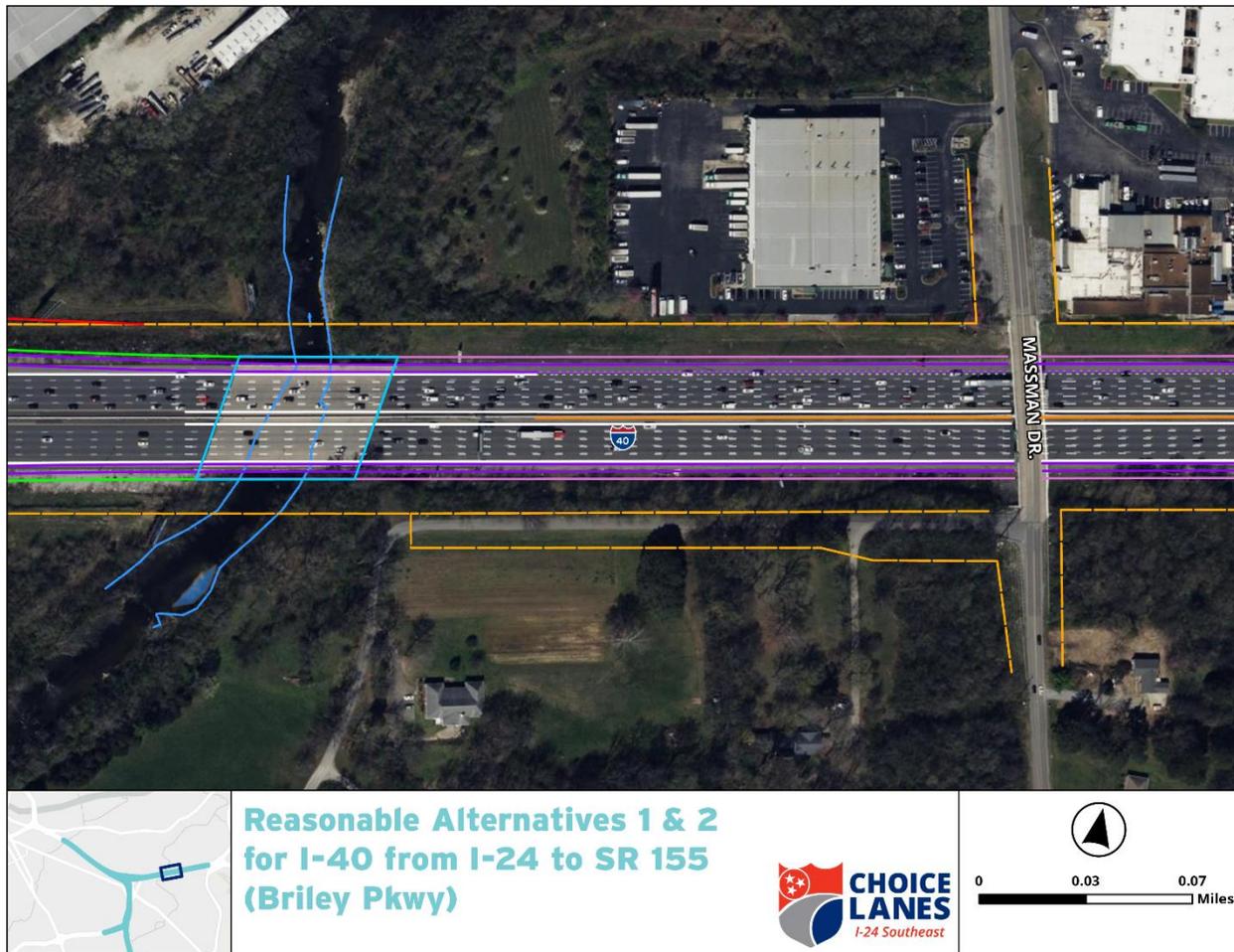
### 3.1.2 I-40 from I-24/I-40 Interchange (MP 213.0) to SR 155 (Briley Parkway) (MP 215.0)

The I-40 mainline section from the I-24/I-40 Interchange to SR 155 (Briley Parkway) is the eastern end along I-40 for the CL in this phase and provides a connection between the CL and the GP lanes near SR 155 (Briley Parkway). There is only one reasonable improvement proposed for this section, so both Reasonable Alternatives are the same. The posted speed for I-40 is 55 mph, with all elements designed at the mainline speed, or if necessary, according to the purpose of the ramp. The proposed improvements would provide one CL in each direction, along the outside edges of I-40 east of the I-24/I-40 interchange. The proposed width of the CL is 16 feet when it is on an independent alignment and reduced to 12 feet when it parallels I-40 at-grade.

It is important to note that there are known height restrictions when approaching the SR 155 (Briley Parkway) interchange due to the proximity of the airport runways, located to the southeast. These existing height restrictions limit the ability to add new connections or ramps to SR 155 (Briley Parkway) without violating those restrictions. Based on these limitations, it was determined that the most logical termination point for the proposed CL along this section was to the west of the interchange.

## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-3: Reasonable Alternatives 1 & 2 for I-40 from I-24 (MP 213.0) to SR 155 (Briley Pkwy) (MP 215.0)**



As noted previously, the proposed improvements within this section are the same in both alternatives and are intended to provide direct access between the CL and the GP lanes along I-40 west of the SR 155 (Briley Parkway) interchange. As the proposed CL leave the I-24/I-40 interchange to the east, they are elevated over Spence Lane before coming down to meet I-40 at-grade in the vicinity of the bridge over Mill Creek. As the CL approach grade, they begin to parallel I-40 and eventually merge in/out of the GP lanes. In the eastbound direction, the CL would terminate west of the GP off-ramp to southbound SR 155 (Briley Parkway) and allow CL users the time to decide if they are exiting I-40 at SR 155 (Briley Parkway) or if they would like to continue east along I-40 to either the airport or other destination. For motorists traveling from southbound SR 155 (Briley Parkway), they would be able to enter the CL by taking the existing ramp to westbound I-40 and remaining in the right lane, which would lead them directly into the westbound CL. Any motorists entering I-40 from northbound SR 155 (Briley Parkway) or are already traveling westbound on I-40,

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which choose to utilize the CL can enter via an at-grade open merge point west of SR 155 (Briley Parkway).

Both alternatives for this section would require minimal changes to the I-40 GP lanes, other than some potential repaving and restriping to show the merges in or out of the CL. The proposed CL would require the replacement and relocation of the existing noise wall along the eastbound side of I-40, as well as a number of bridges and retaining walls within the section.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

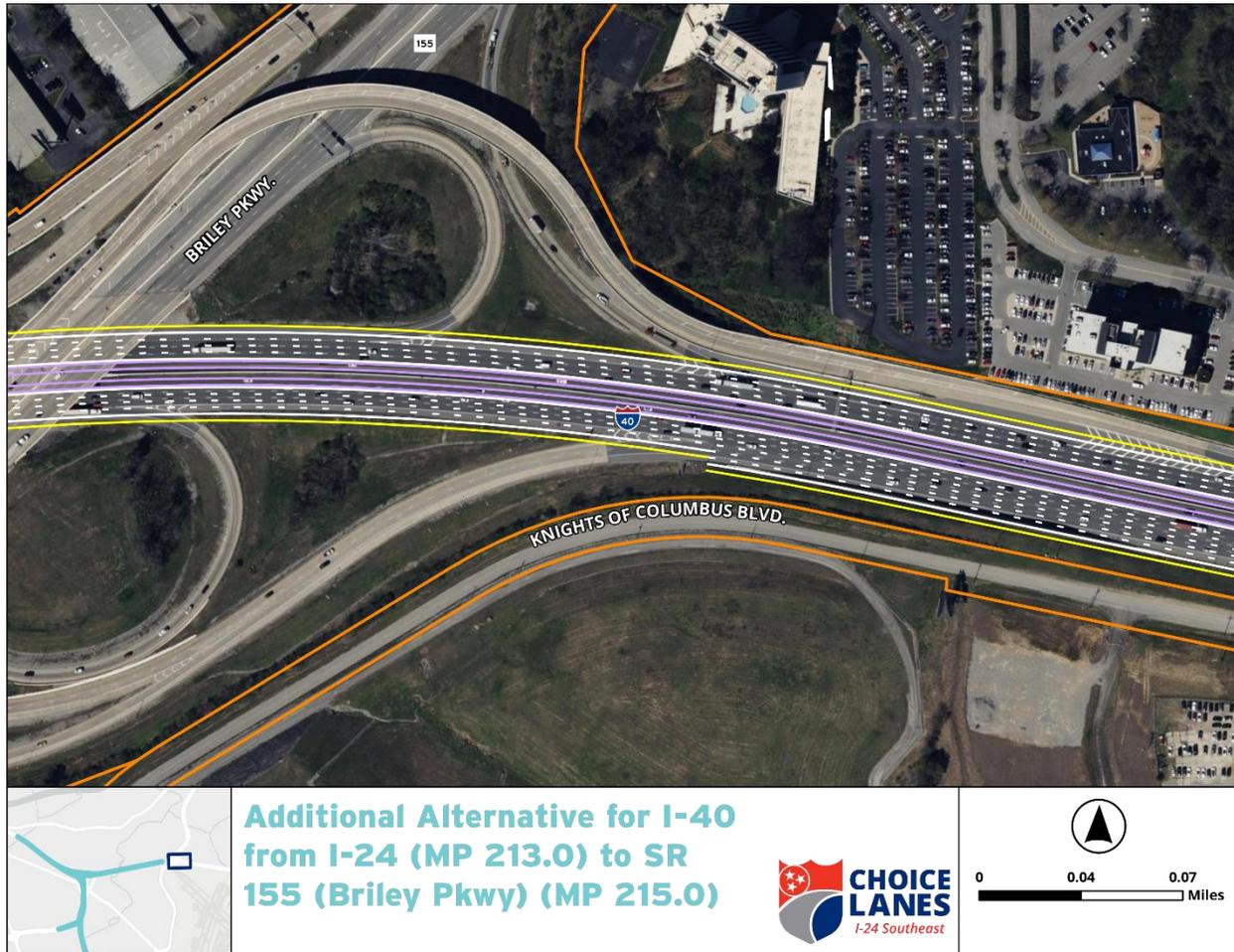
- Bridges: 8-11
- Retaining Walls: 5-10

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

During the Level 2B screening, several access point alternatives were considered at this location.

Various locations of the proposed CL and termini points were investigated. One potential alternative along this section was to continue the CL all the way beyond Donelson Pike, providing access to the airport. Due to airport-related height restrictions previously discussed, it was not possible to provide CL along I-40 in a cost-effective manner, allow adequate access between the GP lanes and CL and maintain existing GP access to SR 155 (Briley Parkway) or the airport without violating those height restrictions. For this reason, it was determined that terminating the CL prior to or at SR 155 (Briley Parkway) was the reasonable alternative and the continuation of the CL to the east was eliminated from consideration.

**Figure 3-4: Additional Alternative for I-40 from I-24 (MP 213.0) to SR 155 (Briley Pkwy) (MP 215.0)**



Based on the general preference for the location of the proposed CL, placing them along the inside of I-40 was also investigated. There would be one proposed CL on either side of a concrete barrier, with the CL separated from the GP lanes by a 4-foot buffer. Based on the decision to terminate the CL prior to or at SR 155 (Briley Parkway), CL on the inside would require a merge across four GP lanes between CL and the SR 155 (Briley Parkway) ramps. The distance along I-40 (approximately 3,200-4,000 feet) required to safely make the merge movement would push the termini of the CL back closer to the Spence Lane overpass, reducing the usefulness of the CL. For this reason, this alternative was eliminated from consideration.

Future alternatives for CL extensions to the airport are being investigated in a parallel planning study, the Downtown Nashville Interstate Corridors Planning and Environmental Linkages Study.

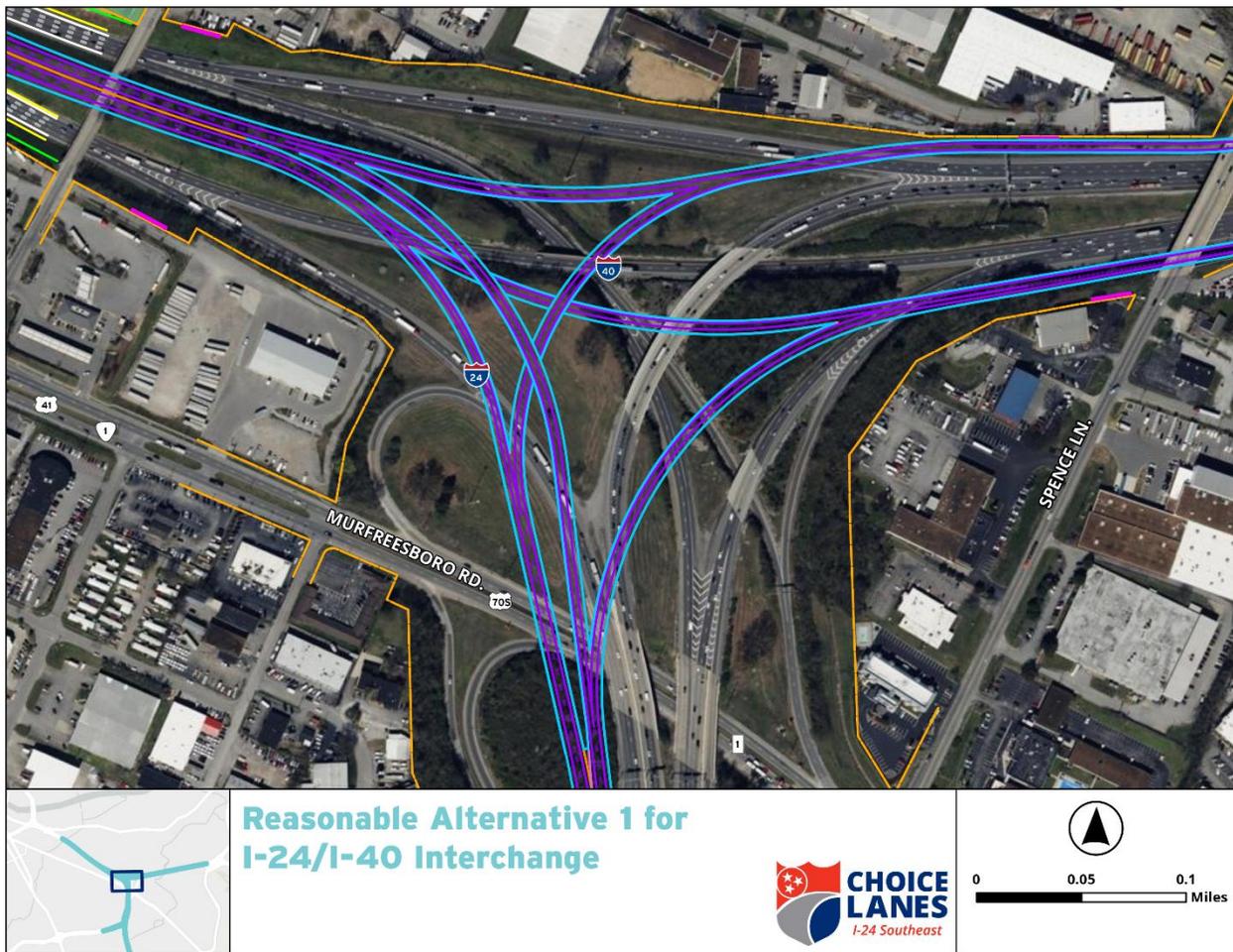
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### 3.1.3 I-24/I-40 Interchange (MP 213.0)

The I-24/I-40 Interchange provides a connection between I-24 and I-40, east of downtown Nashville. The proposed improvements include adding directional connections for CL by providing one 16-foot lane in each travel direction. The design speed of the ramps is intended to be a minimum of 50 mph, as the space and geometry allow. Some ramps may be reduced to 45 mph depending on how and where the ramps need to tie together and whether the required geometry can meet the higher design speed.

#### REASONABLE ALTERNATIVE 1

Figure 3-5: Reasonable Alternative 1 for I-24/I-40 Interchange (MP 213.0)



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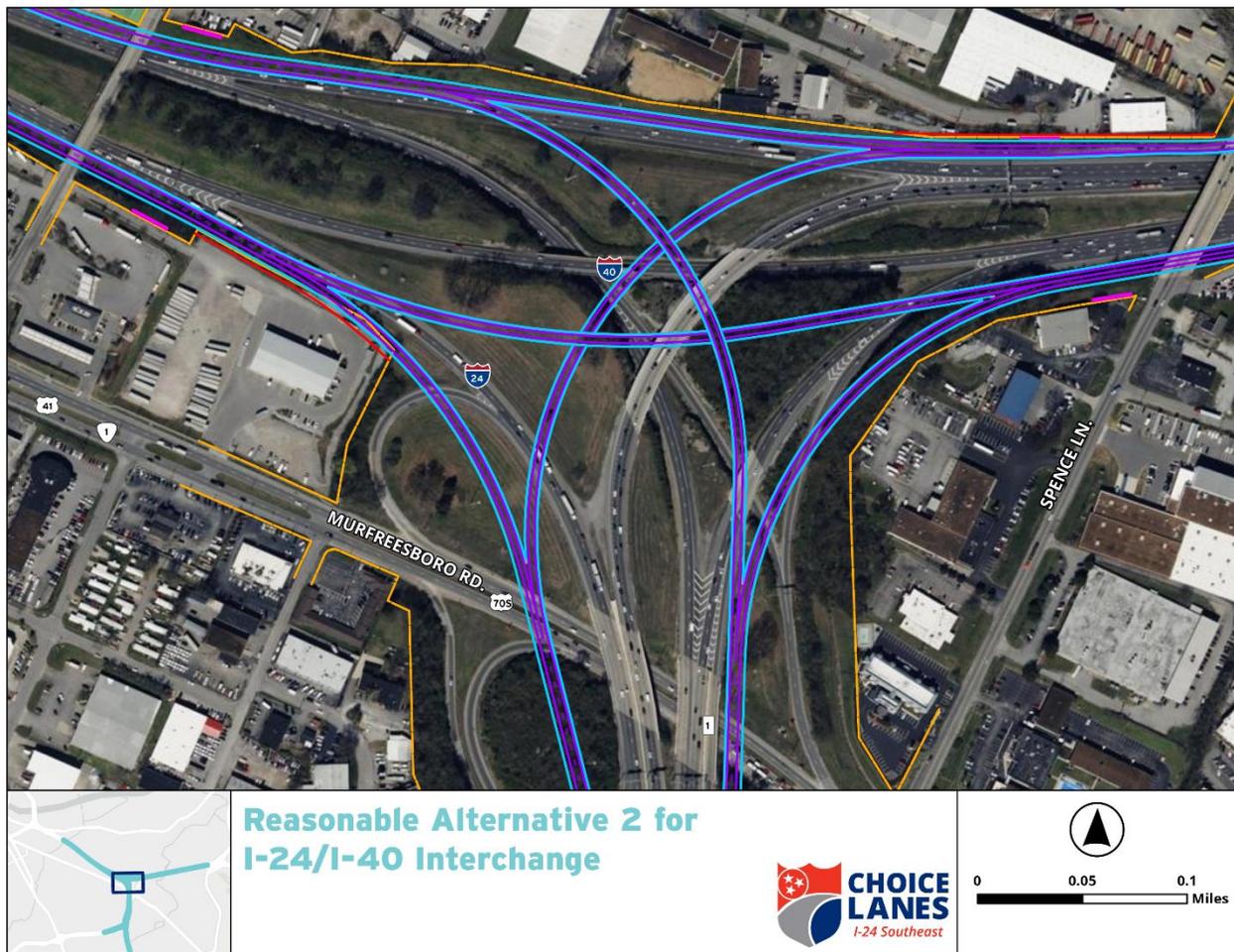
In Alternative 1, the proposed CL are in the center of I-40 on the west side of the interchange, along the west side of I-24, south of the interchange and both sides of I-40 to the east of the interchange. Ramp alignments and potential vertical grades have been laid out to avoid conflicts with existing infrastructure and all proposed elements would be elevated in the interchange.

The proposed CL are completely elevated in this interchange and would require bridges. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 5-7, 12-17
- Retaining Walls: N/A

## REASONABLE ALTERNATIVE 2

**Figure 3-6: Reasonable Alternative 2 for I-24/I-40 Interchange (MP 213.0)**



In Alternative 2 the CL are located on both sides of I-40 east and west of the interchange as well as both sides of I-24 south of the interchange. All ramps are proposed to be elevated throughout the interchange.

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The proposed CL are completely elevated in this interchange and would require bridges. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 8-17
- Retaining Walls: N/A

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

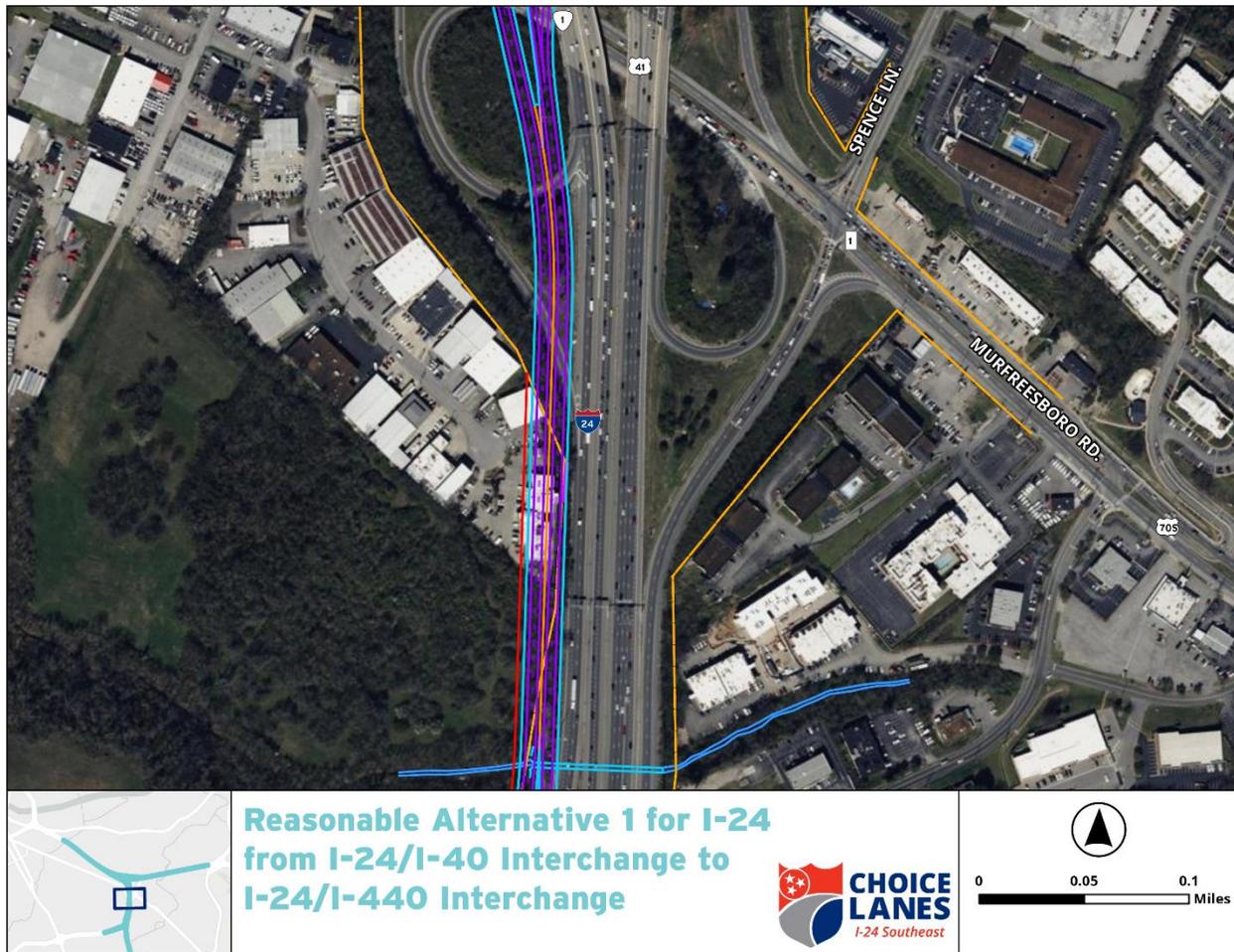
While there were multiple conceptual variations for this interchange, they were very minor and were not considered separate alternatives during the Level 2B screening. Any proposed configuration for this interchange is primarily based on the location of the proposed CL as they approach the interchange.

#### **3.1.4 I-24 from I-24/I-40 Interchange (MP 51.5) to I-24/I-440 Interchange (MP 53.0)**

The I-24 from I-24/I-40 Interchange to I-24/I-440 Interchange section is relatively short but provides a particularly important connection between the two interchanges. Within this section, there is an existing interchange with Murfreesboro Pike and the GP lanes along I-24 are barrier-separated in various ways to channelize directional travel to/from I-24/I-40/I-440 and Murfreesboro Pike. The proposed CL in this section would not provide direct access to the GP lanes nor Murfreesboro Pike but are intended to only provide a connection between the interchanges of I-24/I-40 and I-24/I-440. The decision to omit connections to the GP lanes and Murfreesboro Pike was made based on the existing channelization of movements along I-24, as well as the close proximity of adjacent system-to-system interchanges. Providing additional new connections in this area would have added to the complexity of the area and potentially increased the confusion for motorists. The proposed CL would be two 12-foot CL in each direction with a design speed of 55 mph, or greater, for the entire section.

## REASONABLE ALTERNATIVE 1

Figure 3-7: Reasonable Alternative 1 for I-24 from I-24/I-40 Interchange (MP 51.5) to I-24/I-440 Interchange (MP 53.0)



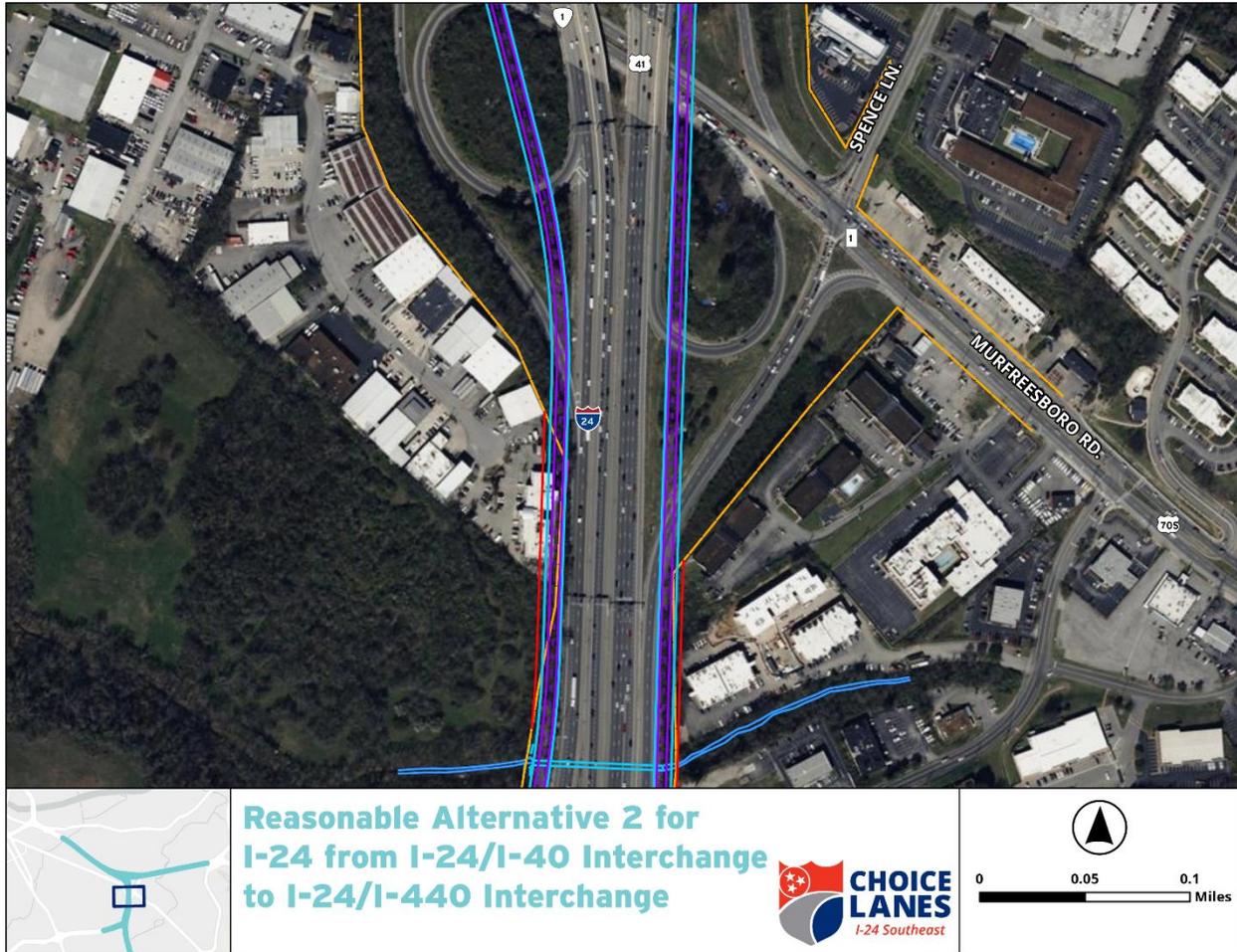
Similar to the sections for the adjacent interchanges, Alternative 1 locates the proposed CL along the west side of I-24 on elevated structures over the existing infrastructure. Both directions of travel are on the same side, separated by a median barrier.

The proposed CL are completely elevated in this section and would require bridges. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 18 - 21
- Retaining Walls: N/A

## REASONABLE ALTERNATIVE 2

**Figure 3-8: Reasonable Alternative 2 for I-24 from I-24/I-40 Interchange (MP 51.5) to I-24/I-440 Interchange (MP 53.0)**



In Alternative 2, the proposed CL are separated by travel direction and located on each side of I-24. The CL are elevated above existing infrastructure and are located to minimize impacts to existing ramps and bridges in the vicinity of the Murfreesboro Pike Interchange.

The elevation of the proposed CL in this section necessitates bridges. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 18 & 19
- Retaining Walls: N/A

### OTHER INTERCHANGE ALTERNATIVES EVALUATED

While there were multiple conceptual variations for this section, the differences were very minor and were not considered separate alternatives during the Level 2B screening. Any

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proposed changes in configuration are primarily based on the location of the proposed CL at the interchanges of I-24/I-40 and I-24/440. Additional potential tweaks to the alignments of the proposed CL were considered and eliminated based on either constructability or ROW impacts.

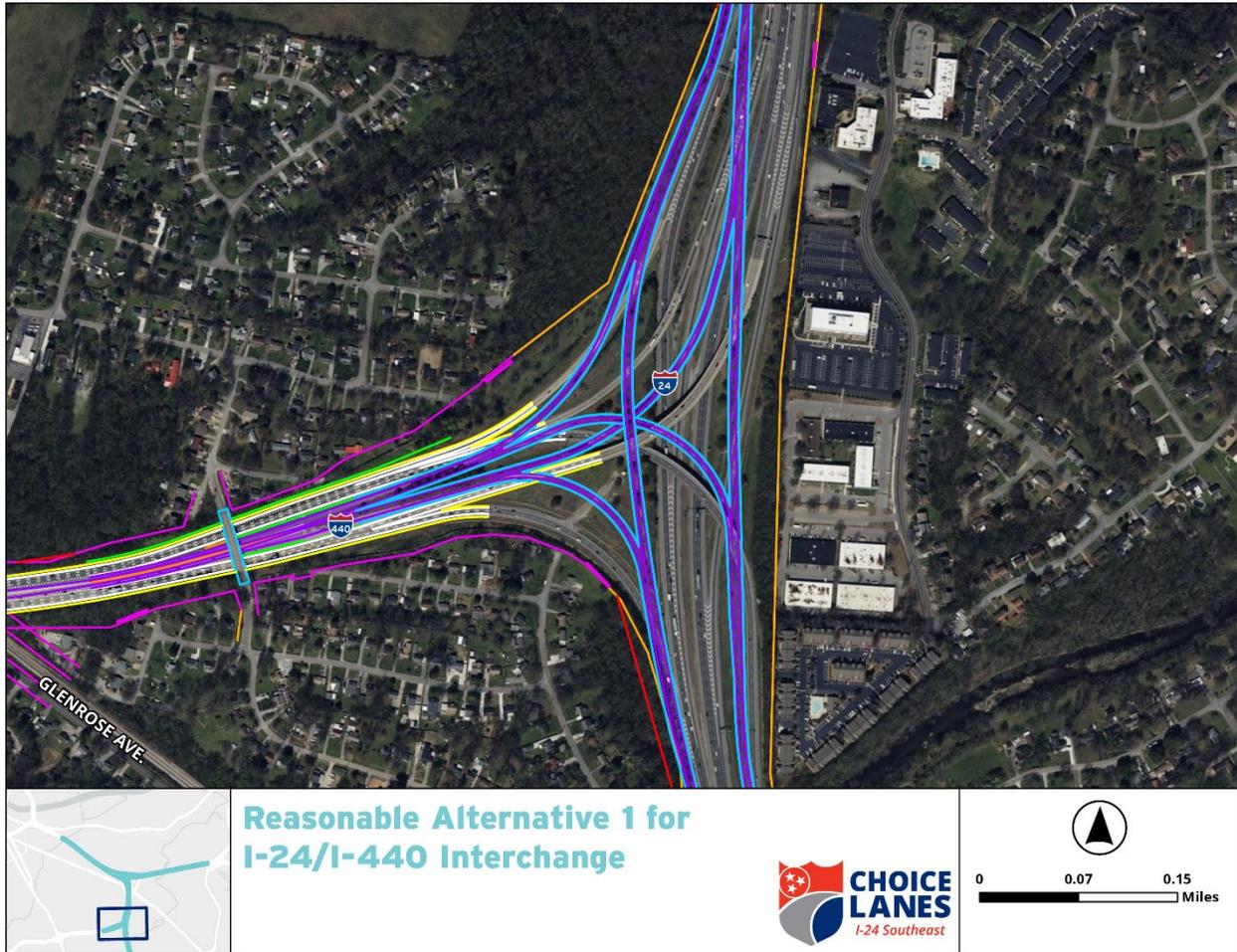
### **3.1.5 I-24/I-440 Interchange (MP 53.0)**

The I-24/I-440 Interchange is located approximately 4,000 feet to the south of the I-24/I-40 interchange and much of the existing GP lanes and proposed CL are interrelated in their connections. The proposed improvements at this interchange would provide direct access for all travel directions between the two interstates. CL ramps to and from I-440 would be single-lane ramps and the I-24 to I-24 connections for I-24 mainline CL would remain as two lanes. While the intent is to maintain a minimum of 55 mph design speed for the proposed CL within this interchange (based on posted speeds for the GP lanes), the ramps between I-24 (south of the interchange) and I-440 need to be reduced to a 45-mph design speed based on the alignment and grade that can be achieved.

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## REASONABLE ALTERNATIVE 1

Figure 3-9: Reasonable Alternative 1 for I-24/I-440 Interchange (MP 53.0)



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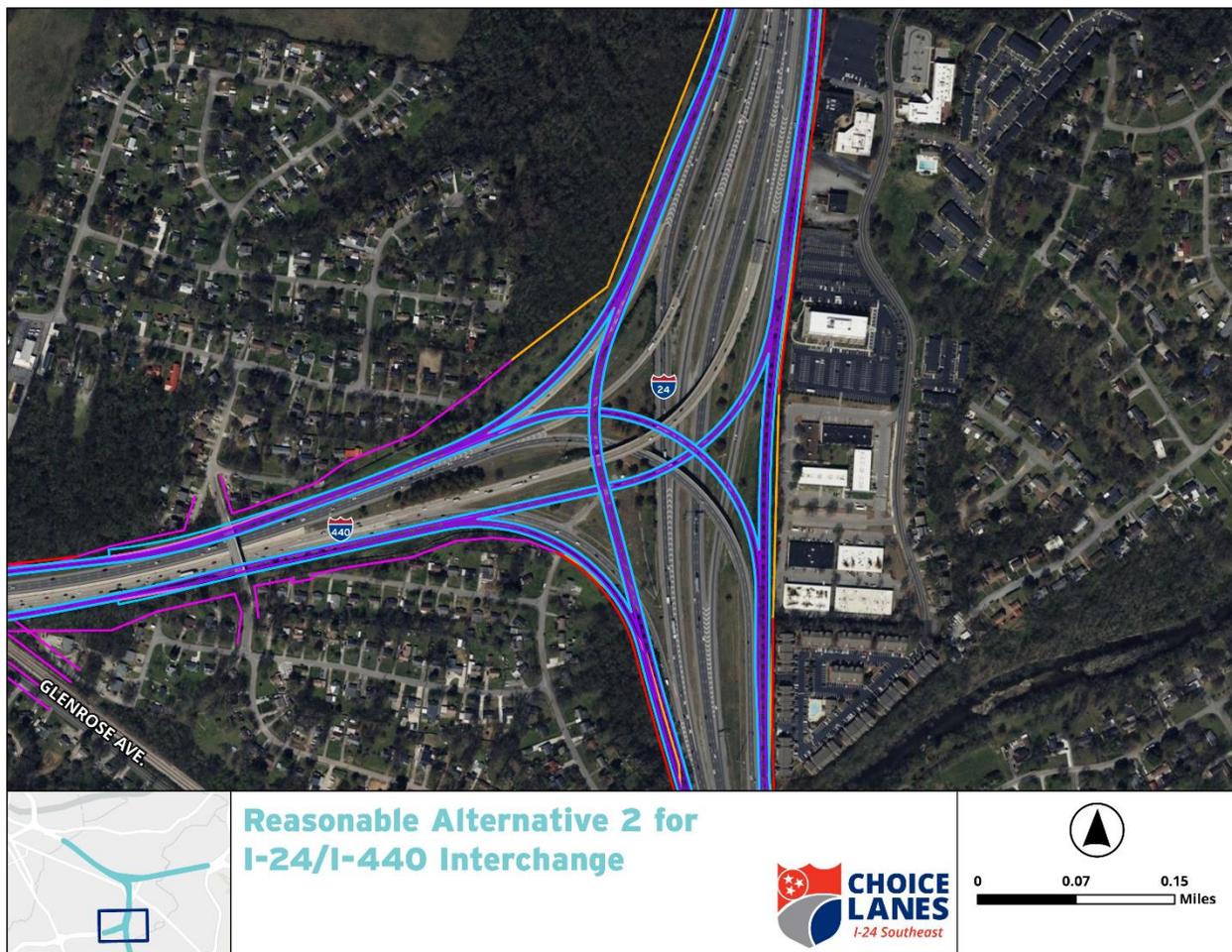
Alternative 1 for the I-24/I-440 Interchange would connect the proposed CL along I-24 to CL down the center of I-440. These CL would be one lane in each direction along I-440 and be at-grade as they approach the South Lyle Lane overpass. All ramps within the interchange area would be elevated structures and the alignments and grades have been laid out to reduce the impacts to existing infrastructure, but some shifting of the I-440 GP lanes may be required to accommodate the proposed CL as they head to the west.

The proposed CL may require the replacement of existing noise walls within the interchange area. As noted previously, all ramps would be elevated through this interchange and would require a number of bridges and retaining walls. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 20-25, 27-30
- Retaining Walls: 11-14

## REASONABLE ALTERNATIVE 2

Figure 3-10: Reasonable Alternative 2 for I-24/I-440 Interchange (MP 53.0)



Alternative 2 provides similar connectivity for CL users as Alternative 1 for this interchange, but the location of the proposed CL is to the outside as they connect with I-440. These alignments do allow for a slightly higher minimum design speed on the ramps, as they meet the 45-55 mph range instead of the 40 mph in Alternative 1. With the proposed CL elevated to the outside of the interstates, additional proposed ROW acquisition may be required to accommodate the improvements.

As noted previously, all CL would be elevated through this interchange and would require a number of bridges. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 20-25, 27 & 29
- Retaining Walls: 11-14

## OTHER INTERCHANGE ALTERNATIVES EVALUATED

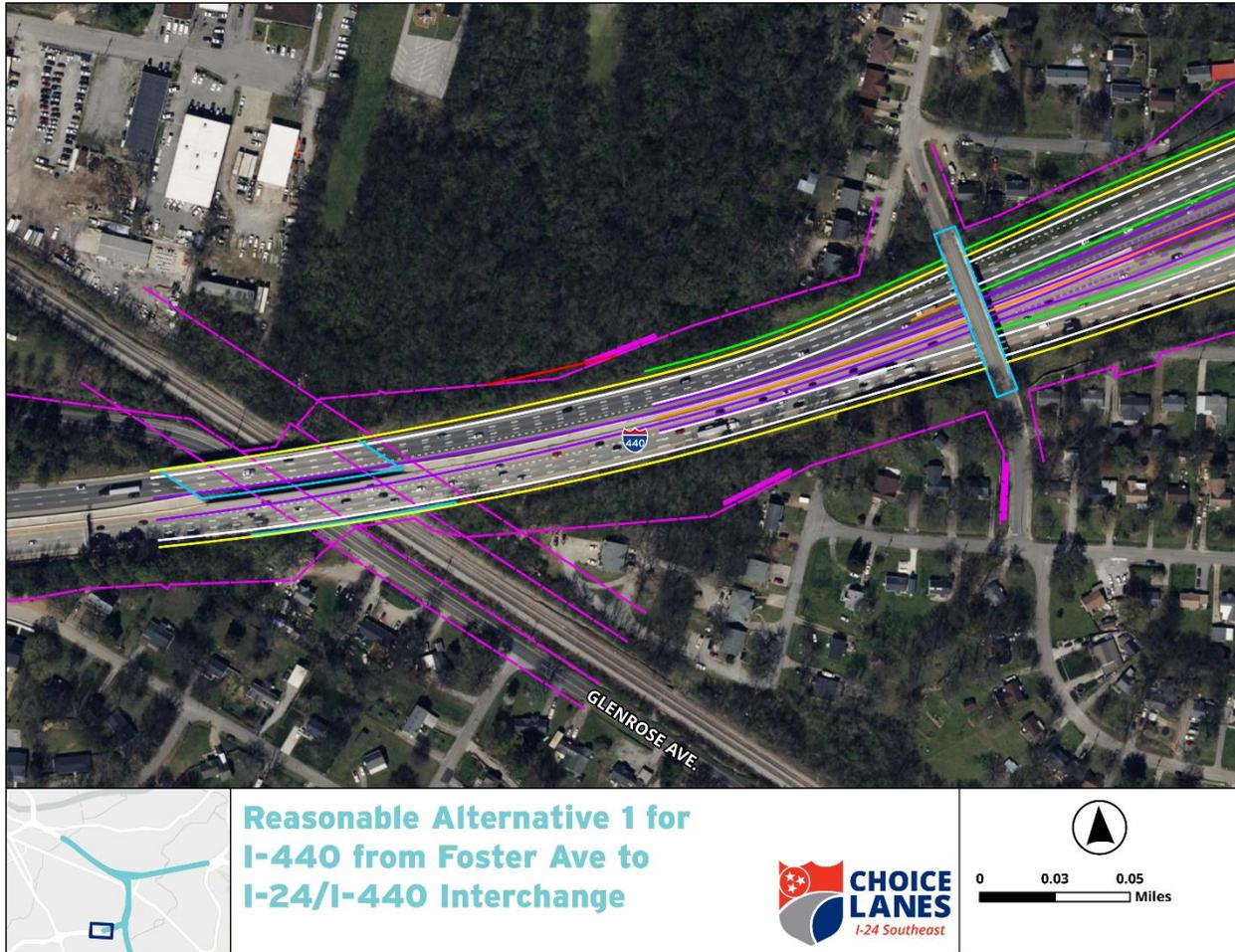
While there were multiple conceptual variations for this interchange, the differences were very minor and were not considered separate alternatives during the Level 2B screening. Any proposed configuration for this interchange is primarily based on the location of the proposed CL as they approach the interchange.

### 3.1.6 I-440 from Foster Avenue (6.7) to I-24/I-440 Interchange (MP 7.2)

This section is one of the western endpoints for the CL in this phase and provides a connection to/from the GP lanes along I-440. The design speed for the CL is a minimum of 55 mph, based on posted speeds along I-440, with all curves and tapers/merges designed accordingly. The proposed improvements would ultimately provide one to two CL in each travel direction along I-440, in a future phase of CL. The ultimate conditions are being evaluated in an ongoing planning study, but the intent of the current proposed improvements is to accommodate the potential future improvements. In this current phase, the proposed CL would be reduced to one lane in each direction and merge in and out of the existing GP lanes.

## REASONABLE ALTERNATIVE 1

**Figure 3-11: Reasonable Alternative 1 for I-440 from Foster Ave (MP 6.7) to I-24/I-440 Interchange (MP 7.2)**



In Alternative 1, the proposed CL are a single lane, down the center of I-440, that connect to the I-24/440 interchange. The CL would transition from elevated to at-grade in the vicinity of the South Lyle Lane overpass, before tapering out and providing access to/from the I-440 GP lanes. Based on taper lengths and required grades, the proposed CL lanes can terminate in the vicinity of the I-440 bridge over Glenrose Avenue and the CSX RR. There would be some shifting/widening of the I-440 GP lanes as the proposed CL ramps come down to grade and merge into I-440 traffic.

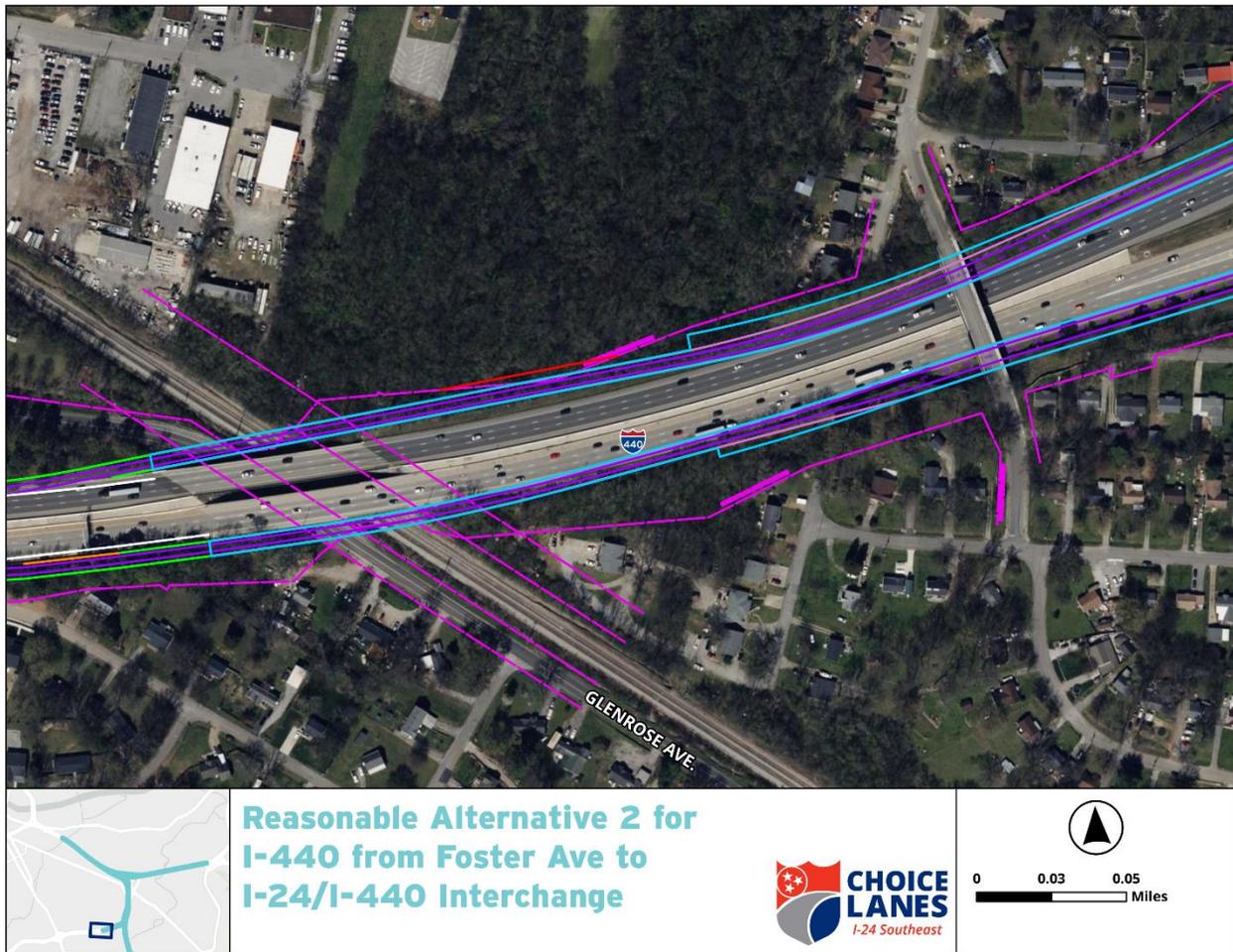
The proposed CL may require the replacement of existing noise walls within the section. While the CL would be mostly at-grade in this section, there are some impacts to existing bridges, which would require replacement or widening, as well as a need for additional proposed retaining walls. Below are the corresponding reference numbers from **Table 3-2**

and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 24-26
- Retaining Walls: 11-14

**REASONABLE ALTERNATIVE 2**

**Figure 3-12: Reasonable Alternative 2 for I-440 from Foster Ave (MP 6.7) to I-24/I-440 Interchange (MP 7.2)**



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Alternative 2 provides similar types of CL within this section but they are located to the outside of I-440 instead of down the center. These proposed CL would be elevated over South Lyle Lane, Glenrose Avenue and the CSX RR. They would come down to grade and provide an at-grade merge to and from I-440 in each direction prior to the Foster Avenue overpass. No impacts to the existing Foster Avenue bridge are anticipated in this alternative.

The proposed CL would potentially require replacement of the existing noise walls within the section. As noted previously, the CL are mostly elevated for this alternative and would require a number of bridges and retaining walls to accommodate the improvements. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 25-28
- Retaining Walls: 8-11

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

While there were multiple conceptual variations for this section, the differences were very minor and were not considered separate alternatives during the Level 2B screening. Any proposed configuration for this section is primarily based on the location of the proposed CL as they leave the I24/440 interchange.

#### **3.1.7 I-24 from I-440 (MP 53.0) to SR 155 (Briley Parkway) (MP 54.0)**

This section of I-24 runs from the I-24/I-440 interchange down to the SR 155 (Briley Parkway) interchange. Due to existing constraints (environmentally sensitive areas, floodplains and potential historic properties) along the section, there is only one reasonable improvement proposed, so both Reasonable Alternatives are the same. The proposed improvements along the section would provide two 12-foot CL in each direction, with a minimum design speed of 70 mph.

## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-13: Reasonable Alternatives 1 & 2 for I-24 from I-440 (MP 53.0) to SR 155 (Briley Pkwy) (MP 54.0)**



Both alternatives for this section have the same proposed improvements, with the CL being elevated to the outside of I-24. The CL have been elevated through this section due to a significant choke point along the route at the location noted by the green shading in **Figure 3-13**. The green shaded property shown in the figure above is a potentially historic church/cemetery property along the western side of I-24 which approaches the edge of the I-24 shoulder and is also constrained by Mill Creek along the east side. Mill Creek has an exceptionally large regulatory floodway and floodplain that would be negatively impacted by any additional roadway fill. Due to these two sensitive areas, the CL have been elevated to minimize the potential impacts. It is important to note that additional non-penetrative ground sensing testing would be beneficial in this area during the Project development to fully understand any potential impacts within the cemetery.

As previously noted, the CL would be elevated on either side of I-24 in this section and would require bridges. Below are the corresponding reference numbers from **Table 3-2**

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and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 31 & 32
- Retaining Walls: N/A

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

During the Level 2B screening, several other access point alternatives were considered at this location.

The first additional alternative evaluated was to follow the generally preferred design of placing the proposed CL along the inside of I-24. These CL would be separated by a concrete barrier between travel directions and a 4-foot buffer between CL and GP lanes. In this configuration, I-24 would be widened to the outside, on both sides, to accommodate the existing number of GP lanes. This alternative was eliminated from consideration based on the large impacts to the Mill Creek floodway and the inability to adequately mitigate those impacts.

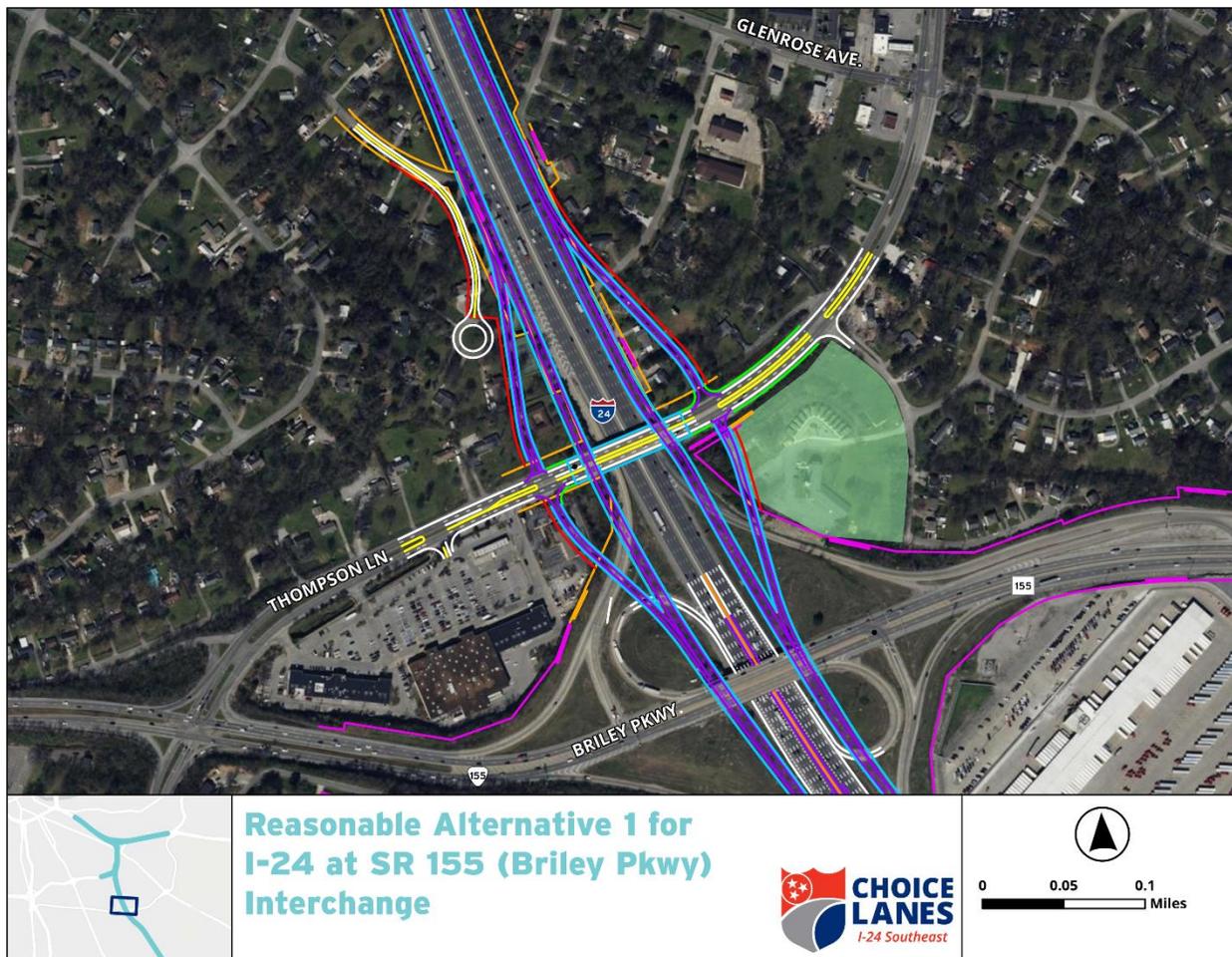
Another alternative investigated was to place the proposed CL on an elevated structure, along the centerline of I-24. It was determined that the size of the column required for such a structure would be exceptionally large and require the existing GP lanes to be shifted to the outside to accommodate the piers. This shift would require I-24 to be widened permanently for the ultimate condition, as well as additional temporary width during construction, and would have a negative impact on the Mill Creek floodway. For this reason, the alternative was removed from consideration.

#### **3.1.8 I-24 at SR 155 (Briley Parkway) Interchange (MP 54.0)**

This existing interchange is a primary access point to SR 155 (Briley Parkway) for motorists in the area, with SR 155 (Briley Parkway) providing a connection to I-40 and the airport to the north and east. East Thompson Lane is located immediately to the north of SR 155 (Briley Parkway), intersecting it to the west of the interchange. The proposed improvements at this interchange would provide two 12-foot CL in each direction, elevated to the outside of I-24. The design speed would be 70 mph, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVE 1

**Figure 3-14: Reasonable Alternative 1 for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)**



In Alternative 1, a proposed new tight diamond interchange at East Thompson Lane provides a dedicated access point for the proposed CL. The mainline CL would continue over both SR 155 (Briley Parkway) and East Thompson Lane, with one-lane ramps connecting down to East Thompson Lane. While this is not a direct connection to SR 155 (Briley Parkway), East Thompson Lane does connect with SR 155 (Briley Parkway) at a signalized intersection to the west of I-24. The new interchange would require raising the grade of East Thompson Lane by approximately 5 feet to better tie in with the on- and off-ramps. This grade raise would be primarily over I-24 with the grade tying down prior to the adjacent surface intersections. The entrance to the Kroger Shopping Center, west of I-24, would need to be relocated to the west to provide separation from the proposed ramp intersection.

This alternative would require proposed ROW acquisition along both sides of I-24 to accommodate the new ramps. Joplin Drive, a residential roadway along the west side of I-

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24, would need to be relocated to maintain a connection to multiple residences on that side of the interstate. Along the east side of I-24, Glenmont Court, a street that parallels I-24, would need to be closed and removed and the residences along that roadway acquired. Also on the east side, a partial acquisition of property, including a portion of the parking lot, of the Glencliff United Methodist Church may be required.

The CL would be completely elevated, other than as ramps tie into East Thompson Lane, which would require new bridges. The proposed grade raise along East Thompson Lane would require the replacement of the bridge over I-24, as well as retaining walls along either side to minimize impacts to adjacent properties. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 33-41
- Retaining Walls: 15-20

## REASONABLE ALTERNATIVE 2

**Figure 3-15: Reasonable Alternative 2 for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)**



Alternative 2 also has the proposed CL elevated through the interchange but proposes to provide a direct connection for CL to SR 155 (Briley Parkway). The existing loop ramps at the SR 155 (Briley Parkway) interchange would be removed and the movements would be accommodated by a flyover ramp for westbound SR 155 (Briley Parkway) to eastbound I-24 and a left turn for eastbound SR 155 (Briley Parkway) to westbound I-24. The CL would connect to SR 155 (Briley Parkway) via a plaza-style intersection at the intersection point of I-24 and SR 155 (Briley Parkway). This new connection point would provide a left-turn lane and a right-turn lane on each CL approach, as well as left-turn movements from SR 155 (Briley Parkway) in both directions. This intersection would be signalized and would require coordination with the existing ramp signals on either side.

It is important to note that the current configuration of the proposed flyover ramp from westbound SR 155 (Briley Parkway) is the highest level of the proposed interchange and a reconfiguration of the other ramps coming from the same direction would be required to

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provide adequate vertical clearances. Currently, the flyover ramp comes from the left-hand lane, as it is more consistent for driver behavior (left lane to go left), but that does require the right lane to be pushed north to revise the grade and provide enough vertical separation between the ramps. This realignment would require additional ROW along that northern edge, which would impact a portion of Glencliff Court, the residences along that section of the road and potentially the Glencliff United Methodist Church.

The proposed plaza intersection would require pushing the existing mainline GP lanes on I-24 to the outside to accommodate the additional width of the CL near Briley Parkway. This widening would require additional ROW and impact the bridges at East Thompson Lane and SR 155 (Briley Parkway). The existing GP ramps would need to be shifted as well before tying back into the existing alignments.

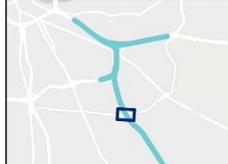
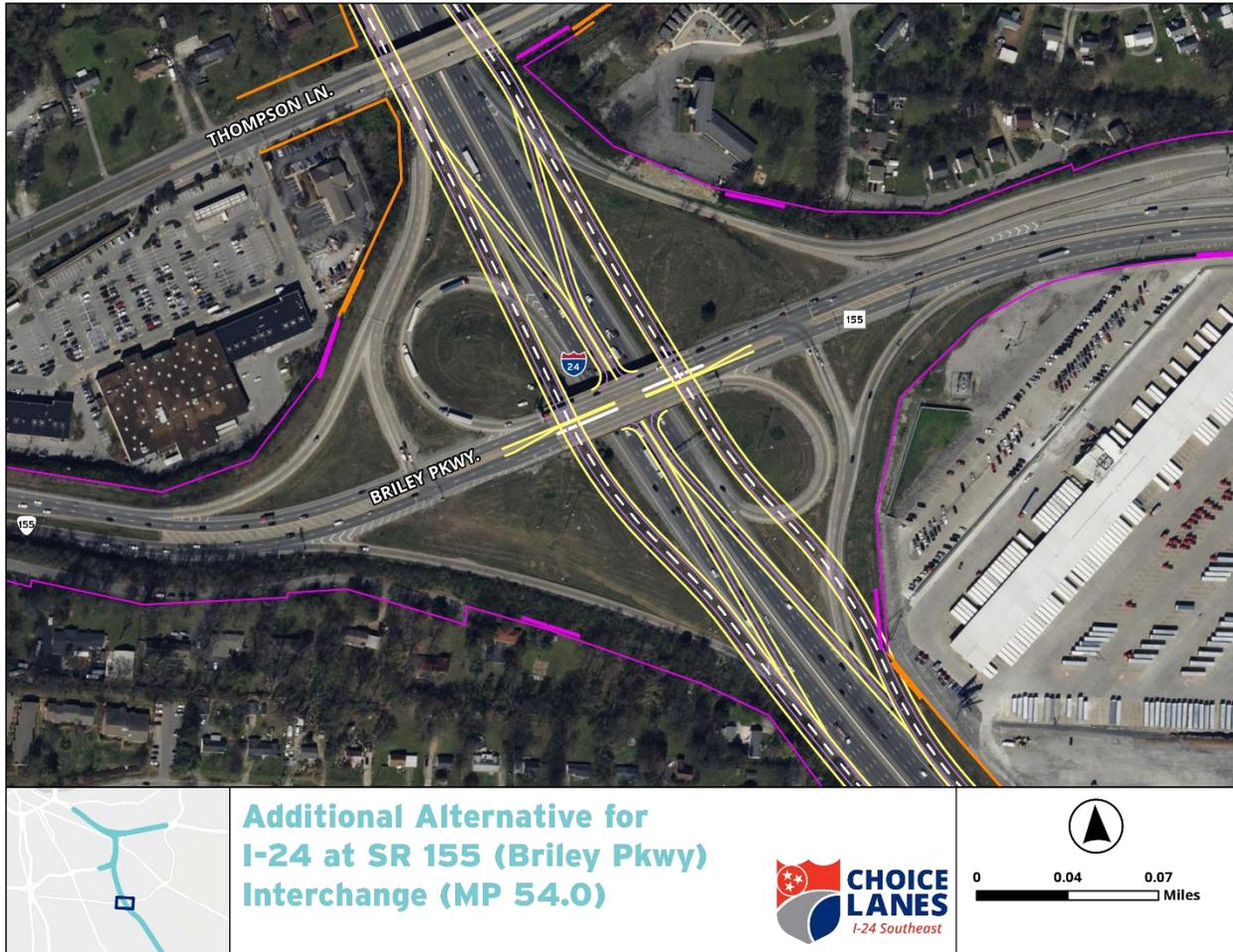
The CL would be completely elevated which would require new bridges. The GP widening noted previously would also require the replacement of overpasses within the interchange. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 32-38
- Retaining Walls: 12-15

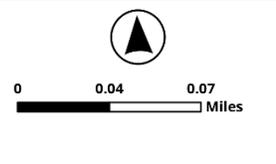
### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

During the Level 2B screening, several other access point alternatives were considered at this location. For this interchange, various reconfigurations of the existing interchange and means of providing access for the proposed CL were investigated.

**Figure 3-15: Additional Alternative for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)**



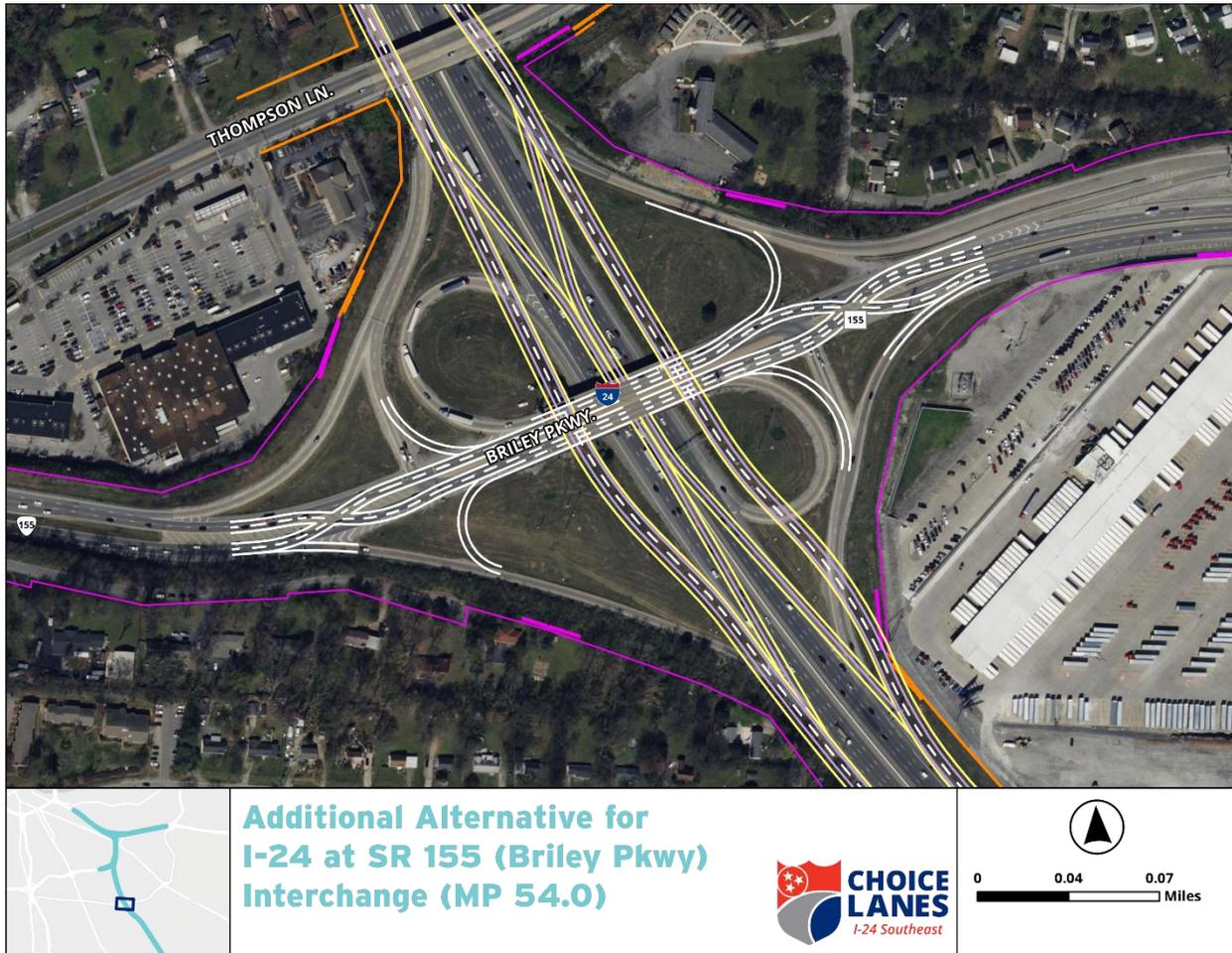
**Additional Alternative for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)**



One alternative was to provide a direct connection for CL to SR 155 (Briley Parkway) at the centerline of I-24. This would be a four-leg intersection located between the existing loop ramps and signalized ramp intersections. The proposed CL on both approaches of I-24 would be located either at-grade along the inside or elevated to the outside. In general, both configurations would operate in a similar manner. The alternative was eliminated due to potential conflicts with the existing loop ramp movements.

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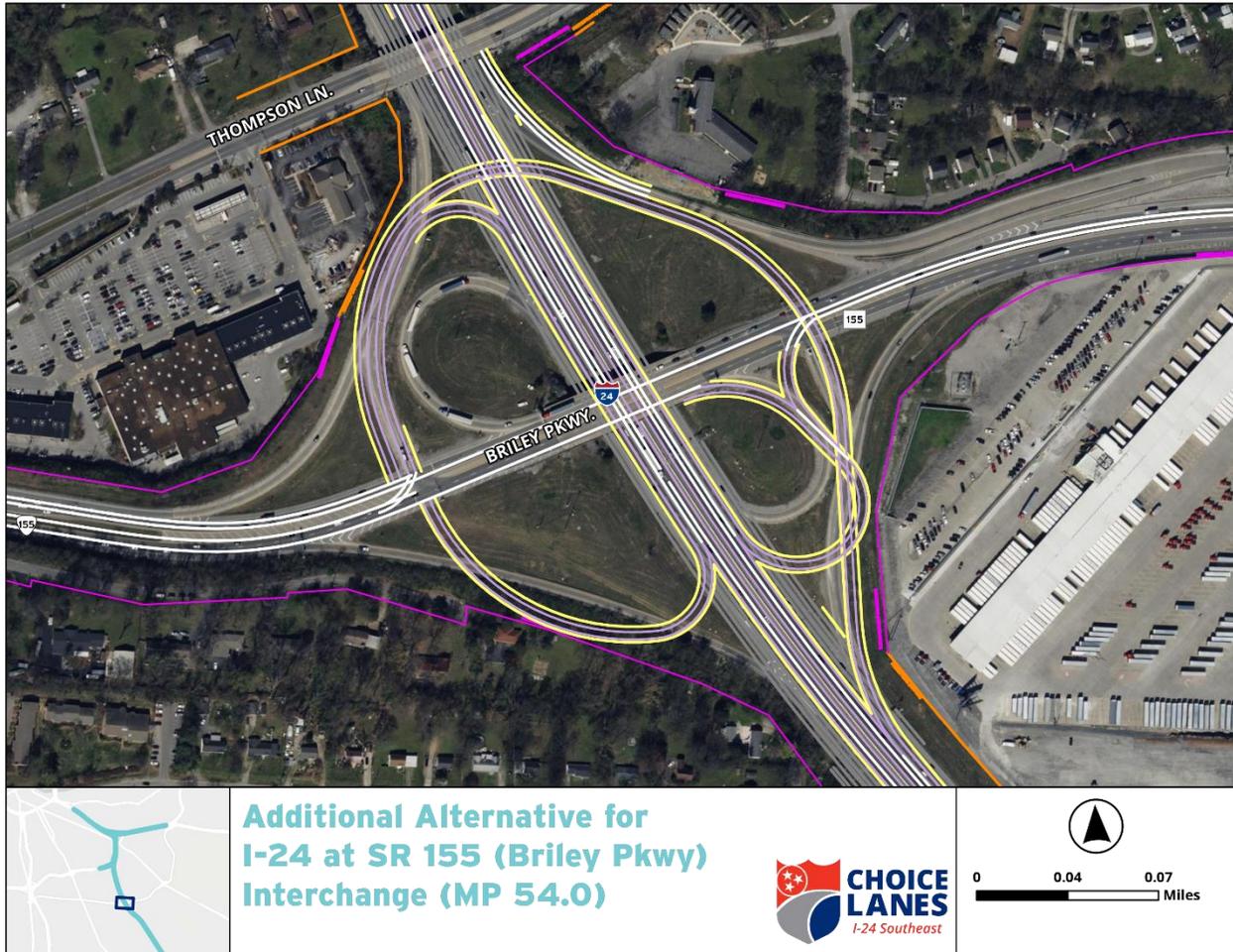
Figure 3-16: Additional Alternative for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)



A proposed diverging diamond interchange (DDI) was also evaluated for this existing interchange. While a DDI was greatly beneficial for the operation of the GP traffic movements, it did not provide a reasonable way to connect to the proposed CL and was therefore removed from consideration.

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**Figure 3-17: Additional Alternative for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)**



There were also multiple conceptual interchanges developed (new full directional, new directional for CL only and even a turbine interchange), but each of these were eliminated due to either constructability, feasibility or cost-to-benefit ratio.

### 3.1.9 I-24 from SR 155 (Briley Parkway) (MP 54.0) to 4,000 West of SR 255 (Harding Place) (MP 55.0)

This section of I-24 connects the SR 155 (Briley Parkway) interchange to approximately 4,000 feet west of the SR 255 (Harding Place) interchange. The proposed improvements along this section would provide two, 12-foot CL in either direction and directional access to the GP lanes near SR 155 (Briley Parkway). The posted speed on I-24 changes along this section, from 55 mph near SR 155 (Briley Parkway) to 70 mph as you progress east. The design speed for the CL is 70 mph for the main lanes and is variable for ramps.

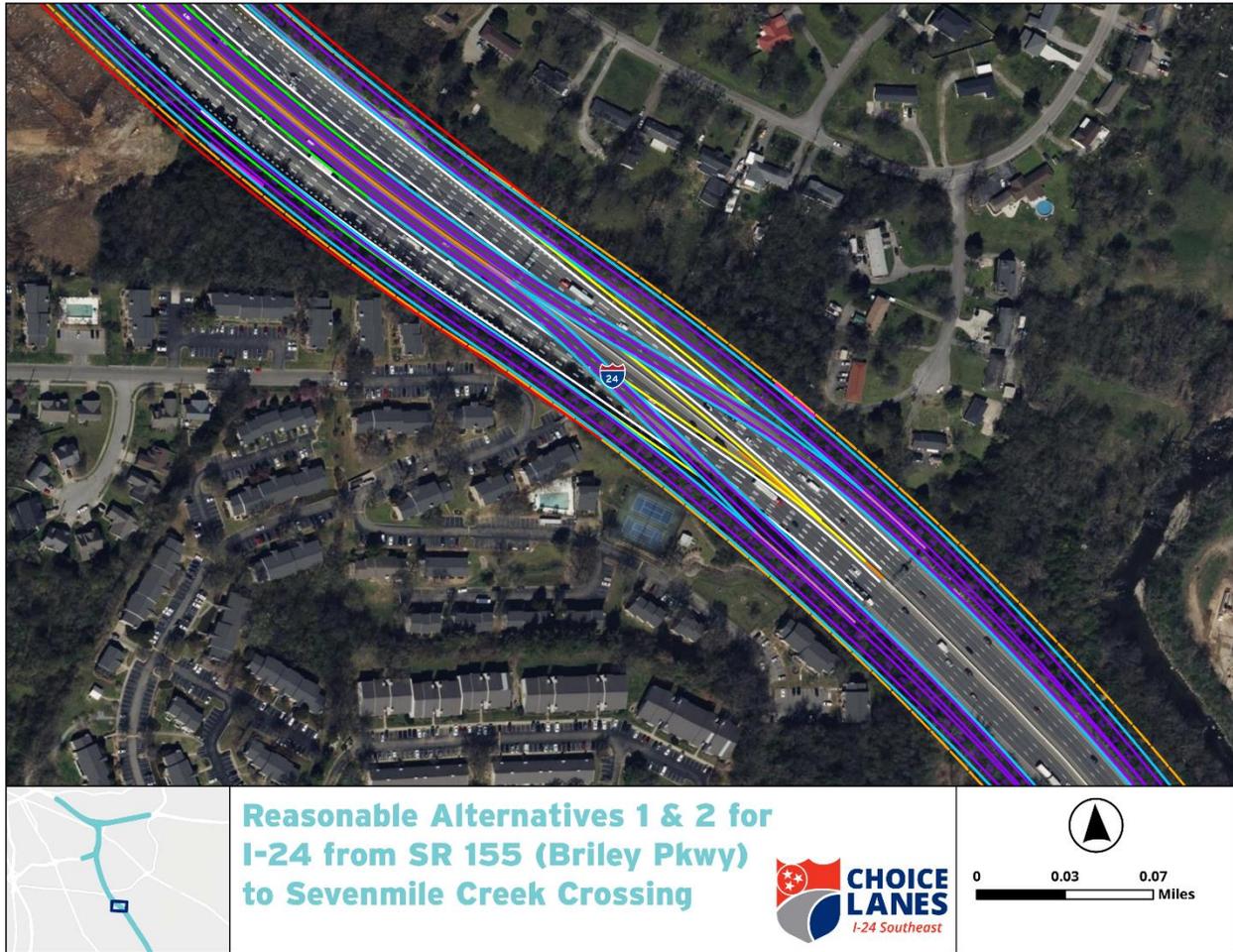
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## **REASONABLE ALTERNATIVES 1 & 2 FROM SR 155 (BRILEY PARKWAY) (MP 54.0) TO SEVENMILE CREEK CROSSING (MP 54.5)**

Both alternatives have the same, or similar, proposed improvements along the first portion of the section. Immediately east of the SR 155 (Briley Parkway) interchange, an at-grade access point to and from CL to GP lanes (in going east and out going west) is shown in each alternative. The proposed CL are elevated to the outside of I-24 through this section. The at-grade access is proposed as one CL in each direction and would elevate as they head east away from SR 155 (Briley Parkway), before splitting to become single lane CL ramps. These ramps would then stay elevated, cross over each travel direction of I-24 before connecting with the elevated mainline CL on either side of the interstate. To accommodate the movement of the CL ramps from at-grade along the inside of I-24 to elevated along the outside, the GP lanes would require shifting to the outside. Due to this shifting, I-24 would need to be widened to accommodate the existing number of GP lanes. Based on potential negative impacts to the Mill Creek and Sevenmile Creek floodways, the intent is that this widening would be completed north of that area.

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**Figure 3-16: Reasonable Alternatives 1 & 2 for I-24 from SR 155 (Briley Pkwy) (MP 54.0) to Sevenmile Creek Crossing (MP 54.5)**

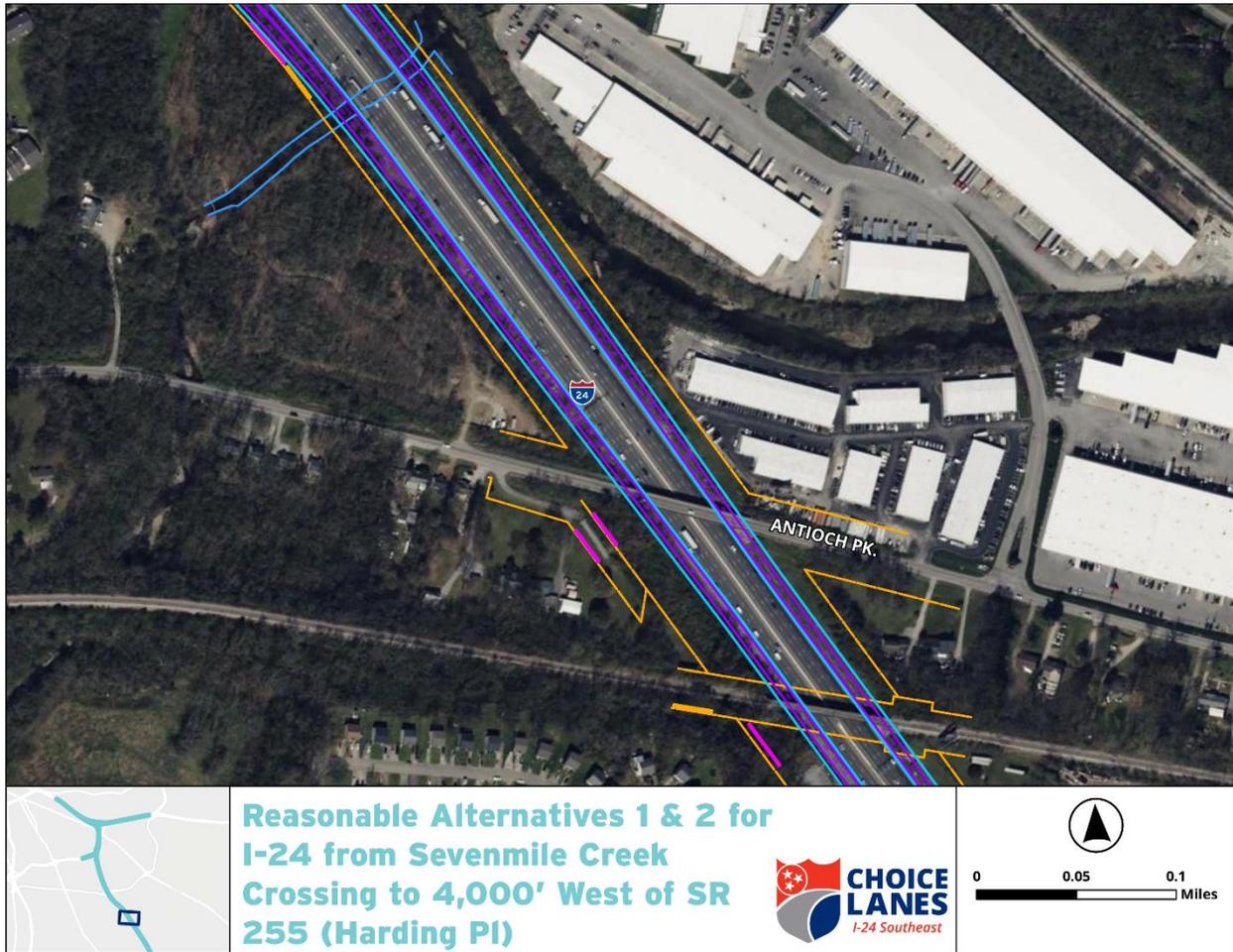


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**REASONABLE ALTERNATIVES 1 & 2 FROM SEVENMILE CREEK CROSSING (MP 54.5) TO 4,000' WEST OF SR 255 (HARDING PLACE) INTERCHANGE (MP 55.0)**

Both alternatives propose elevating the CL to both sides of I-24 as you head east along the alignment. These CL are elevated to minimize impacts of roadway fill to the Sevenmile Creek and Mill Creek Floodways (top of **Figure 3-17**), which then requires the CL to stay elevated over the Antioch Pike and CSX RR overpasses to the east.

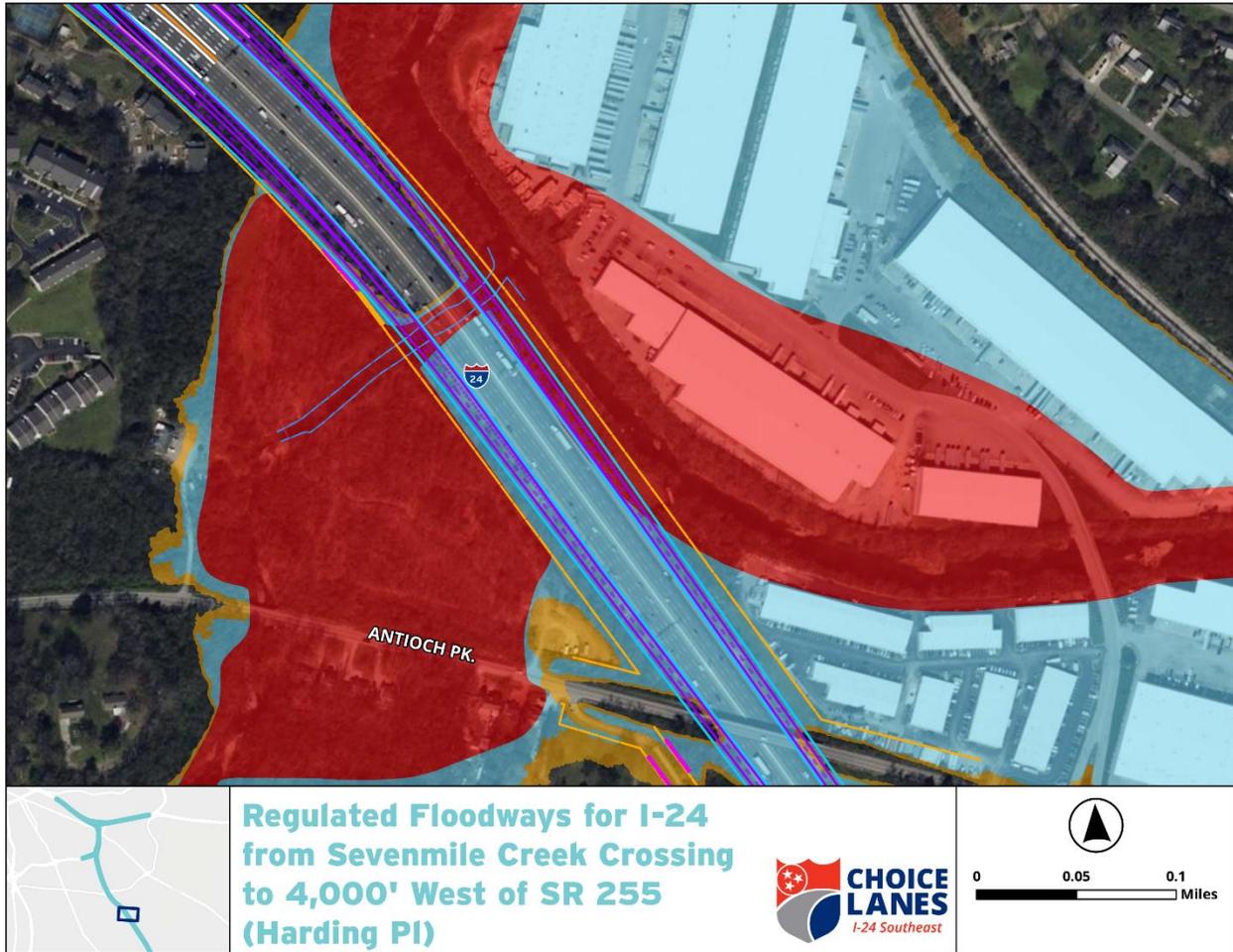
**Figure 3-17: Reasonable Alternatives 1 & 2 for I-24 from Sevenmile Creek Crossing (MP 54.5) to 4,000' West of SR 255 (Harding PI) (MP 55.0)**



**Figure 3-18** shows the regulated floodway (red), the 100-year floodplain (blue) and the 500-year floodplains (orange). As can be seen in the image, the floodway is up to the edge of the existing I-24 pavement and any additional proposed fill would need to be minimized and/or mitigated.

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**Figure 3-18: Regulated Floodways for I-24 from Sevenmile Creek Crossing (MP 54.5) to 4,000' West of SR 255 (Harding PI) (MP 55.0)**



The CL would be elevated which would require new bridges and retaining walls.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Reasonable Alternative 1 Bridges – 40-45
  - Reasonable Alternative 2 Bridges – 37-43
- Retaining Walls:
  - Reasonable Alternative 1 Walls – 21-24
  - Reasonable Alternative 2 Walls – 16-19

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## **OTHER ALTERNATIVES EVALUATED**

During the Level 2B screening, several other alternatives were considered at this location.

The first additional alternative evaluated was to follow the generally preferred design of placing the proposed CL along the inside of I-24 for the entire length of the section. In this configuration, I-24 would need to be widened to the outside, on both sides, to accommodate the existing number of GP lanes. This alternative was eliminated from consideration based on the large impacts to the Mill Creek and Sevenmile Creek floodways and the inability to adequately mitigate those impacts.

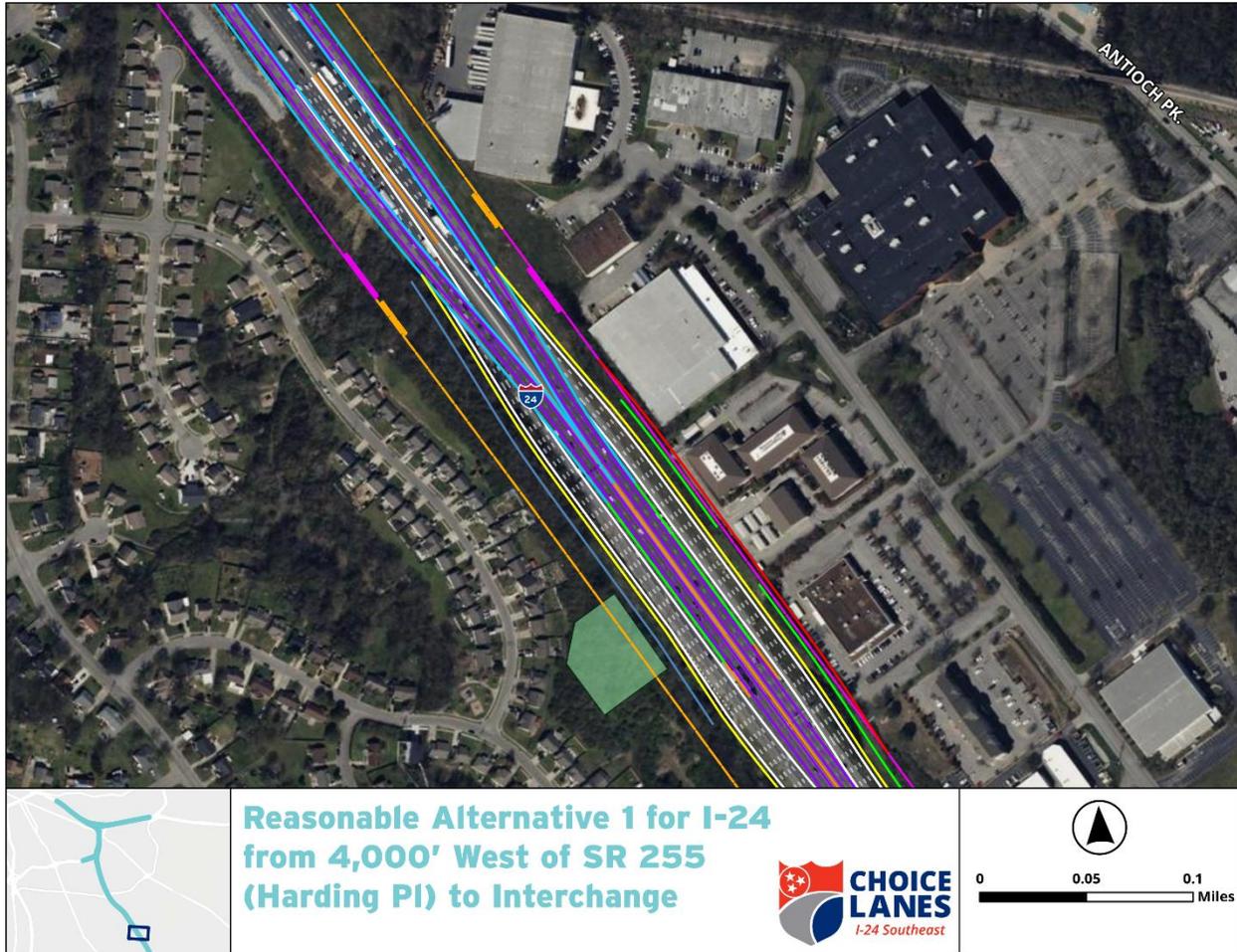
Another alternative investigated was to place the proposed CL on an elevated structure along the centerline of I-24. It was determined that the size of the column required for such a structure would be exceptionally large and require the existing GP lanes to be shifted to the outside to accommodate the piers. This shift would require I-24 to be widened, permanently for the ultimate condition, as well as additional temporary width during construction, and would have a negative impact on the Mill Creek and Sevenmile Creek floodways. For this reason, the alternative was removed from consideration.

### **3.1.10 I-24 from 4,000' West of SR 255 (Harding Place) (MP 55.0) to SR 255 (Harding Place) (MP 56.0)**

This section of the I-24 mainline extends east to the SR 255 (Harding Place) interchange and includes the Antioch Pike overpass and a CSX RR overpass. The proposed improvements along this section would provide two 12-foot CL in either direction and directional access to the GP lanes near SR 155 (Briley Parkway). The posted speed changes along this section, from 55 mph near SR 155 (Briley Parkway) to 70 mph as you progress east. The design speed for the CL is 70 mph for the main lane, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVE 1

**Figure 3-19: Reasonable Alternative 1 for I-24 from 4,000' West of SR 255 (Harding PI) (MP 55.0) to Interchange (MP 56.0)**



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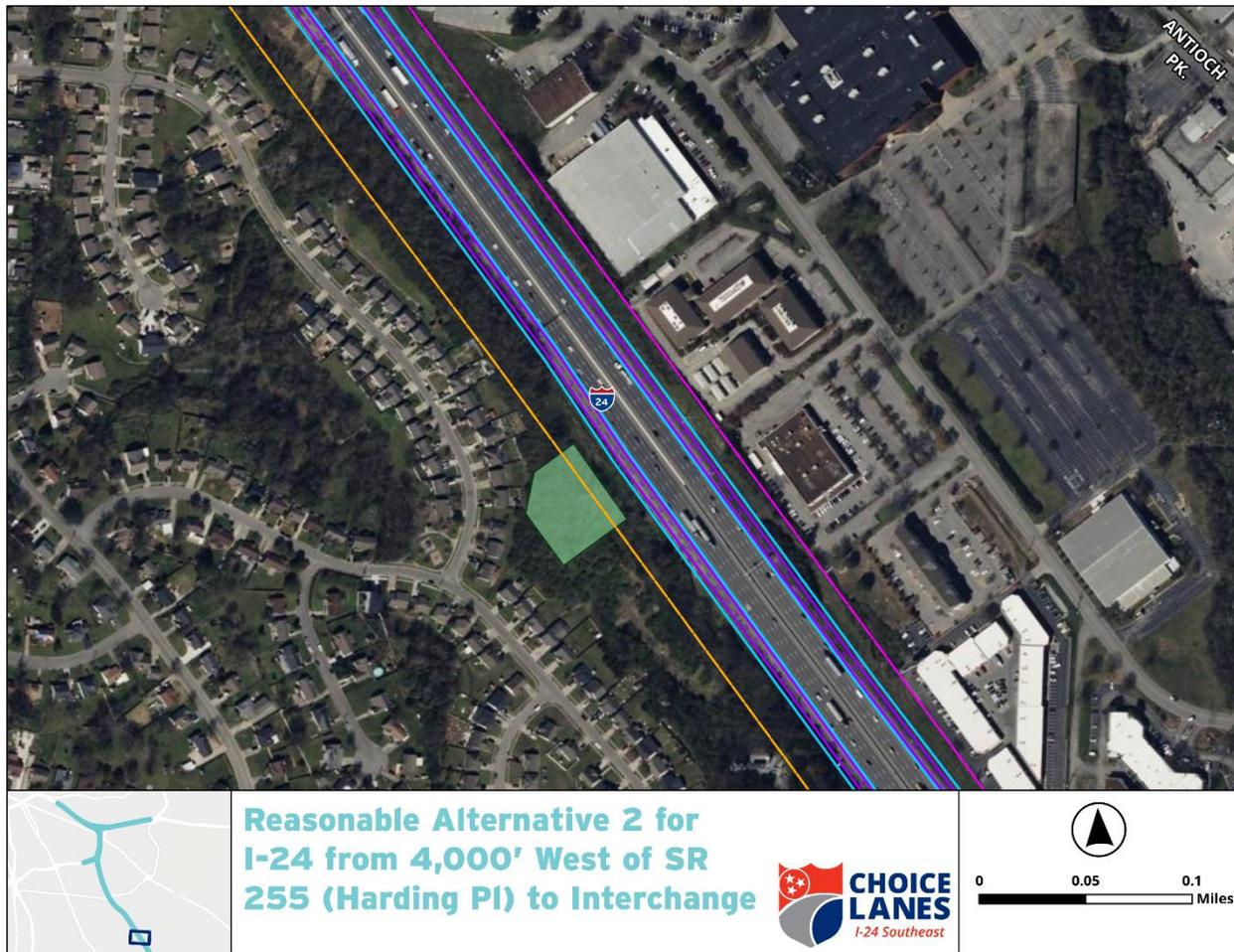
In Alternative 1 the CL are elevated and enter this section on the outside. The CL shift to at-grade in the center of I-24. This shift would be accomplished by carrying both of the elevated CL over the I-24 GP lanes to meet in the center of I-24. The four CL would be separated by a median barrier. As the CL shift to the center, I-24 would be widened to accommodate the current number of GP lanes. This widening would require some rock excavation along the west side of I-24 and additional ROW acquisitions along the east side of I-24.

The CL would be elevated in portions of this section, which would require new bridges and retaining walls. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 44 & 45
- Retaining Walls: 25-29

## REASONABLE ALTERNATIVE 2

**Figure 3-20: Reasonable Alternative 2 for I-24 from 4,000' West of SR 255 (Harding PI) to Interchange (MP 56.0)**



In Alternative 2, the proposed CL would enter this section and remain elevated and to the outside of I-24 all the way to SR 255 (Harding Place). Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 42 & 43
- Retaining Walls: N/A

## OTHER ALTERNATIVES EVALUATED

During the Level 2B screening, several other alternatives were considered at this location.

The additional alternative investigated was to place the proposed CL on an elevated structure, along the centerline of I-24. It was determined that the size of the column required for such a structure would be exceptionally large and require the existing GP

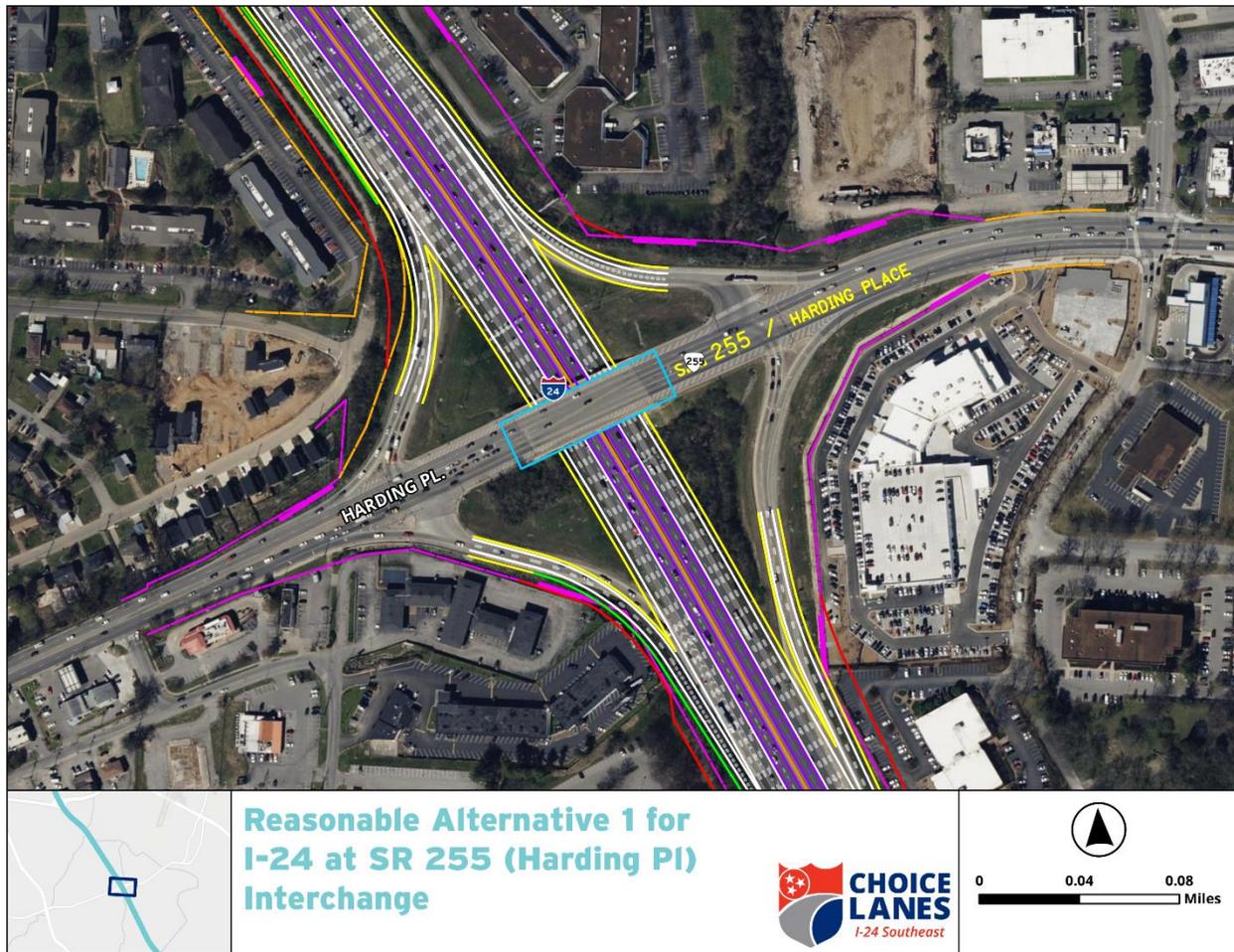
lanes to be shifted to the outside to accommodate the piers. This shift would require I-24 to be widened, permanently for the ultimate condition, as well as additional temporary width during construction, similar to the proposed reasonable alternatives. The cost of this additional widening, along with the cost of the CL structure itself, was deemed excessive when compared to the other alternatives. For this reason, the alternative was removed from consideration.

### **3.1.11 I-24 at SR 255 (Harding Place) Interchange (MP 56.0)**

The SR 255 (Harding Place) interchange provides direct access to a primary connecting route running east and west. The existing diamond interchange configuration provides an opportunity to evaluate providing a CL connection. However, the interchange is heavily developed, and Sorghum Branch runs through this interchange which limits the ability to expand the interchange without significant impacts. While there are no proposed direct connections to SR 255 (Harding Place) from the CL, the improvements would carry two CL in each direction through the SR 255 (Harding Place) interchange. Design speeds for all proposed CL is 70 mph, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVE 1

Figure 3-21: Reasonable Alternative 1 for I-24 at SR 255 (Harding PI) Interchange (MP 56.0)



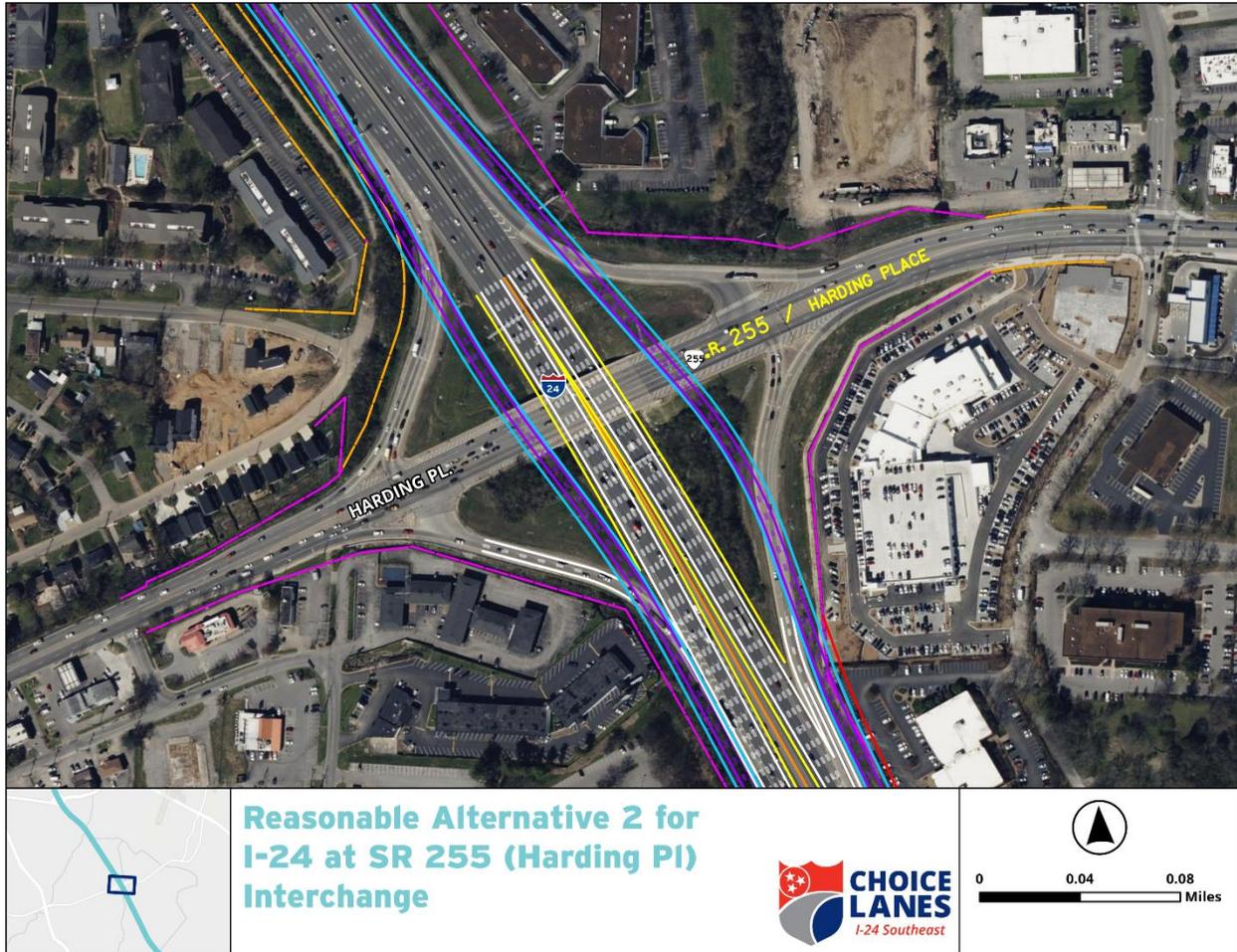
In Alternative 1, the proposed CL would remain at-grade in the center of I-24. In this configuration, I-24 would be widened to the outside on both sides to accommodate the existing number of GP lanes. As I-24 passes under SR 255 (Harding Place), the additional horizontal width required would result in replacement of the existing SR 255 bridge over I-24. All ramps serving the existing interchange would be shifted to accommodate the change in location of the GP lanes before tying back into the existing I-24 alignment as they approach SR 255 (Harding Place).

In Alternative 1, the proposed widening would require bridges and retaining walls. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 46
- Retaining Walls: 31

## REASONABLE ALTERNATIVE 2

Figure 3-22: Reasonable Alternative 2 for I-24 at SR 255 (Harding Pl) Interchange (MP 56.0)



In Alternative 2, the proposed CL remain elevated to the outside along I-24 and continue over SR 255 (Harding Place). The elevated CL, especially on the westbound side, are aligned to minimize the potential impacts to Sorghum Branch, a stream running under I-24 and SR 255 (Harding Place) within the existing interchange.

The elevated CL through the SR 255 (Harding Place) interchange require bridges. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 42-44
- Retaining Walls: N/A

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## **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

During the Level 2B screening, several other access point alternatives were considered at this location. For this interchange, various reconfigurations of the existing interchange and means of providing access for the proposed CL were investigated.

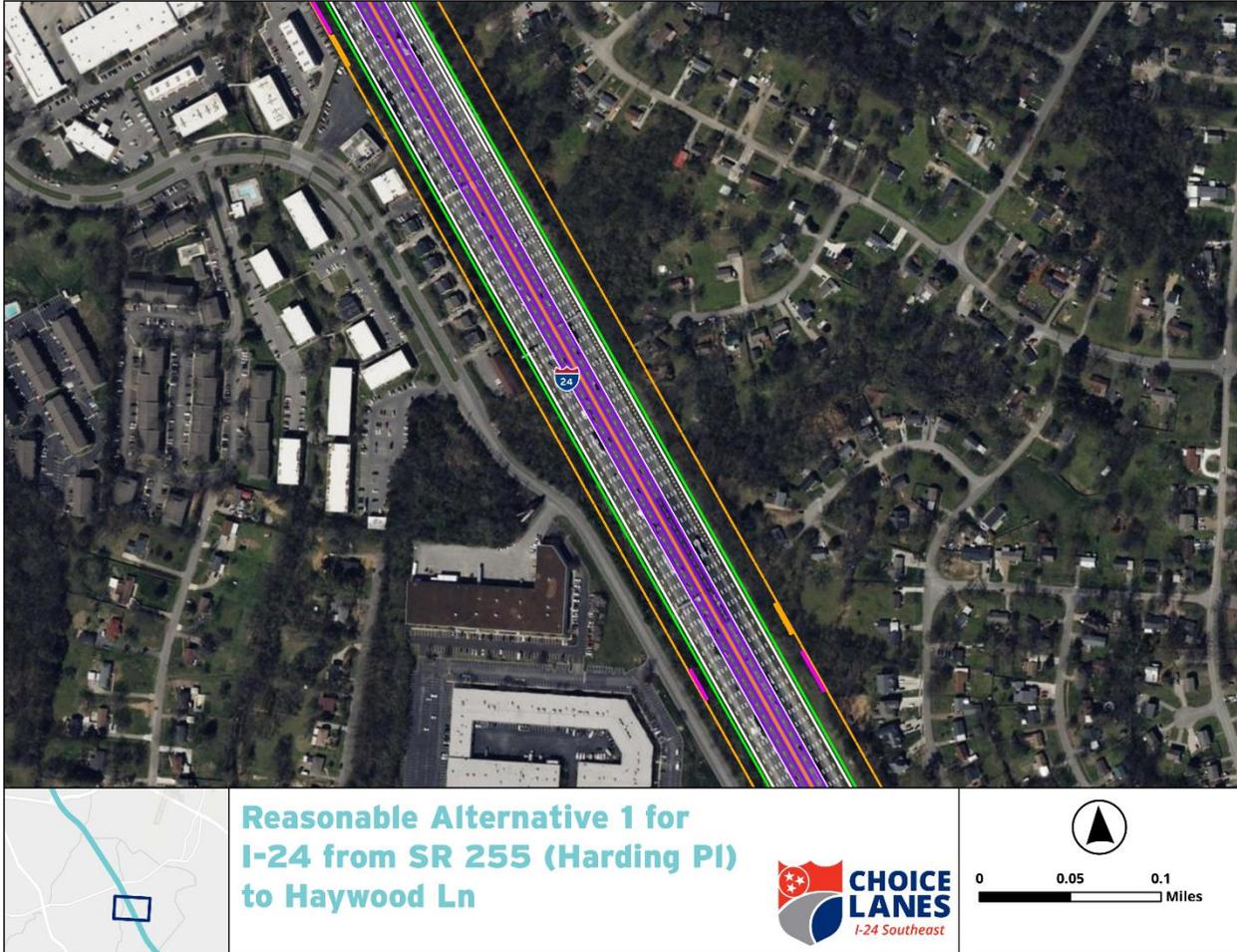
The first of these configurations was a single T-intersection at SR 255 (Harding Place) over the centerline of I-24. This intersection requires the elevation of the proposed CL along the center of I-24 to connect with SR 255 (Harding Place), which would require the GP lanes to shift to the outside. With the GP lanes shifting outwards to accommodate the proposed CL, the existing ramp connections would need to be reworked to maintain GP access, causing major ROW impacts at the interchange. Also, the addition of a third signalized intersection, all within 700 feet, at this interchange and the requirement for double left-turn lanes at a minimum of two of the intersections, was not feasible without major ROW impacts to provide adequate traffic operation. This alternative was eliminated based upon these additional impacts (ROW and traffic operations) being considered excessive as compared to the other alternatives, for this stage of the proposed Project.

### **3.1.12 I-24 from SR 255 (Harding Place) (MP 56.0) To Haywood Lane (MP 57.0)**

This section of I-24 runs from the SR 255 (Harding Place) interchange to the Haywood Lane interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The design speed is 70 mph for the section.

## REASONABLE ALTERNATIVE 1

**Figure 3-23: Reasonable Alternative 1 for I-24 from SR 255 (Harding PI) (MP 56.0) to Haywood Ln (MP 57.0)**



In Alternative 1 for this section, the proposed CL are a continuation of Alternative 1 for the SR 255 (Harding Place) interchange and are located at-grade along the center of I-24 for the entire section. In this configuration, I-24 would be widened to the outside on both sides to accommodate the existing number of GP lanes.

To minimize the property impacts to homes along I-24 within this section, proposed retaining walls would be required along much of the section. Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: N/A
- Retaining Walls: 30 & 31

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## REASONABLE ALTERNATIVE 2

**Figure 3-24: Reasonable Alternative 2 for I-24 from SR 255 (Harding PI) (MP 56.0) to Haywood Ln (MP 57.0)**



Alternative 2 for this section is a continuation of Alternative 2 for the SR 255 (Harding Place) interchange and begins with the proposed CL elevated to the outside. The proposed CL would then shift to at-grade in the center of I-24 just east of the Harding Place interchange. This shift would be accomplished by carrying both lanes of the elevated CL over the I-24 GP lanes to meet in the center of I-24. The four CL would be separated by a median barrier. As the CL shift to the center, the existing GP lanes would be shifted to the outside of I-24 to accommodate the additional width required. This widening would result in additional property impacts along the outside but may be minimized with retaining walls.

The CL would be mostly elevated within this section, which would require new bridges and retaining walls. Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 42 & 43
- Retaining Walls: 20-23

### OTHER ALTERNATIVES EVALUATED

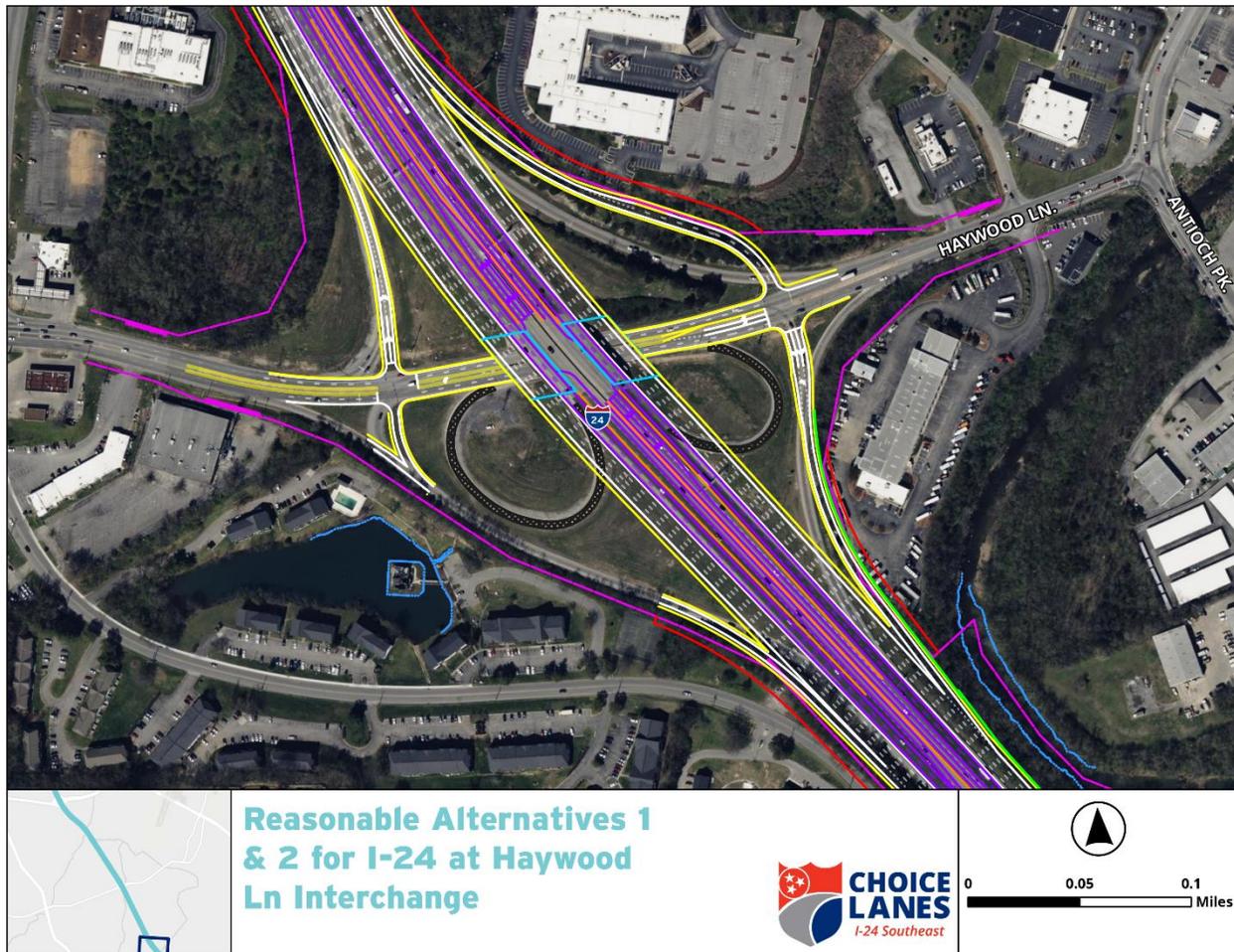
In addition to the reasonable alternatives noted, other minor adjustments to the way the CL traverse from elevated to at-grade were evaluated. These were considered design refinement and not substantial enough to be considered alternatives in the Level 2B screening.

#### 3.1.13 I-24 at Haywood Lane Interchange (MP 57.0)

The Haywood Lane interchange provides a connection to downtown Nashville with easy access from the surrounding densely populated areas. The existing partial cloverleaf interchange provides an opportunity to tighten the interchange and provide CL access. The interchange does have environmentally sensitive areas with Mill Creek and the associated floodway and a park property in the southeastern quadrant. The design speed is 70 mph for the mainline, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVES 1 & 2

Figure 3-25: Reasonable Alternatives 1 & 2 for I-24 at Haywood Ln Interchange (MP 57.0)



Alternatives 1 and 2 propose an interchange modification at the I-24/Haywood Lane Interchange to convert the existing partial cloverleaf interchange to a diamond interchange. This modification includes the addition of new direct connection CL ramps that connect to Haywood Lane through a new intersection within the median of the proposed modified diamond interchange. The existing partial cloverleaf ramps would be replaced, creating a diamond interchange for the GP lanes. The I-24 bridge over Haywood Lane would need to be replaced with two new bridge structures to accommodate the widening of I-24 and proposed interchange modifications. The CL ramps to Haywood Lane would be accomplished by ramping down from the I-24 and utilizing retaining walls at approximately mile post (MP) 57.0 to minimize the width of impacts required to overcome the grade differential. The widening would require rock cuts at the southwest quadrant adjacent to the ramps' convergence with the I-24 GP lanes and the northeast quadrant for the majority of the ramps' length from Haywood to I-24. It would also require additional

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ROW along the southwest, southeast and northeast quadrant of the ramps. A retaining wall would be required at the westbound off-ramp at approximately MP 57.4.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 1 – 47 & 48
  - Alternative 2 – 45 & 46
- Retaining Walls:
  - Alternative 1 – 32-34, 47 & 48
  - Alternative 2 – 25-27, 44 & 45

### OTHER INTERCHANGE ALTERNATIVES EVALUATED

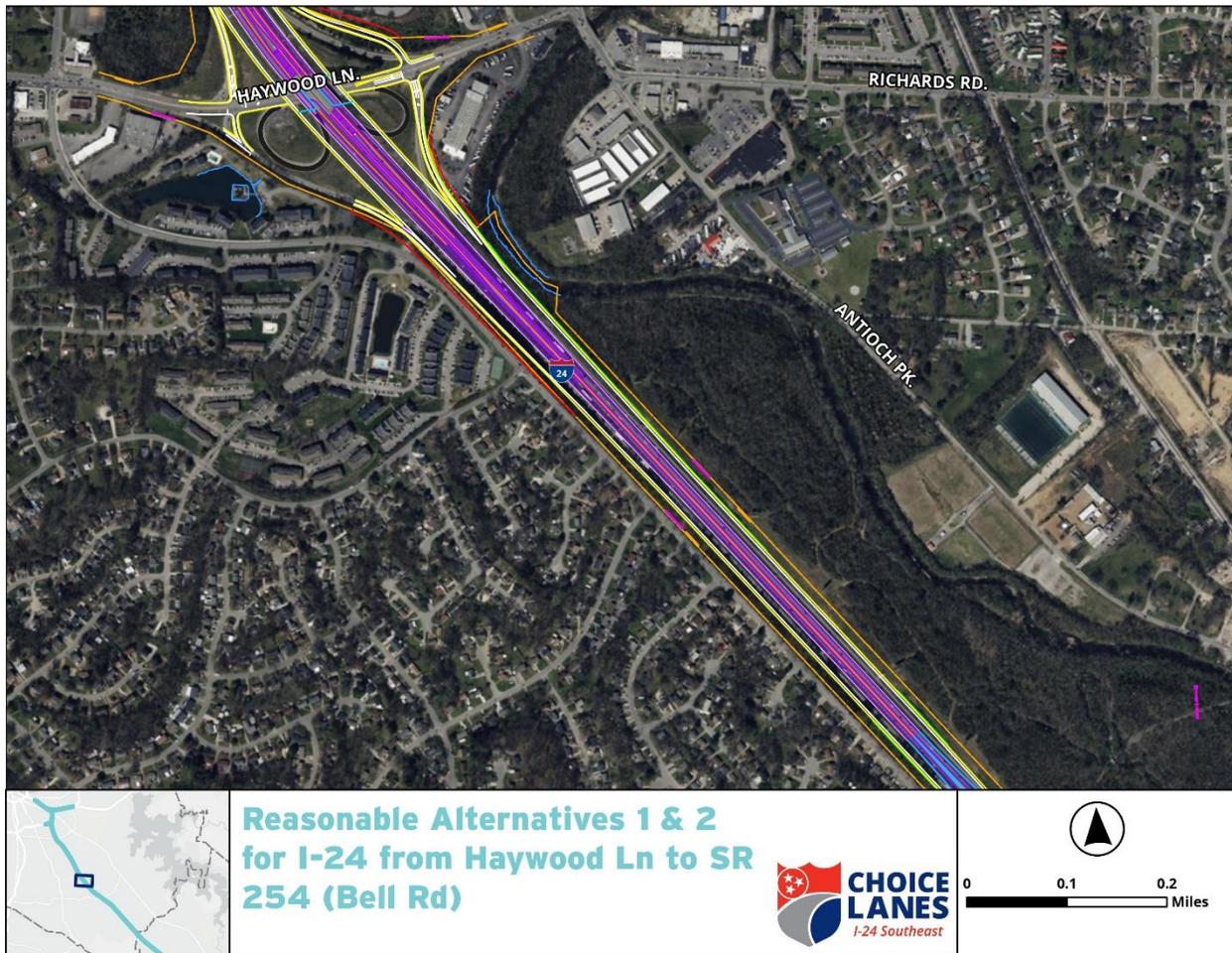
During the Level 2B screening, one other access point alternative was considered at the Haywood Lane interchange. The alternative proposed no CL access to Haywood Lane. This alternative was eliminated due to the traffic projections. The traffic data showed that Haywood Lane would be a heavily utilized interchange and CL access would be warranted.

#### **3.1.14 I-24 from Haywood Lane (MP 57.0) to SR 254 (Bell Road) (MP 59.0)**

This section of I-24 runs from the Haywood Lane interchange to the SR 254 (Bell Road) interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The design speed is 70 mph for the section.

## REASONABLE ALTERNATIVE 1

**Figure 3-26: Reasonable Alternative 1 for I-24 from Haywood Ln (MP 57.0) to SR 254 (Bell Rd) (MP 59.0)**



Alternative 1 proposes an at-grade typical section for I-24 immediately to the east of the Haywood Lane interchange, including four GP lanes and two CL to the inside in either direction separated by a 4-foot buffer and flexible delineators. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. Along this section rock cut and additional ROW would be required due to the proximity of Apache Trail and residences to the south of I-24, Apache Trail lies approximately 35 feet from the ROW. Along the north side of I-24, a retaining wall would be required due to the proximity of the Mill Creek floodplain at approximately MP 57.6.

Approximately 0.9 miles east of the Haywood Lane interchange, the CL begin to elevate and transition to the outside of the GP lanes, and they would require the use of retaining walls and structures to be elevated. Once the transition of the CL to the outside has occurred the GP lanes would remain as currently configured. The proposed typical section for the CL

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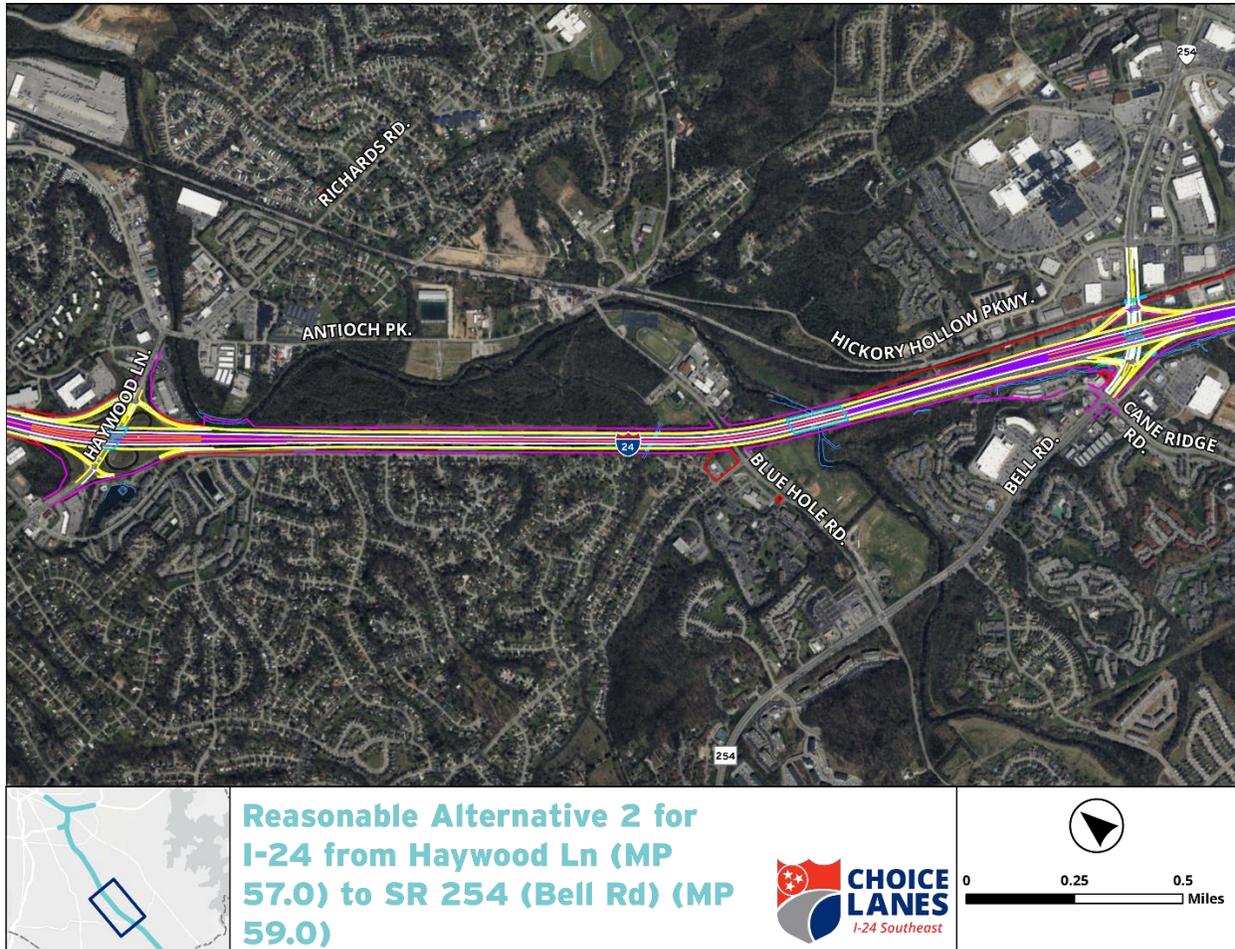
includes two lanes in either direction with a 12-foot shoulder on the inside and 6-foot shoulder on the outside. Along this section, the CL would be fully elevated creating an overpass over Blue Hole Road. The Blue Hole Road bridge would be replaced to create room for future improvements to I-24 and eliminate any possibility of future bridge replacement being hampered by the new overpass created by the CL structures. Further east, the I-24 bridge over Mill Creek would be replaced to allow for future interstate expansion and eliminate any possibility of future bridge replacement being hampered by the new overhead structures. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp. This configuration for Alternative 1 is proposed to minimize impacts to the regulated floodway.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1.

- Bridges:
  - Alternative 1 – 49, 50, 53
- Retaining Walls:
  - Alternative 1 – 34-36, 49 & 50

## REASONABLE ALTERNATIVE 2

**Figure 3-27: Reasonable Alternative 2 for I-24 from Haywood Ln (MP 57.0) to SR 254 (Bell Rd) (MP 59.0)**



Alternative 2 proposes an at-grade typical section including four GP lanes and two CL to the inside in either direction separated by a 4-foot buffer and flexible delineators. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. Along this section rock cut, retaining walls and additional ROW would be required. Along the south side, a retaining wall would be required at approximately MP 58.0 due to the proximity of Apache Trail and residences. Apache Trail lies approximately 35 feet from the ROW. Along the north side of I-24, a retaining wall would be required due to the proximity of the Mill Creek floodplain at approximately MP 57.4. Another retaining wall would be required on the north side of I-24 at approximately MP 57.9. To the east, the Blue Hole Road bridge would be replaced to accommodate the widening of I-24. Further east, the I-24 bridge over Mill Creek would be replaced to accommodate the widening of I-24 and lengthened to minimize the impact to the regulated floodway. Adjustments to the vertical grade of I-24 are not anticipated here.

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Just east of the Mill Creek Bridge near MP 58.6, the alignment begins to shift north of the existing alignment. Further east, a retaining wall would be required to the south of I-24 near MP 59 due to Collins Creek running along I-24 to the south. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp. This configuration for Alternative 2 is proposed to minimize impacts to the regulated floodway.

Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2.

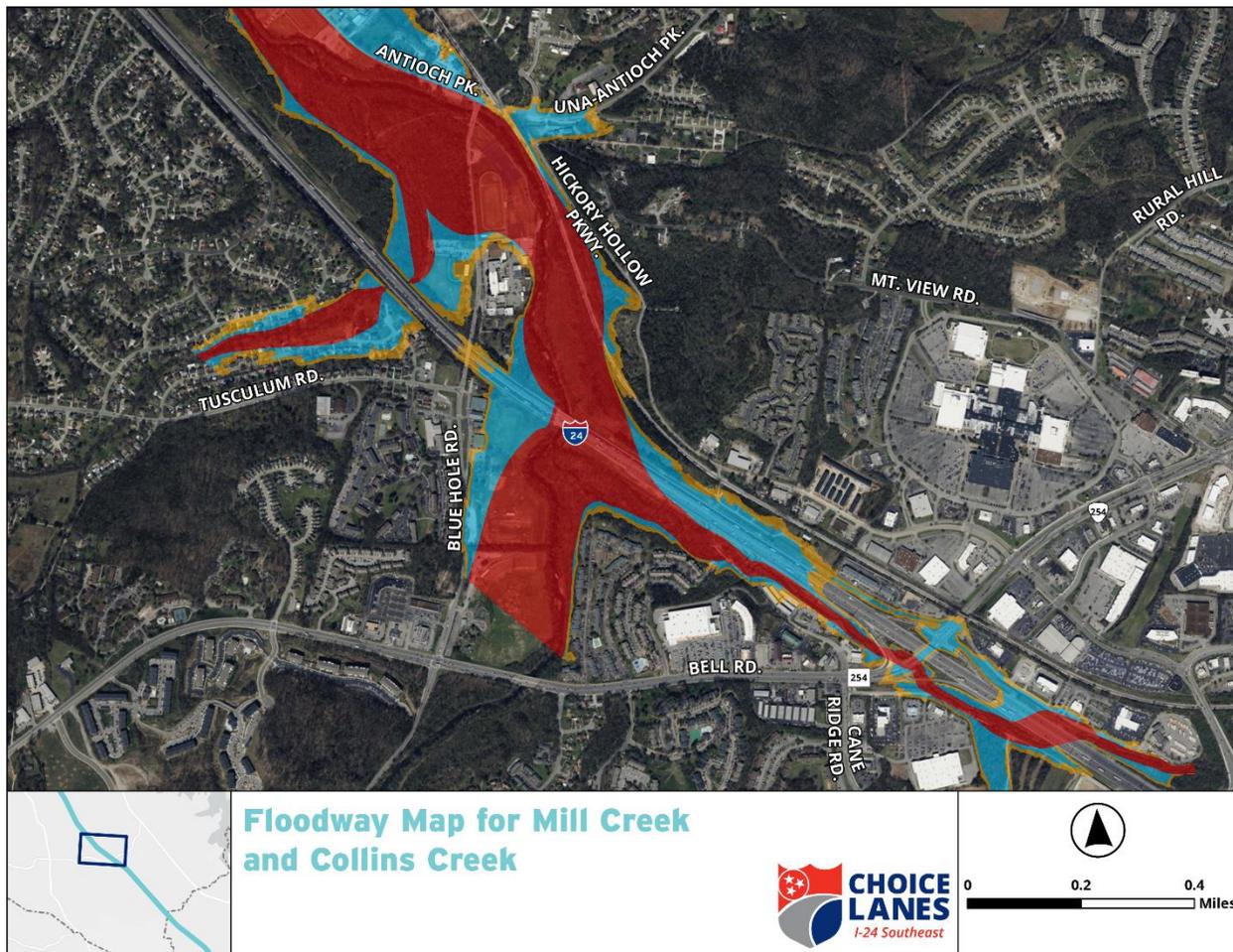
- Bridges:
  - Alternative 2 – 47-50, 53
- Retaining Walls:
  - Alternative 2 – 27-30

### **OTHER ALTERNATIVES EVALUATED**

During the Level 2B screening, one additional access point alternative was considered at this location at Blue Hole Road but was determined to not be feasible due to environmental constraints and the existing roadway's condition to handle the additional traffic.

An at-grade typical section was considered for the full length of this section but it was determined that the impacts to the regulated floodway shown in red in **Figure 3-28**, would be too significant to be considered as reasonable. It was decided to avoid the floodway by elevating the CL and leaving any modifications to the interstate in this section to a minimum.

**Figure 3-28: Floodway Map for Mill Creek and Collins Creek**



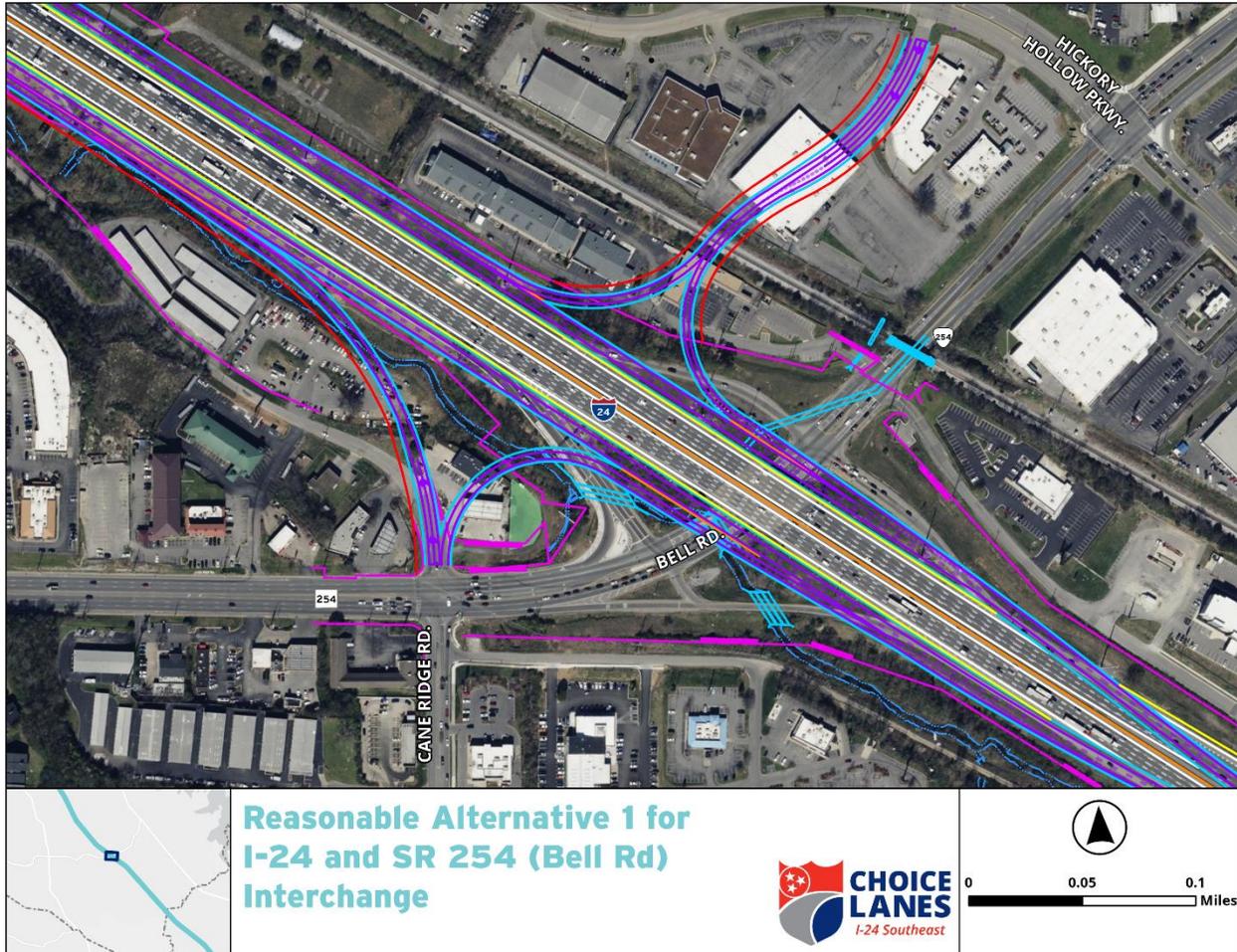
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### 3.1.15 I-24 and SR 254 (Bell Road) Interchange (MP 59.0)

This existing interchange provides a primary connection to a surface street with very high traffic volumes. The existing interchange is substandard and needs improvement. However, the interchange is constrained with dense development and a CSX RR bridge overpass adjacent that currently constricts traffic flow to the interchange from the east. The interchange is also constrained by the RR running parallel to the interstate, and other environmentally sensitive features such as a cemetery, Mill Creek and Collins Creek. The proposed improvements at this interchange would provide two 12-foot CL in each direction, elevated to the outside of I-24, with direct connection ramps to the proposed transit center on Hickory Hollow Parkway just north of the interchange. The design speed would be 70 mph, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVE 1

**Figure 3-29: Reasonable Alternative 1 for I-24 and SR 254 (Bell Rd) Interchange (MP 59.0)**



Alternative 1 proposes the I-24/SR 254 (Bell Road) Interchange remains in its current configuration as a diamond interchange. The CL would bypass the existing interchange via raised structures. Access to the CL would be provided via two locations, one for access to westbound I-24 and one for access to eastbound I-24. The westbound I-24 access begins at an existing signalized intersection on Hickory Hollow Boulevard. The new road crosses over the RR on the northern side of the interchange and merges with the westbound CL on the outside of I-24. Access to the CL in this configuration would require ROW acquisition and the removal of three structures within an existing commercial development. One structure is an empty big-box-type commercial building north of the CSX RR track. The other two structures are an existing hotel and bar on the south side of the CSX RR. Access to eastbound I-24 is provided by repurposing existing Cane Ridge Road as the access from SR 254 (Bell Road) to the CL. While Cane Ridge Road does provide access to several businesses, it is mostly secondary access, as most businesses affected have primary access

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from SR 254 (Bell Road). The access to three businesses would be impacted. A gas station would lose access; access to a storage facility and used car lot would require reconfiguration to prevent a loss of access. The existing GP interchange would not be reconfigured due to floodway impacts and stream impacts to Collins Creek running along the south side of I-24. This interchange configuration would apply to Alternative 1 to minimize the impacts to the regulated floodway.

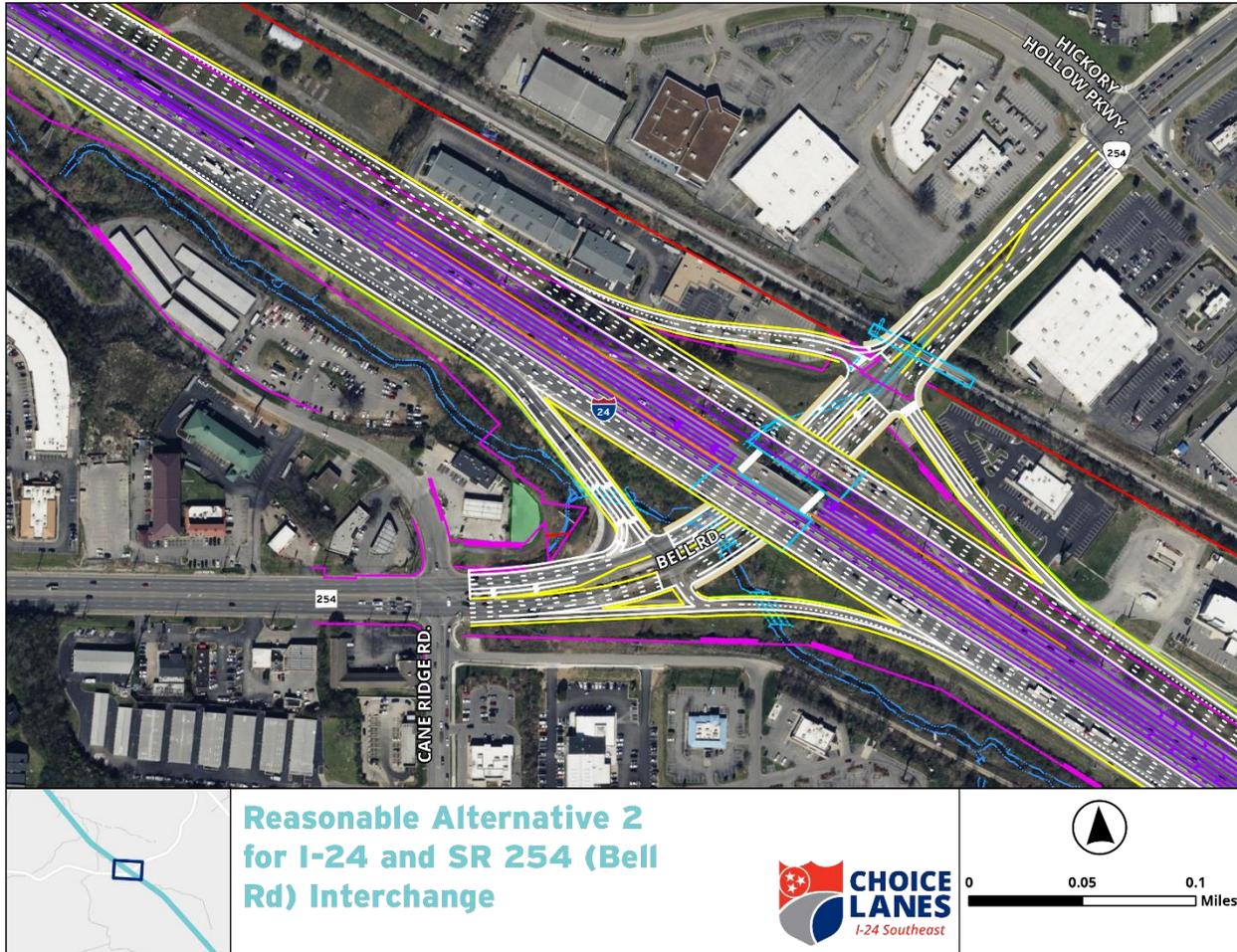
Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1:

- Bridges:
  - Alternative 1 – 50-55
- Retaining Walls:
  - Alternative 1 – N/A

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## REASONABLE ALTERNATIVE 2

**Figure 3-30: Reasonable Alternative 2 for I-24 and SR 254 (Bell Rd) Interchange (MP 59.0)**



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Alternative 2 proposes the I-24/SR 254 (Bell Road) Interchange be reconfigured to a diamond interchange with plaza-style full direct access to the CL in both directions in between the GP lanes. Due to Collins Creek running parallel to the south side of I-24, the I-24 alignment would be shifted to the north to accommodate the widening of I-24 to add two CL in each direction and minimize the impacts to the regulated floodway. The existing I-24 bridge over SR 254 (Bell Road) would be replaced with two bridges. The grade of I-24 would be raised to accommodate the proposed widening of SR 254 (Bell Road) and maintain required vertical clearance. The widening of SR 254 (Bell Road) would also require a new CSX RR bridge over SR 254 (Bell Road) north of I-24. The I-24 bridge over SR 254 (Bell Road) would be replaced with two bridges to provide full direct access to the CL in between the GP lanes. The CL ramps to SR 254 (Bell Road) would be accomplished by ramping down from I-24 and utilizing retaining walls to minimize impacts required to overcome the grade differential. The westbound on and off-ramps would provide access to SR 254 (Bell Road) in

both directions and would remove Collins Park Drive, the frontage road that provides access to the businesses on the north side of I-24. The interchange would have three signalized intersections, two at either tie into the GP ramps and one for the CL access. This interchange reconfiguration would require retaining walls along the eastbound on and off-ramps and along the westbound off-ramp and it would require additional ROW on the north side of I-24 and in the northwestern quadrant. The ROW acquisition of 36 acres to the north of the interstate would require the relocation of businesses along Collins Park Drive including Comfort Inn, TNT Billiards Bar and Grill, Jimmy Johns, Best Western Plus Executive Residency, Drive Time Used Cars, Crash Champions Collision Repair and Wise Coaches of Nashville.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 2 – 51, 52, 54 & 55
- Retaining Walls:
  - Alternative 2 – 30-32, 46, & 47

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

During the Level 2B screening, several other access point alternatives were considered at this location.

Another alternative considered was the plaza-style direct access at the center of SR 254 (Bell Road) with CL in the center of I-24 without an alignment shift, as well as a side access plaza configuration. Various configurations were explored that provided access to raised CL on the outside from different locations along SR 254 (Bell Road) and/or Hickory Hollow Parkway. These alternatives were not pursued due to the significant impacts to the GP lanes, RR constraints and inefficient storage lengths.

#### **3.1.16 I-24 from SR 254 (Bell Road) (MP 59.0) to Hickory Hollow Parkway (MP 60.0)**

This section of I-24 runs from the SR 254 (Bell Road) interchange to the Hickory Hollow Parkway interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The CL are elevated to the outside of I-24 through the SR 254 (Bell Road) interchange and transition to at-grade in the median just south of the interchange. The design speed is 70 mph for the section.

## REASONABLE ALTERNATIVE 1

**Figure 3-31: Reasonable Alternative 1 for I-24 from SR 254 (Bell Rd) (MP 59.0) to Hickory Hollow Pkwy (MP 60.0)**



Alternatives 1 for the section east of the SR 254 (Bell Road) interchange propose elevated, outside CL that transition to the inside of the GP lanes. This transition ends near MP 59.8 about 0.4 miles east of the SR 254 (Bell Road) interchange. The transition requires retaining walls and structures. The proposed typical section for the at-grade section from this point to the east includes four GP lanes and two CL to the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier.

A retaining wall would be required east of the transition of the CL back to the middle of the GP lanes to accommodate the necessary widening. The retaining wall is required because Collins Creek runs along I-24 on the north here and the floodplain, as shown in **Figure 3-28**,

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is near the proposed alignment. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1:

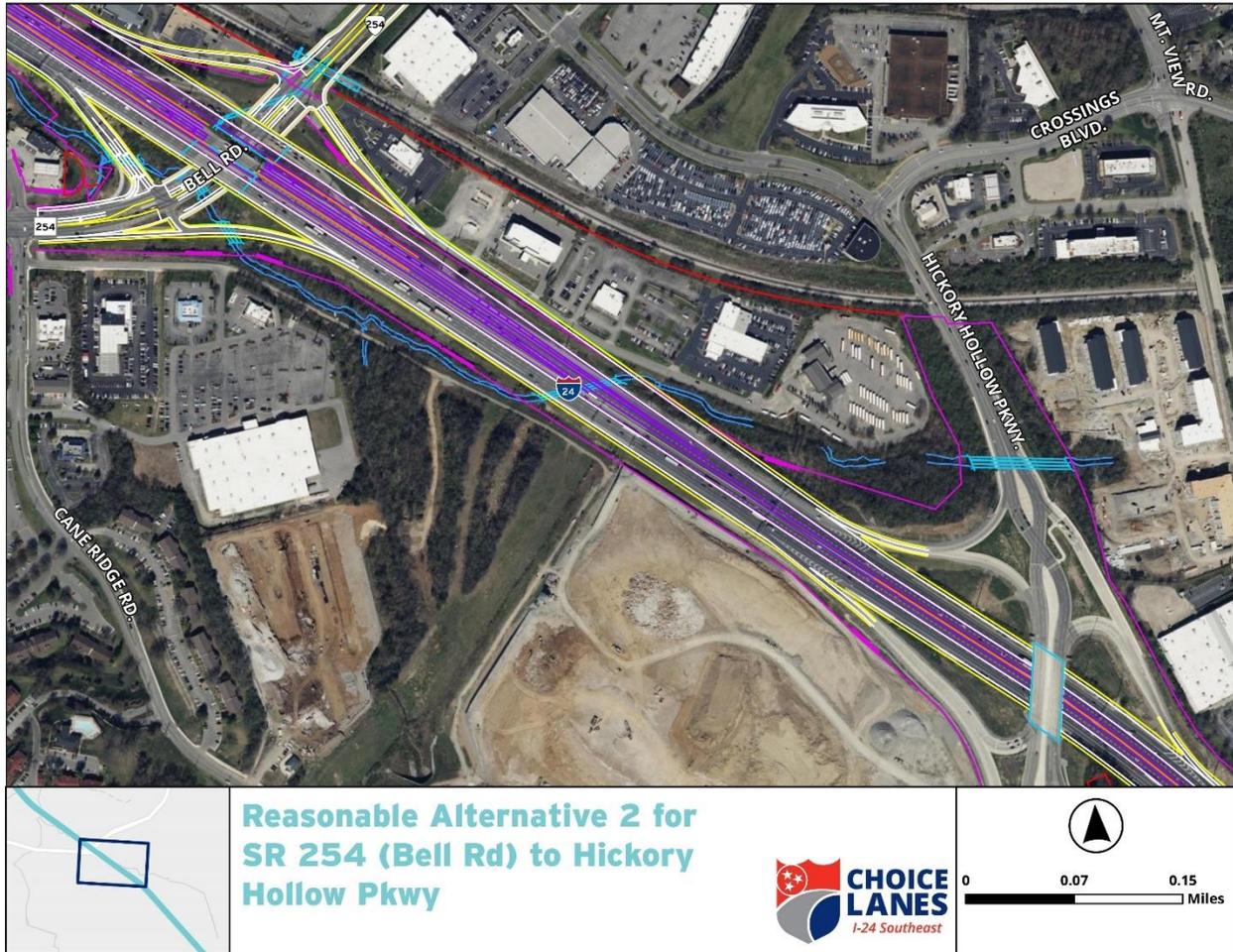
- Bridges:
  - Alternative 1 – 50 & 53
- Retaining Walls:
  - Alternative 1 – 37, 52 & 53

## **REASONABLE ALTERNATIVE 2**

Alternative 2 proposes an at-grade typical section including four GP lanes and two CL to the inside in either direction separated by a 4-foot buffer and flexible delineators. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. Along this section, alignment shifts back to the existing alignment at approximately MP 59.7. Additional ROW would be required along the north side of I-24 to accommodate the alignment shift and widening of I-24. A retaining wall would be required to the north of I-24 near MP 59.5. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

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**Figure 3-32: Reasonable Alternative 2 for I-24 from SR 254 (Bell Rd) (MP 59.0) to Hickory Hollow Pkwy (MP 60.0)**



Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 2 – 50 & 53
- Retaining Walls:
  - Alternative 2 – 32

**OTHER INTERCHANGE ALTERNATIVES EVALUATED**

This section of the I-24 mainline is less than a half mile in length and the design alternatives of this section of mainline were influenced by the proposed interchange configurations. The existing interchange at Hickory Hollow Parkway is a new interchange that was recently improved to the existing diverging diamond interchange configuration, so the intent was to

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preserve this new interchange. During the Level 2B screening, several additional access point interchange alternatives were considered at the SR 254 (Bell Road) interchange to the northwest which were the drivers of the design on this short section of mainline. This included providing access along Cane Ridge Road and SR 254 (Bell Road) to the west of I-24 for the eastbound CL and several access points to Hickory Hollow Parkway for the westbound CL.

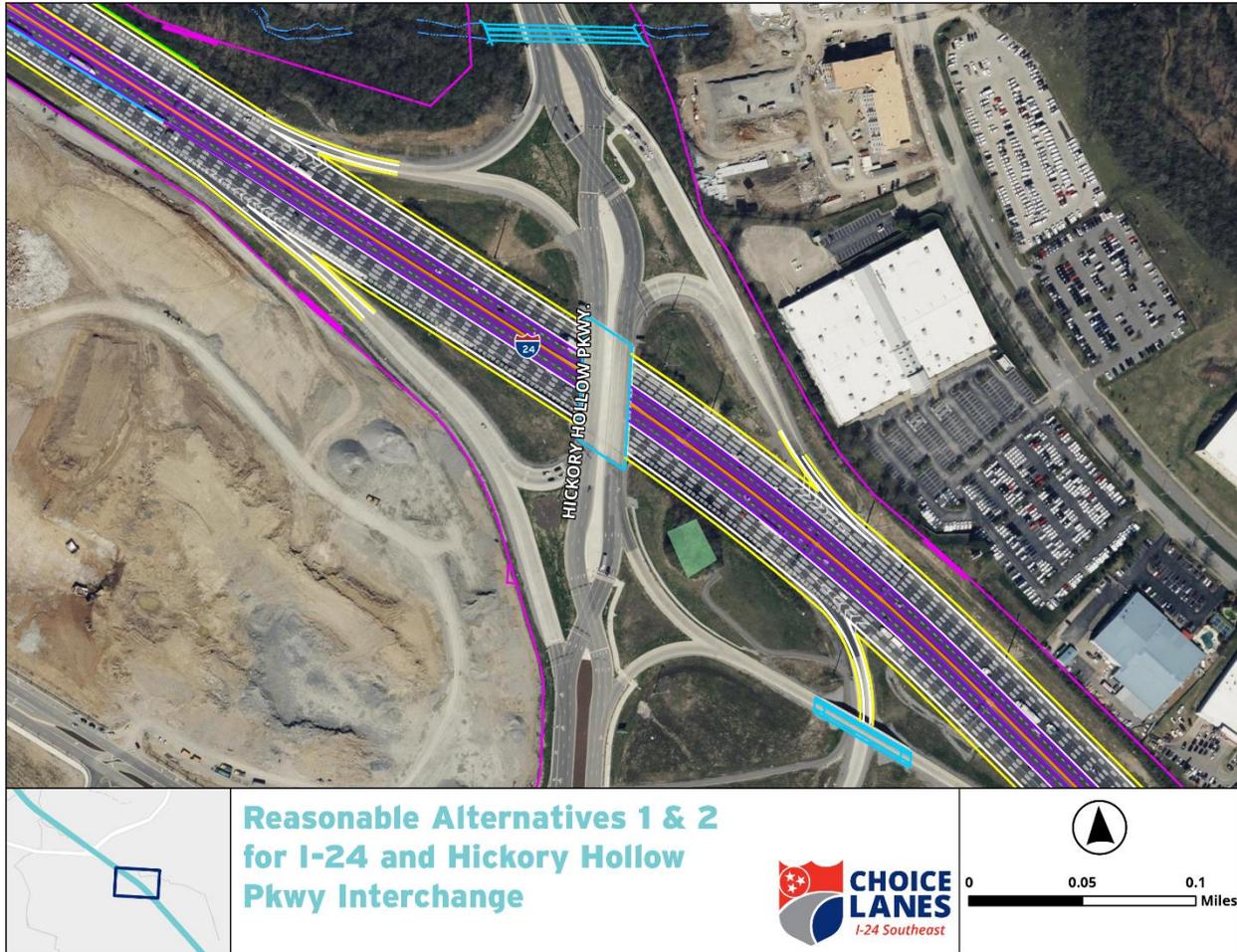
### **3.1.17 I-24 and Hickory Hollow Parkway Interchange (MP 60.0)**

This existing interchange provides a primary connection to a surface street with very high traffic volumes. The existing interchange is a new interchange that was recently improved to the existing diverging diamond interchange configuration, so the intent is to preserve this new interchange. The proposed CL are at-grade in the median through this interchange and proposed modifications include replacement of the Hickory Hollow Parkway bridge over I-24 to accommodate the CL in the median under the new bridge.

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## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-33: Reasonable Alternatives 1 & 2 for I-24 and Hickory Hollow Pkwy Interchange (MP 60.0)**



Alternatives 1 and 2 for the I-24/Hickory Hollow Parkway Interchange proposes the existing DDI remain as existing with no direct access to CL provided. While not shown in available aerial imagery, all four quadrants of the interchange are recently developed in close proximity to the ramps. In the southwest quadrant, there is an existing cemetery that may be avoided by eliminating a reconstruction effort for this interchange. The Hickory Hollow Parkway bridge over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction, the lengthening of the bridge would not affect the DDI configuration or operation, once construction is complete. To minimize impacts as described above, this proposed configuration would remain consistent in Alternatives 1 and 2.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for

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Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 1 – 56
  - Alternative 2 – 53
- Retaining Walls: N/A

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

The possible alternatives were limited at this interchange due to the recent reconfiguration of this interchange. It was determined that a plaza-style interchange would not function properly within the DDI, which removes the possibility of direct access. Complete reconstruction of the interchange was deemed impractical due to the cost-benefit ratio.

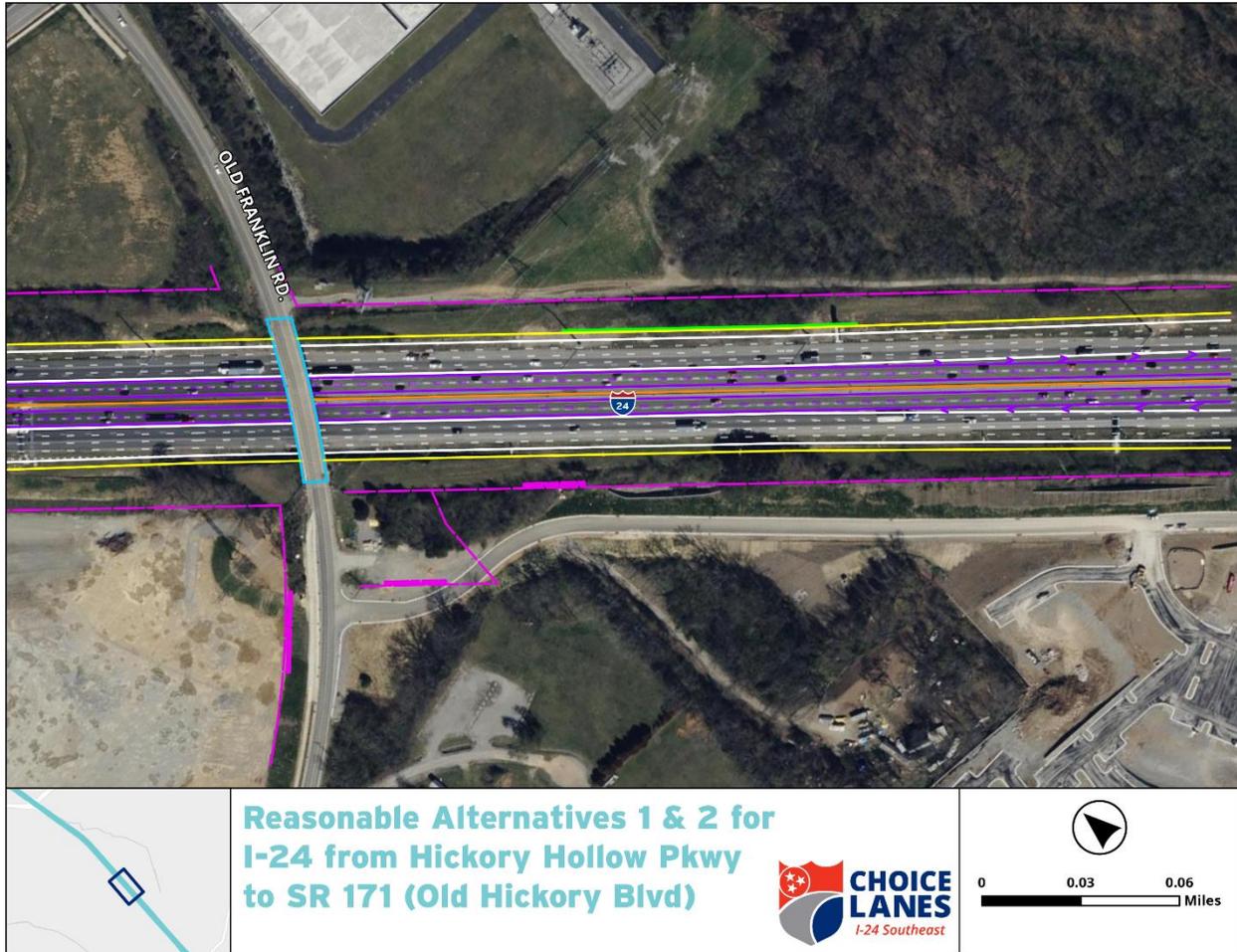
#### **3.1.18 I-24 from Hickory Hollow Parkway (MP 60.0) to SR 171 (Old Hickory Boulevard) (MP 62.0)**

This section of I-24 runs from the Hickory Hollow Parkway interchange to the SR 171 (Old Hickory Boulevard) interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The CL are at-grade in the median and includes an overpass bridge replacement at Old Franklin Road. The design speed is 70 mph for the section.

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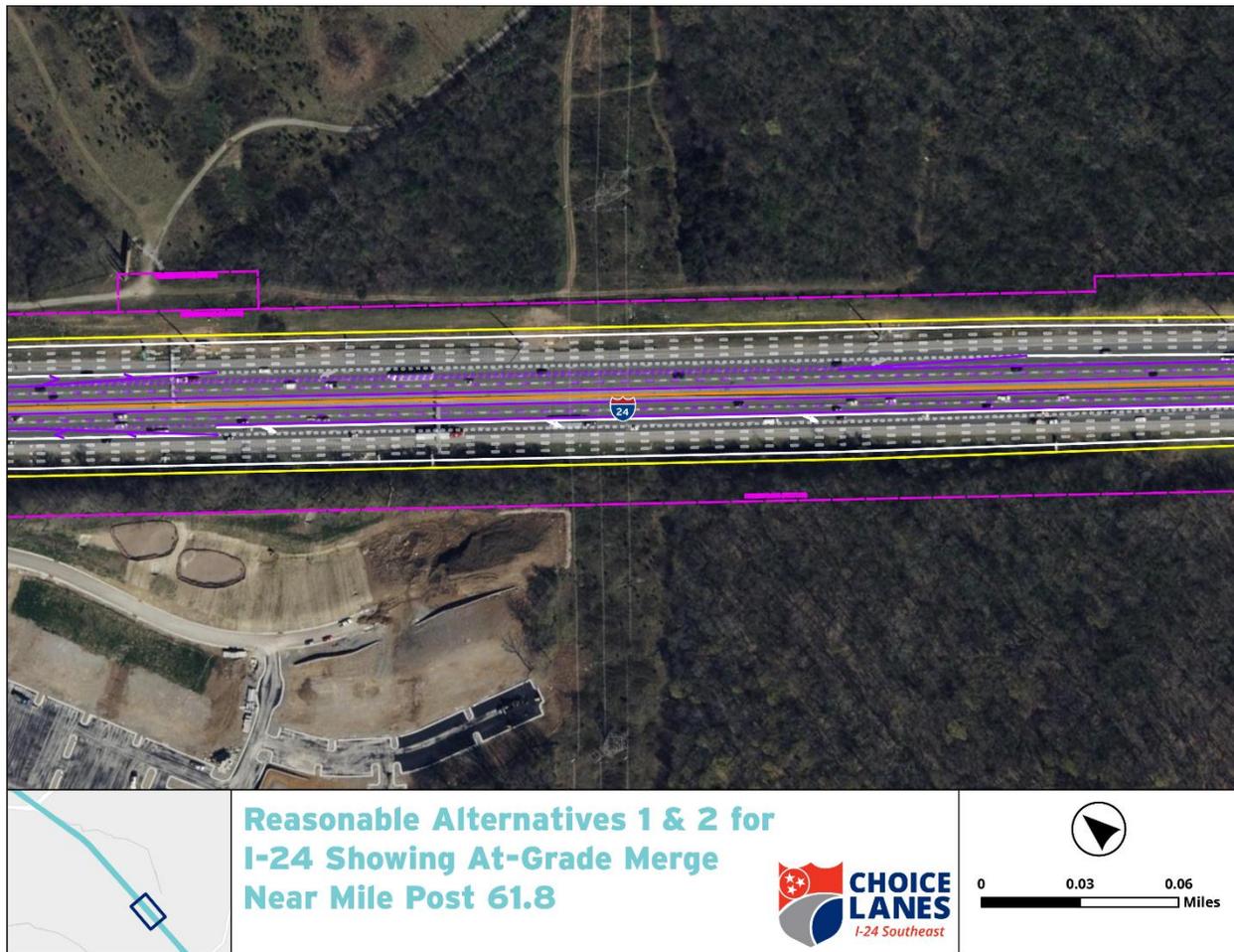
### REASONABLE ALTERNATIVES 1 & 2

Figure 3-34: Reasonable Alternatives 1 & 2 for I-24 from Hickory Hollow Pkwy (MP 60.0) to SR 171 (Old Hickory Blvd) (MP 62.0)



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**Figure 3-35: Reasonable Alternatives 1 & 2 for I-24 Showing At-Grade Merge Near MP 61.8**



Alternatives 1 and 2 propose a typical section for the section of I-24 from Hickory Hollow Parkway to SR 171 (Old Hickory Boulevard) includes four GP lanes and two CL to the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. The design speed for this section is 70 mph.

Along this section, Old Franklin Road crosses over I-24. The Old Franklin Road bridge over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction. About 400 feet east of the Old Franklin Road bridge a retaining wall would be required to the north of I-24 to prevent the relocation of a utility access road.

About a mile east of the Hickory Hollow Parkway interchange near MP 61.8, there would be an at-grade merge into and out of the CL in both directions. Rock cuts, retaining walls and additional ROW would be required to accommodate the widening of I-24 to add two CL and directional merges in either direction.

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Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 1 – 57
  - Alternative 2 – 54
- Retaining Walls:
  - Alternative 1 – 38
  - Alternative 2 – 33

### OTHER ALTERNATIVES EVALUATED

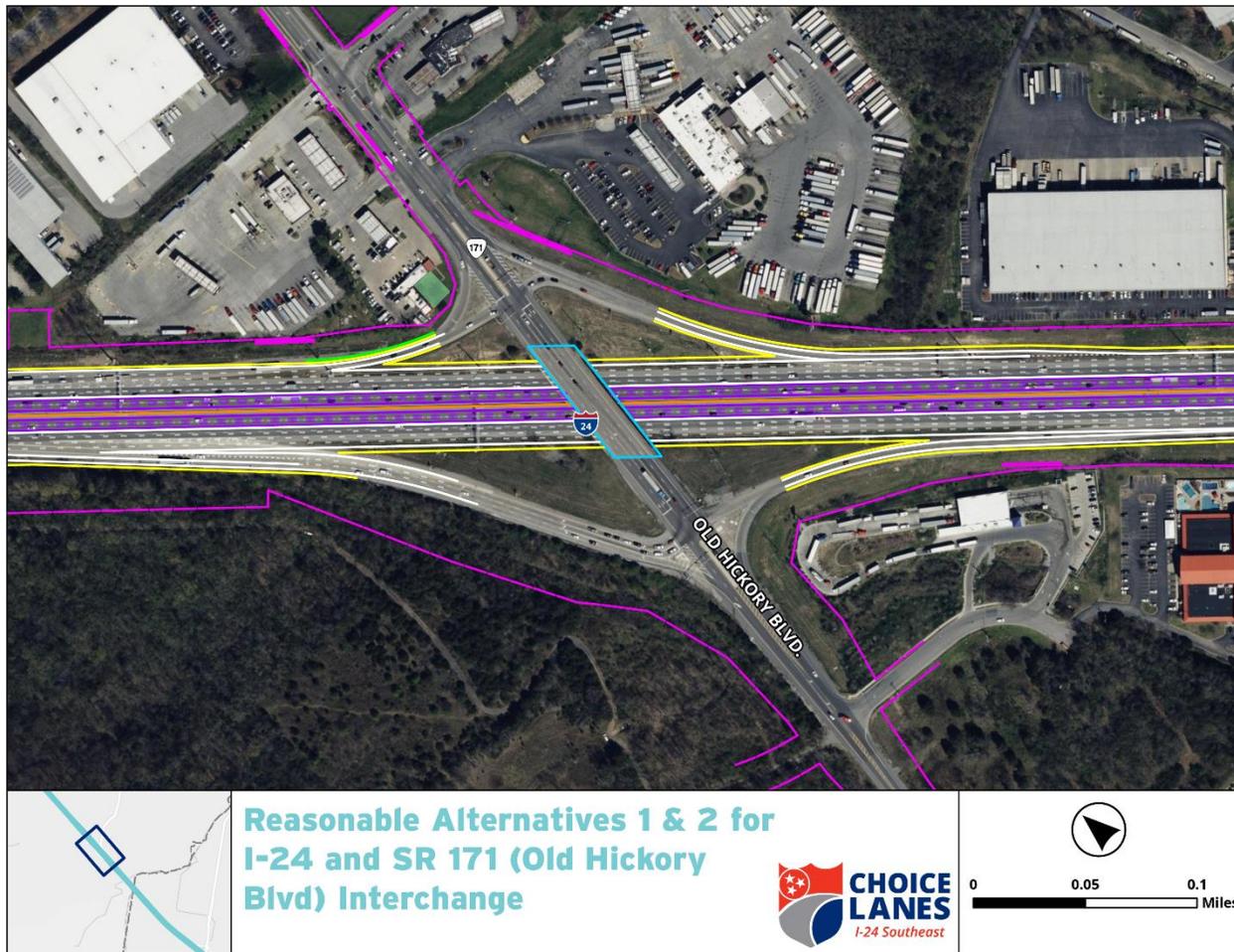
Other alternatives explored in this area during the Level 2B screening did not allow for the at-grade merge access to be implemented. These alternatives were eliminated because the at-grade merge was deemed necessary without direct access to SR 171 (Old Hickory Boulevard).

#### **3.1.19 I-24 and SR 171 (Old Hickory Boulevard) Interchange (MP 62.0)**

This existing interchange provides a connection to downtown Nashville with easy access to commercial and urban areas with heavy traffic volumes. The existing interchange is a diamond Interchange configuration with a minimal footprint with commercial developments in three of the four quadrants. There are also environmental constraints with streams parallel to the interstate on the northwestern and southwestern ramps and a cemetery adjacent to one ramp. The proposed CL are at-grade in the median through this interchange and proposed modifications include replacement of the SR 171 (Old Hickory Boulevard) bridge over I-24 to accommodate the CL in the median. The design speed is 70 mph for the mainline, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-36: Reasonable Alternatives 1 & 2 for I-24 and SR 171 (Old Hickory Blvd) Interchange (MP 62.0)**



The I-24/SR 171 (Old Hickory Boulevard) Interchange is a diamond interchange with no direct access to CL. There would be no access or interchange redesign due to the existing interchange holding a small footprint that would need to be expanded to provide room for a third intersection within the interchange. The northeast quadrant has a cemetery adjacent to ROW and there are businesses with access points to SR 171 (Old Hickory Boulevard) near the interchange. Due to these constraints, it was determined that direct access could not be provided without significant impacts to the community. The SR 171 (Old Hickory Boulevard) bridge over I-24 would be replaced and a retaining wall would be required at the westbound on-ramp to accommodate the widening of I-24 to add two CL in either direction. The retaining wall is required to minimize the need for ROW acquisition in the area. This interchange configuration is the same in both Alternatives 1 and 2.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for

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Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 1 – 58
  - Alternative 2 – 55
- Retaining Walls:
  - Alternative 1 – 39
  - Alternative 2 – 34

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

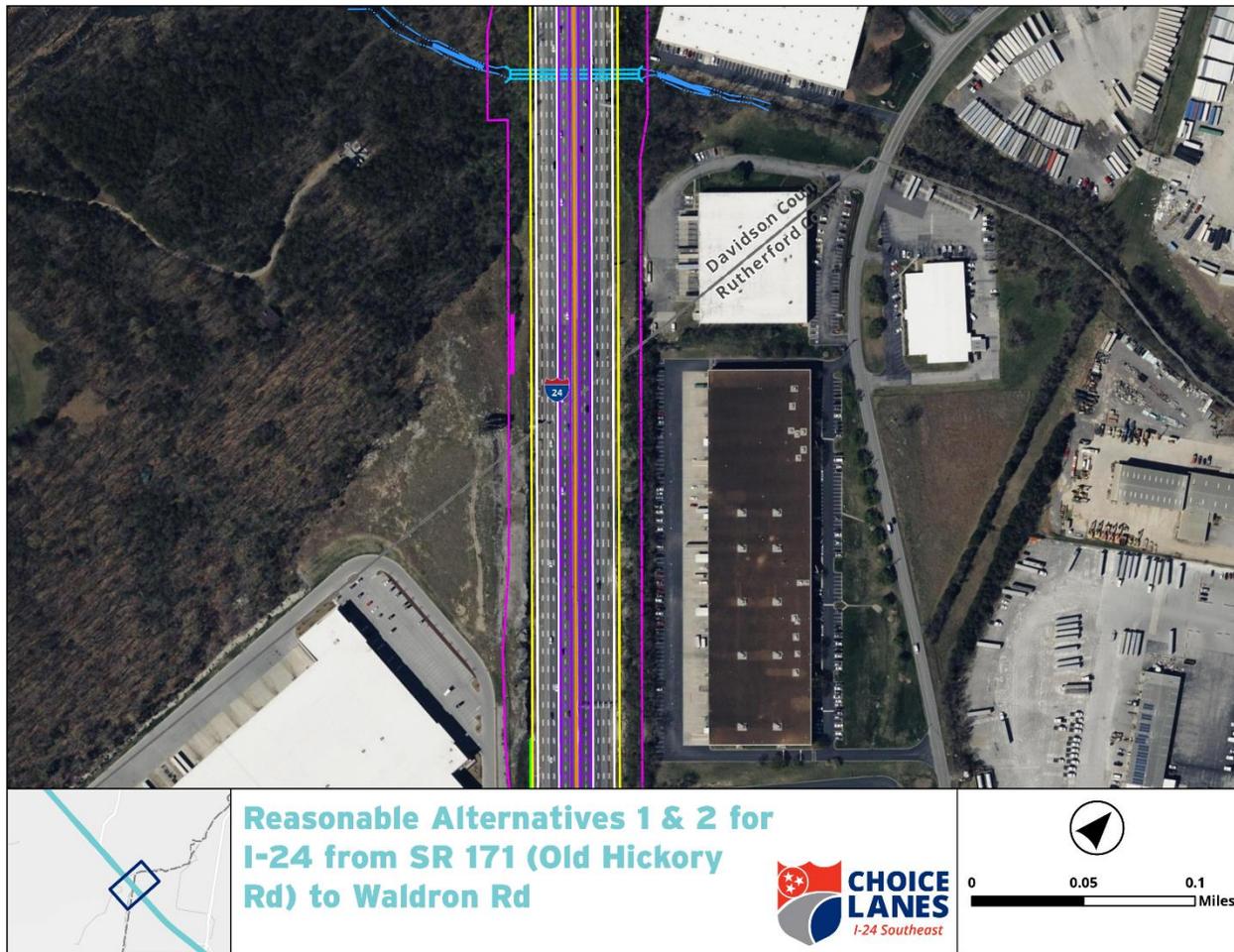
During the Level 2B screening, other alternatives were explored at this interchange to provide direct access, like a plaza-style interchange. These were deemed not feasible due to the geometric and environmental constraints mentioned above that would prove to be detrimental to the community.

#### **3.1.20 I-24 from SR 171 (Old Hickory Boulevard) (MP 62.0) to Waldron Road (MP 64.0)**

This section of I-24 runs from the SR 171 (Old Hickory Boulevard) interchange to the Waldron Road interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The proposed CL are at-grade in the median. The design speed is 70 mph for the section.

## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-37: Reasonable Alternatives 1 & 2 for I-24 from SR 171 (Old Hickory Rd) (MP 62.0) to Waldron Rd (MP 64.0)**



Alternatives 1 and 2 propose a typical section for the section of I-24 from SR 171 (Old Hickory Boulevard) to Waldron Road that includes four GP lanes and two CL on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. Widening is required to accommodate the addition of the two CL. The widening requires rock cuts and a retaining wall on the south side of I-24 to eliminate impacts to New Paul Road. The design speed for this section is 70 mph.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

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- Bridges: N/A
- Retaining Walls:
  - Alternative 1 – 40
  - Alternative 2 – 35

## OTHER ALTERNATIVES EVALUATED

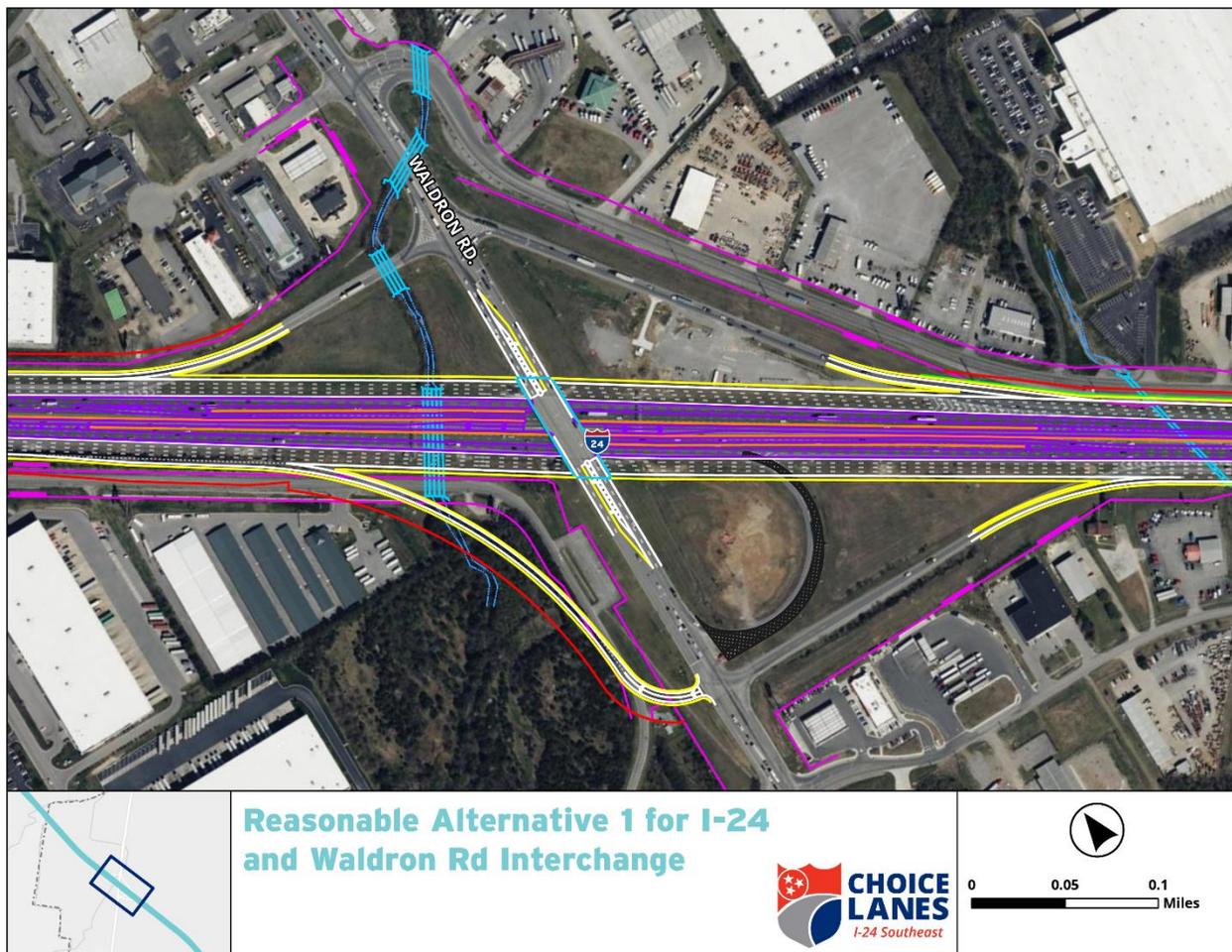
There were no additional alternatives considered for the typical section through this section.

### 3.1.21 I-24 and Waldron Road Interchange (MP 64.0)

This existing interchange provides a connection to downtown Nashville with easy access to commercial and urban areas with heavy traffic volumes. The existing interchange is a partial diamond interchange configuration on the northern side of the interchange with a loop ramp in the southeastern quadrant and no ramp access in the southwestern quadrant. There are also environmental constraints with Hurricane Creek and associated floodways within the interchange footprint. The proposed CL are at-grade in the median through this interchange and proposed modifications include replacement of the Waldron Road bridge over I-24 to accommodate CL access through an interchange modification. The design speed is 70 mph for the mainline, with ramp speeds being dependent on the purpose of the ramp.

## REASONABLE ALTERNATIVE 1

Figure 3-38: Reasonable Alternative 1 for I-24 and Waldron Rd Interchange (MP 64.0)



Alternative 1 proposes the reconfiguration of the I-24/Waldron Road Interchange to a diamond interchange with full direct access to the CL with a plaza-style interchange. The entrance and exit ramps connecting Waldron Road to the CL would be accomplished by ramping up from the interstate grade to the grade of Waldron Road. This connection requires the addition of a third signalized intersection in the interchange. The existing loop ramp would be removed, and an eastbound off-ramp would be added to the northwest quadrant. The new off-ramp impacts Hurricane Creek, an existing park and ride and New Paul Road. The new ramp would also require additional ROW. Access to an existing storage facility which would be impacted on the east side. New Paul Road would be reconfigured to maintain access to the storage facility from the west. The park and ride would be relocated closer to Center Point Drive. The Waldron Road bridge over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction. The CL would be elevated to provide access at the Waldron Road bridge and would require retaining walls.

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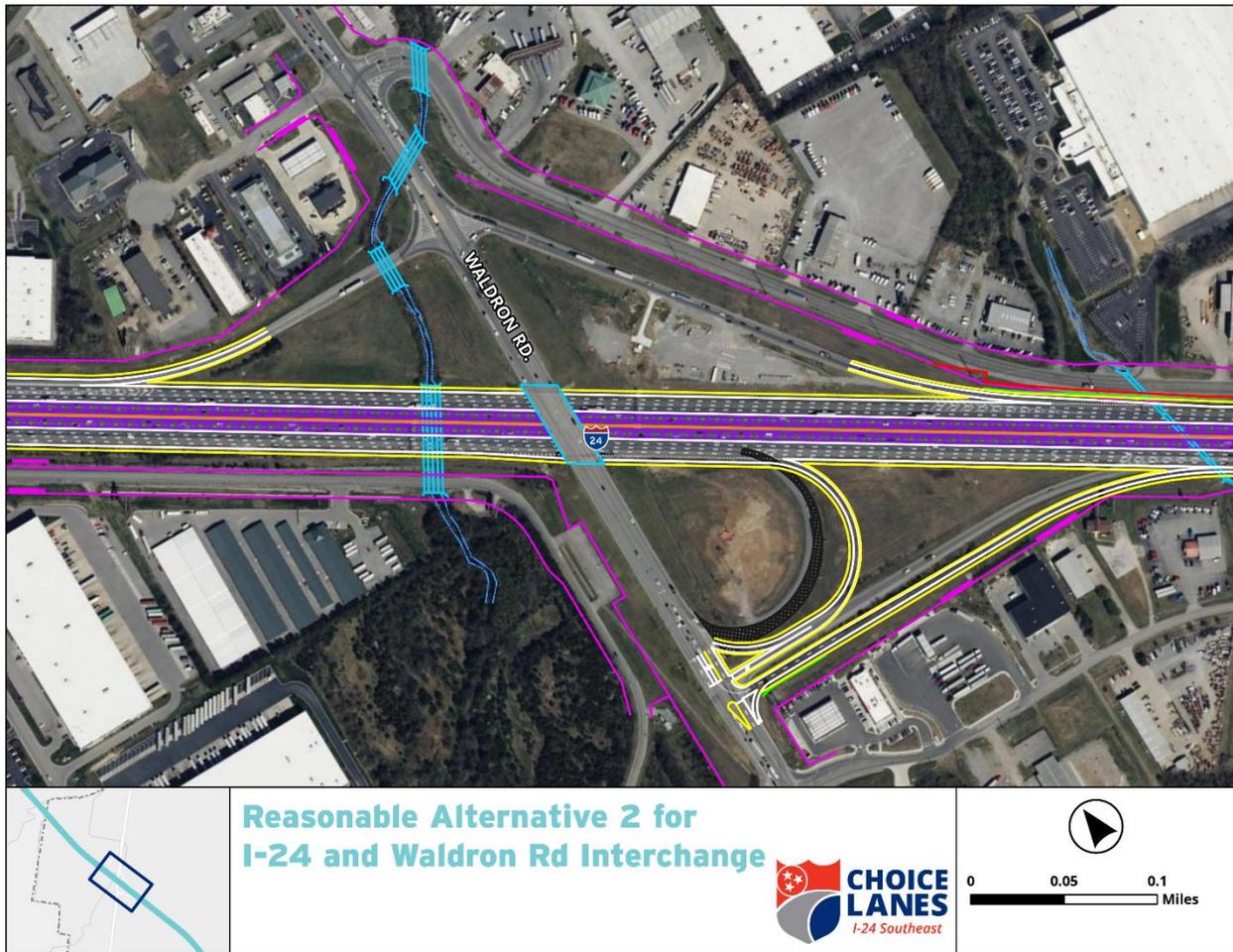
The widening of I-24 would also require a retaining wall along part of the westbound off-ramp due to the close proximity of businesses.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 59A & 59B
- Retaining Walls: 41, 53 & 54

## REASONABLE ALTERNATIVE 2

**Figure 3-39: Reasonable Alternative 2 for I-24 and Waldron Rd Interchange (MP 64.0)**



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Alternative 2 proposes the current interchange configuration remain with the ramps being modified to accommodate the widening required for the CL. In this scenario, there would be no direct access to the CL. While this configuration does not allow for CL access it does minimize the impacts to the northwest quadrant as described in Alternative 1 description. The eastbound on-ramp would be shifted further away from the mainline and require a

retaining wall and rock-cut due to the realignment of the loop ramp. A retaining wall would also be required along part of the westbound off-ramp.

Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 56
- Retaining Walls: 36 & 37

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

The two alternatives described above were the only alternatives evaluated for this location.

#### **3.1.22 I-24 from Waldron Road (MP 64.0) to SR 266 (Sam Ridley Parkway) (MP 66.0)**

This section of I-24 runs from the Waldron Road interchange to the SR 266 (Sam Ridley Parkway) interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The proposed CL are at-grade in the median. The design speed is 70 mph for the section.

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## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-40: Reasonable Alternatives 1 & 2 for I-24 from Waldron Rd (MP 64.0) to SR 266 (Sam Ridley Pkwy) (MP 66.0)**



Alternatives 1 and 2 propose a typical section for the section of I-24 from Waldron Road to SR 266 (Sam Ridley Parkway) that includes four GP lanes and two CL on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. The widening would require rock cuts, retaining walls and additional ROW along this section. Retaining walls would be required in several sections to minimize impacts to Industrial Drive on the north side of I-24 through this section. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges: N/A
- Retaining Walls:
  - Alternative 1 – 41-43
  - Alternative 2 – 37-39

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

There were no additional alternatives considered for the typical section through this section.

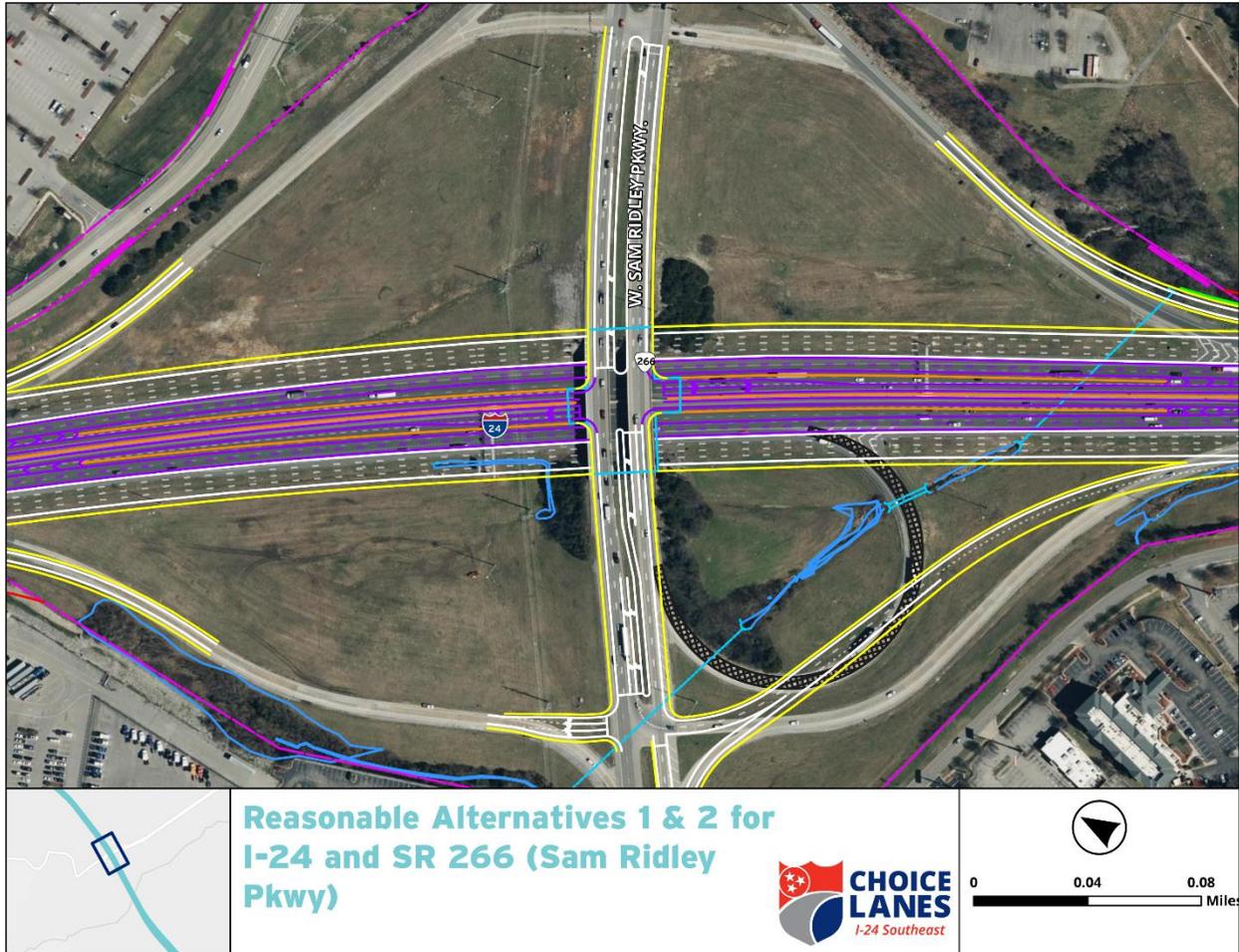
#### **3.1.23 I-24 and SR 266 (Sam Ridley Parkway) Interchange (MP 66.0)**

This existing interchange provides a connection to downtown Nashville with easy access to the Town of Smyrna’s commercial and urban areas with heavy traffic volumes. The existing interchange is a diamond interchange configuration with a loop ramp in the southwestern quadrant. There are also environmental constraints with a stream flowing through the interchange footprint and the interchange serves a major hospital in the southeastern quadrant. The proposed CL are at-grade in the median through this interchange and proposed modifications include replacement of the SR 266 (Sam Ridley Parkway) bridge over I-24 to accommodate CL access through an interchange modification. The design speed is 70 mph for the mainline, with ramp speeds being dependent on the purpose of the ramp.

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## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-41: Reasonable Alternatives 1 & 2 for I-24 and SR 266 (Sam Ridley Pkwy) (MP 66.0)**



Alternatives 1 and 2 propose the I-24/SR 266 (Sam Ridley Parkway) Interchange be reconfigured to a diamond interchange with full direct access to the CL in both directions. The eastbound off-ramp would provide access to SR 266 (Sam Ridley Parkway) in both directions, and it would replace the loop ramp which provided access to the SR 266 (Sam Ridley Parkway) eastbound lanes. The SR 266 (Sam Ridley Parkway) bridges over I-24 would be replaced with one bridge to accommodate the widening of I-24 to add two CL in either direction. The CL ramps would be elevated to provide access at the bridge and would require retaining walls. The interchange would have three signalized intersections, two at either tie into the GP ramps and one for the CL access.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

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- Bridges:
  - Alternative 1 – 60 & 61
  - Alternative 2 – 57 & 58
- Retaining Walls:
  - Alternative 1 – 44, 55 & 56
  - Alternative 2 – 40, 48 & 49

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

In the Level 2B screening, the other alternative evaluated proposed replacing the bridge to accommodate widening I-24 with no interchange modifications and no direct access to CL. Due to the traffic volumes expected in and out of CL from this location, it was determined that direct access should be provided.

#### **3.1.24 I-24 from SR 266 (Sam Ridley Parkway) (MP 66.0) to SR 102 (Almaville Road) (MP 70.0)**

This section of I-24 runs from the SR 266 (Sam Ridley Parkway) interchange to the SR 102 (Almaville Road) interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The proposed CL are at-grade in the median and includes replacement of the I-24 mainline bridge over Rock Springs Road and replacement of Rocky Fork Road overpass over I-24. Approximately 1200 feet south of the Rock Springs Road overpass, the mainline interstate widens out to include a grassed median. The design speed is 70 mph for the mainline, with ramp speeds being dependent on the purpose of the ramp.

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## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-42: Reasonable Alternatives 1 & 2 for I-24 from SR 266 (Sam Ridley Pkwy) (MP 66.0) to SR 102 (Almaville Rd) (MP 70.0)**



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Alternatives 1 and 2 propose a typical section for the section of I-24 from SR 266 (Sam Ridley Parkway) to SR 102 (Almaville Road) including four GP lanes and two CL on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier.

Immediately east of the I-24/SR 266 (Sam Ridley Parkway) Interchange the widening would require additional ROW. A retaining wall would be required to the south of I-24 due to potential impacts on Highwood Boulevard and the close proximity of businesses and residences.

Along this section, I-24 crosses over Rock Springs Road. The I-24 bridge over Rock Springs Road would be replaced to accommodate the widening of I-24 to add two CL in each

direction. Immediately east of the bridge, a retaining wall is required to the north due to the close proximity of a utility access road running parallel to I-24.

Approximately 0.9 miles east of the I-24/SR 266 (Sam Ridley Parkway) Interchange the existing alignment changes from barrier separated to depressed grass median. In the area of the depressed median, no additional ROW is required as there is sufficient space for widening to the inside. Along this section, Rocky Fork Road crosses over I-24. The Rocky Fork Road bridge over I-24 would be replaced due to impacts on the existing bridge bents. The design speed for this section is 70 mph.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 1 – 62 & 63
  - Alternative 2 – 59 & 60
- Retaining Walls:
  - Alternative 1 – 45 & 46
  - Alternative 2 – 41 & 42

### **OTHER ALTERNATIVES EVALUATED**

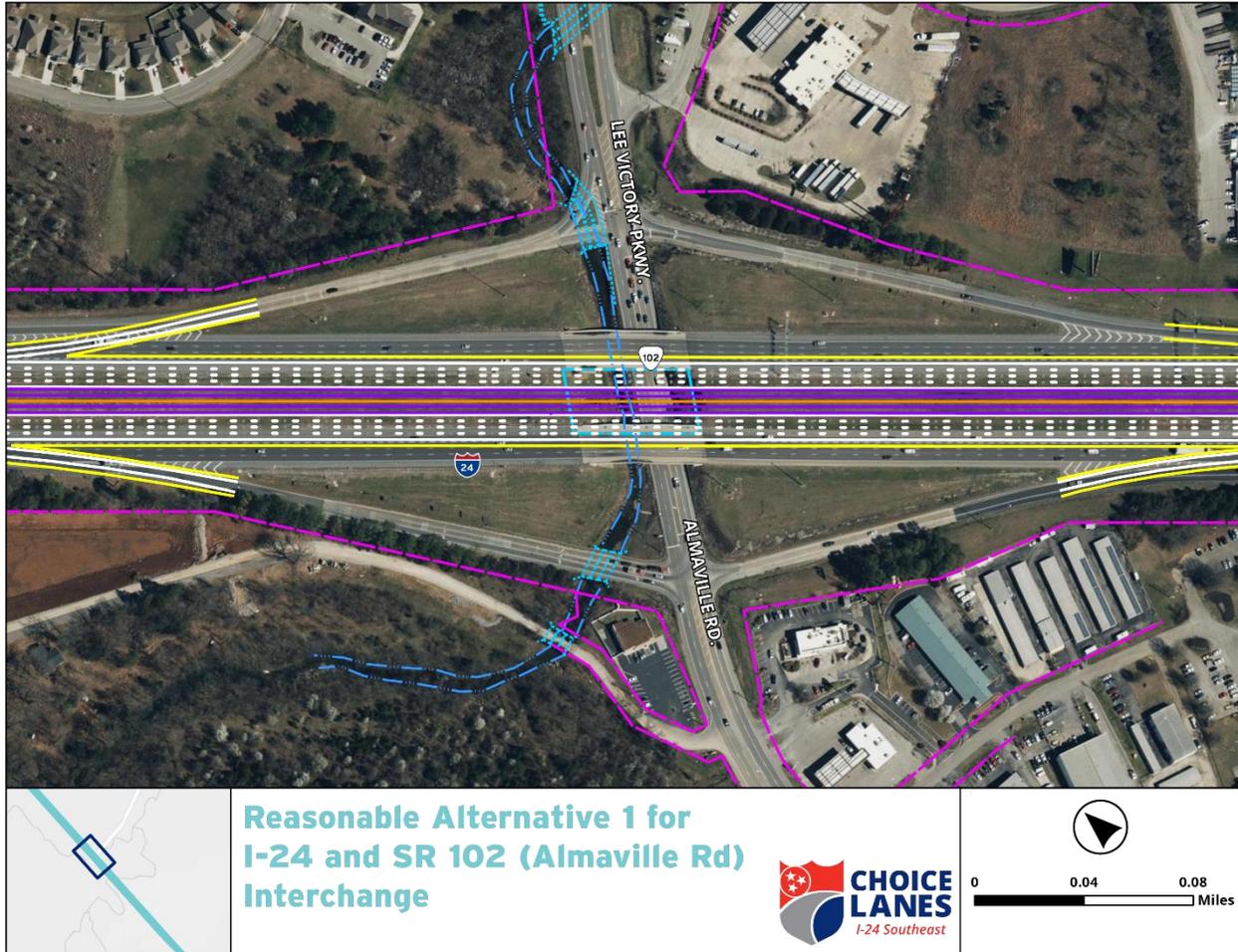
There were no additional alternatives considered for the typical section through this section.

#### **3.1.25 I-24 and SR 102 (Almaville Road) Interchange (MP 70.0)**

This existing interchange provides a connection to downtown Nashville with easy access to densely populated commercial and urban areas of Almaville with heavy traffic volumes accessing I-24 at this location. The existing interchange is a diamond interchange configuration. There is also an environmental constraint with the Olive Branch stream flowing through the interchange footprint. There is an existing proposed project for this interchange under development to improve the interchange with a diverging diamond interchange configuration. The proposed CL are at-grade in the median through this interchange and proposed modifications may include replacement of the I-24 mainline bridges over SR 102 (Almaville Road) to accommodate CL access through an interchange modification. The design speed is 70 mph for the mainline, with ramp speeds being dependent on the purpose of the ramp.

### REASONABLE ALTERNATIVE 1

**Figure 3-43: Reasonable Alternative 1 for I-24 and SR 102 (Almaville Rd) (MP 70.0) Interchange**



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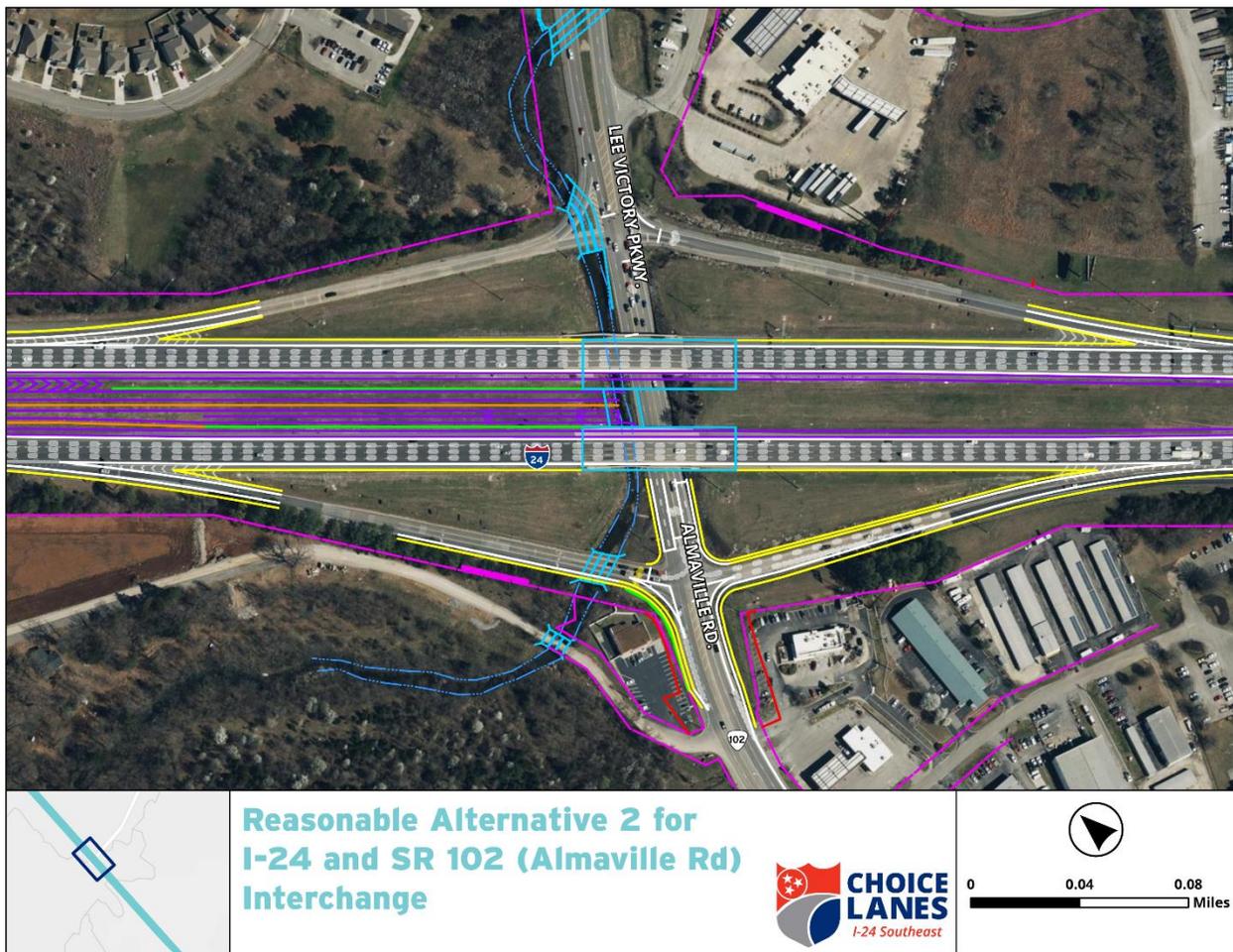
Alternative 1 proposes the I-24/SR 102 (Almaville Road) Interchange remains a diamond interchange with no direct access to CL. This alternative would accommodate the future proposed project to improve this interchange with a diverging diamond interchange configuration. This is a separate project that is under development and would be constructed prior to the design year for this project. To provide access to the CL, about 0.8 miles west of the I-24/SR 102 (Almaville Road) Interchange, an at-grade merge would be developed allowing access to the CL from the GP lanes in both directions. The added merge would allow entrance into the westbound CL and exit from the eastbound CL. In the westbound direction, this would increase the CL from one to two, and eastbound this would decrease the CL from two to one. The two bridges over SR 102 (Almaville Road) would be replaced to accommodate the widening required for one CL in either direction.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 64 & 65
- Retaining Walls: 47

## REASONABLE ALTERNATIVE 2

**Figure 3-44: Reasonable Alternative 2 for I-24 and SR 102 (Almaville Rd) Interchange (MP 70.0)**



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Alternative 2 proposes the I-24/SR 102 (Almaville Road) Interchange remains a diamond interchange with half-direct access to the CL. There is a westbound on-ramp and eastbound off-ramp for the CL in between the two bridges from SR 102 (Almaville Road). At this interchange, one CL in both directions drops off as an at-grade ramp with SR 102 (Almaville Road), leaving one CL in either direction over SR 102 (Almaville Road) and to the east. The transition of the CL ramps would require retaining walls. The I-24 bridges over SR 102 (Almaville Road) would be replaced to accommodate the widening of I-24 to add one CL in either direction. A retaining wall would be required at the eastbound off-ramp due to

geometric improvements. ROW acquisition would be required on the south side of SR 102 (Almaville Road) to accommodate the proposed modifications.

Below are the corresponding reference numbers from **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section:

- Bridges: 61-63
- Retaining Walls: 43, 50, & 51

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

One additional alternative was considered during the Level 2B screening, which incorporates the diverging diamond interchange proposed by TDOT in an existing project under development. This interchange design was evaluated to determine the feasibility of integrating CL access within the proposed diverging diamond interchange design. The alternative featured a- CL entrance/exit point allowing access to westbound I-24 from SR 102 (Almaville Road) and an exit to SR 102 (Almaville Road) from eastbound I-24. This alternative was eliminated due to operational issues identified in the traffic analysis when adding CL direct ramps into the interchange, and a determination that the diverging diamond interchange project scope would not be included in this project scope. Therefore, It is more feasible to provide an at-grade merge access west of SR 102 (Almaville Road) to provide CL access and allow the separate interchange improvement project at this location to proceed as a separate project.

#### **3.1.26 I-24 from SR 102 (Almaville Road) (MP 70.0) to I-840 (MP 74.0)**

This section of I-24 runs from the SR 102 (Almaville Road) interchange to the I-840 interchange. The proposed improvements along this section would provide one 12-foot CL in either direction along the route. The proposed CL are at-grade in the median and may include the replacement of the Baker Road overpass bridge over I-24 to accommodate the CL. The design speed is 70 mph for the section.

## REASONABLE ALTERNATIVES 1 & 2

**Figure 3-45: Reasonable Alternatives 1 & 2 for I-24 from SR 102 (Almaville Rd) (MP 70.0) to I-840 (MP 74.0)**



Alternatives 1 and 2 propose a typical section for the section of I-24 from SR 102 (Almaville Road) to I-840 to include four GP lanes and one CL in each direction on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes, CL divided by a median barrier with 10-foot shoulders on either side of the barrier.

Along this section, I-24 crosses Stewart Creek via dual-span bridges. The bridges would be replaced to accommodate the widening of I-24 to add one CL in each direction. Also, along this section, Baker Road crosses over I-24. The Baker Road bridge over I-24 would be replaced due to the impact on the existing bridge bents.

Approximately 3.10 miles east of the I-24/SR 102 (Almaville) Interchange, an at-grade merge for the single CL in either direction would mark the beginning/end of the CL, and the GP

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lanes would begin to transition out to tie into the existing GP lanes. The design speed for this section is 70 mph.

Below are the corresponding reference numbers from **Table 3-2** and **Table 3-3** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 1 and **Table 3-4** and **Table 3-5** for the proposed bridges and retaining walls that are expected to be within this section for Alternative 2:

- Bridges:
  - Alternative 1 – 65 & 66
  - Alternative 2 – 64-66
- Retaining Walls: N/A

### **OTHER INTERCHANGE ALTERNATIVES EVALUATED**

The Level 2B screening considered an alternative that continued CL through the I-840 and I-24 interchange with two lanes. It was decided that having the lanes travel through the interchange would not be cost-effective and would require at-grade access to get drivers out of CL to use the GP lane ramps at the interchange.

## 3.2 Summary of Reasonable Alternative Structures

The I-24 Southeast Choice Lanes Alternatives 1 and 2 have been described in the previous section. These alternatives require long stretches of elevated roadway to minimize impact to existing infrastructure and minimize ROW takes and environmental impacts. The differences between the two alternatives have also been explained in the previous section and the location of bridge and retaining wall structures were identified therein. This Structures section provides an understanding of structural systems expected to carry approximately 26 miles of CL on I-24 from I-40 near Fesslers Lane just south of the Inner Loop, to I-840 just north of Murfreesboro.

### 3.2.1 Bridge Superstructure

For the majority of bridges within this section, traditional prestressed concrete girder bridges are the most viable solution for many locations. It is anticipated that there are some sections where spans exceed the lengths typical for prestressed concrete girders, or perhaps due to curved geometry, steel plate girder superstructure may be the only viable option. However, sectional concrete box beam bridges whether post-tensioned or cast-in-place may also be considered for highly curved bridges. Recent bridge design manuals, such as the American Association of State Highway and Transportation Officials Load Resistance Factor Design manual, may also allow steel double tub-girders as viable options on curved geometry, which were previously considered non-redundant.

All girder systems are expected to have a minimum of four girders in a cross-section with a reinforced deck and provisions for future wearing surface. The barriers are expected to be solid concrete single-sloped TL-4 MASH-compliant systems that can be mounted on bridge decks and retaining walls.

The superstructure type selected may depend on the Maintenance of Traffic limitations such as closure periods, maximum number of closures, detours and available shoulder width for beam erection. As a result, technical provisions should be developed to allow multiple superstructure options that promote innovation and efficiency.

### 3.2.2 Bridge Substructure and Foundations

The presence of limestone and weathered bedrock relatively near the surface allows for more efficient foundations such as spread footings and driven pile foundations. However, there is a risk of sinkhole formations, particularly in the inner basin near Nashville. This would require positive grading around foundations and substructures to reduce the formation of sinkholes. Concrete substructures supporting CL bridges supported by spread footings bearing on sound bedrock, steel H-piles or drilled shafts appear to be viable alternatives in most locations. Geotechnical explorations or recommendations may make other foundation elements, such as micropiles, viable alternatives particularly where

overhead clearances would preclude deep foundations. This situation is likely where the CL can be constructed on widened shoulders underneath a bridge. The removal of endrolls would require that the abutments be supported on a cut wall that is founded on shallow foundations such as micropiles.

In some areas, elevated CL must overpass or translate across GP lanes or other CL. Some substructures supporting these elevated bridges may need to straddle sections of roadway below. In these cases, the use of straddle bents may be necessary. Both concrete and steel straddle bents are viable options. Steel straddle bents allow for shallower cap depth, but some state agencies consider a two-girder straddle bent as a fracture-critical non-redundant structure. However, specifications can be developed that provide some guidance on connection details that allow system redundancy even with two-girder systems. As for concrete straddle bents, recent literature shows that post-tensioned straddle bents perform much better than conventionally reinforced systems and allow for shallower beam depths. Piers with non-symmetrical shapes, caps made of steel materials, post-tensioned concrete and other alternative substructure types may be explored to overcome geometric constraints.

Pier caps in some locations may need to be widened to support sign gantries, tolling equipment and variable message signs. Although not contemplated at this time, some bridges in close proximity to residential areas such as I-24 south of the I-440 interchange and all the way to I-840 may require sound barriers or noise walls mounted on elevated bridges. This requirement would need further inspection as there are very few MASH-compliant sound barriers in the present market.

### 3.2.3 Railroad Bridges

There are RR bridges over CSX tracks that overpass some sections of I-24 and on the combined section of I-24/I-40. Options are explored to replace those bridges which could require complex staging or the construction of temporary or shoo fly structures adjacent to the existing bridges before replacing the existing bridge on the same alignment.

### 3.2.4 Retaining Walls

Retaining walls are required in several locations within the developed alternatives due to constraints such as changes in grade, limits of ROW or reducing impacts to other features. Many factors determine which retaining wall types are most cost-effective in a given location such as geotechnical recommendations, limits of excavation and proximity of other constraints. Where retaining walls are utilized to extend the width of a roadway by adding fill, mechanically stabilized earth retaining walls can be cost-effective alternatives. Cast-in-place concrete cantilever walls are also typical retaining wall options for these added fill sections as well as sections where cuts are required from existing

embankment to add width. Many other retaining wall types, such as soldier pile, anchored soldier pile and soil nail, are viable when constraints, limited excavation or staging challenges are present.

### 3.2.5 Bridge and Retaining Wall Locations and Geometry Tables and Figures

Alternatives 1 and 2 roadways were investigated to develop a conceptual vertical design that minimizes overall impacts to existing infrastructure, ROW and environmental resources. The bridges expected along the CL corridor starting from Fesslers Lane south of the Inner Loop to north of I-840 are presented in the tables below. Separate tables are provided for each alternative as presented below. Figures are provided for Alternative 1. Figures for Alternative 2 are not provided as they are similar for most of I-24. However, the differences between the two alternatives are provided in figures in the **Descriptions of the Reasonable Alternatives**.

An approximate summary of bridges and retaining walls is provided below:

#### Summary of Structures (Approximate)

Alternative 1 Total Bridge Length	18.24	Miles
Alternative 1 Retaining Wall Length	10.70	Miles
Alternative 2 Total Bridge Length	20.87	Miles
Alternative 2 Retaining Wall Length	8.54	Miles

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**Table 3-2: Alternative 1 Bridge Location and Geometry Table**

ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
1	Bridge Replacement	I-24 CL at Elm Hill Pike	Existing bridge: length = 363.20 ft; width = 66.30 ft; built 1963, repaired 2001  Existing section: Four 12-ft travel lanes, two 6-ft sidewalks	515	74	38,110
		BR. ID. 19I00400103	Proposed section: Five 12-ft travel lanes, two 6-ft shoulders			
2	New Bridge	I-40 WB CL Off-Ramp at Elm Hill Pike	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	1,000	35.25	35,250
3	New Bridge	I-40 EB CL On-Ramp at Elm Hill Pike	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	1,770	35.25	62,393
4	Bridge Replacement	CSX RR Bridge over I-40	RR Bridge Replacement	500	40	20,000
			Possible replacement of CSX Railroad bridge. Potential to include the removal of the adjacent abandoned bridge			

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
5	New Bridge	I-40 WB CL over CSX & Arlington Ave	10-ft inside shoulder, two 12-ft travel lanes, 12-ft outside shoulder	1,930	47.25	91,193
6	New Bridge	I-40 EB CL over CSX & Arlington Ave	10-ft inside shoulder, two 12-ft travel lanes, 12-ft outside shoulder	2,200	47.25	103,950
7	New Bridge	I-40 WB CL continuing to I-40 WB CL	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	805	35.25	28,376
8	Bridge Replacement	I-24 CL over Mill Creek	Existing bridge: length = 254.21 ft; width = 168.00 ft; built 1961; widened 1986 & 2003  Existing section: Ten 12-ft travel lanes, two 12-ft shoulders, 22-ft median	255	196	49,980
		BR. ID. 19I00400117	Proposed section: Ten 12-ft travel lanes, two 4-ft shoulders, two 12-ft shoulders, 20-ft median.			

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
9	Bridge Modification	I-24 CL at Massman Drive	Existing bridge: length = 287.00 ft; width = 46.00 ft; built 1963; widened 2003  Existing section: Two 12-ft travel lanes, two 10-ft shoulders	287	44	12,628
		BR. ID. 19I00400119	Proposed section: Potential work underneath bridge to accommodate CL			
10	New Bridge	I-40 WB CL over Spence Lane	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	2,950	35.25	103,988
11	New Bridge	I-40 EB CL over Spence Lane	6-ft inside shoulder, one 16-ft travel lane, 12-foot outside shoulder	2,200	35.25	77,550
12	New Bridge	I-40 EB CL continuing to I-40 EB CL	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	1,025	35.25	36,131
13	New Bridge	I-40 WB CL to I-24 EB CL	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	760	35.25	26,790

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
14	New Bridge	I-40 EB CL over I-24 EB Ramp to I-24 EB	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	500	35.25	17,625
15	New Bridge	I-24 WB CL over Murfreesboro Pike to I-40 WB	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	1,435	35.25	50,584
16	New Bridge	I-24 WB CL over Murfreesboro Pike to I-40 EB	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	1,100	35.25	38,775
17	New Bridge	I-40 EB CL Ramp to I-24 EB and I-24 WB to I-40 EB CL	12-ft outside shoulder, one 12-ft travel lane and one 15-ft travel lane transition to two 12-ft travel lanes, 7-ft inside shoulder transition to 10-ft inside shoulder	776	67.25-47.25	44,426
18	New Bridge	I-24 EB CL Ramps to I-40 EB and WB CL	8-ft inside shoulder transition to 6-ft inside shoulder, two 12-ft travel lanes transition to one 14.2-ft travel lane and one 15-ft travel lane, 12-ft outside shoulder	246	45.25-68.75	14,022

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
19	New Bridge	I-40 CL Ramps to I-24 EB CL	12-ft outside shoulder, two 12-ft travel lanes, 10-ft inside shoulder	775	47.25 (68 at north end)	44,659
20	New Bridge	I-24 WB CL to I-40 CL Ramps	6-ft inside shoulder, three 12-ft travel lanes transition to two 12-ft travel lanes, 12-ft outside shoulder	3,037	78.92- 46.25	190,071
21	New Bridge	I-24 EB CL to I-24 EB and WB CL Ramps	12-ft outside shoulder, two 12-ft travel lanes transition to three 12-ft travel lanes, 10-ft inside shoulder	3,798	47.00- 78.92	239,122
22	New Bridge	I-440 EB CL Ramp to I-24 WB CL	6-ft inside shoulder, one 16-ft travel lane, 12-ft outside shoulder	1,395	35.25	49,174
23	New Bridge	I-24 EB CL Ramp to I-440 WB CL Ramp	12-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	912	35.25	32,148
24	New Bridge	I-24 CL Ramps to I-440 WB CL	12-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	654	51.25	33,518
25	New Bridge	I-440 EB CL to I-24 CL Ramps	12-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	685	51.25	35,106

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
26	Bridge Replacement	Lyle Lane over I-440 BR. ID. 19I004400055	Existing bridge: length = 288.25 ft; width = 41.00 ft; built 1985, repaired 2011  Existing section: Two 14-ft travel lanes, two 5'-6" sidewalks	307	39	11,973
			Proposed section: Two 12-ft travel lanes, two 6-ft sidewalks, two 0.5-ft curbs			
27	New Bridge	I-24 WB CL over Existing I-440 EB Ramp	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	1,162	43.25	50,257
28	New Bridge	I-24 WB CL Ramp to I-440 WB CL	12-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	1,058	35.25	37,295
29	New Bridge	I-24 EB CL Ramp over I-24 WB CL Ramp	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	1,143	43.25	49,435
30	New Bridge	I-440 EB CL Ramp to I-24 EB CL	12-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	570	35.25	20,093

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
31	New Bridge	I-24 WB CL over Old Glenrose Ave. and CSX RR	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	4,554	43.25	196,961
32	New Bridge	I-24 EB CL over Old Glenrose Ave. and CSX RR	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	4,537	43.25	196,225
33	New Bridge	East Thompson Lane On-Ramp to I-24 WB CL	8-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	687	31.25	21,469
34	New Bridge	I-24 EB CL Exit Ramp to East Thompson Lane	8-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	623	31.25	19,469
35	New Bridge	I-24 WB CL over East Thompson Lane	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	1,392	43.25	60,204
36	New Bridge	I-24 EB CL over East Thompson Lane	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	1,179	43.25	50,992

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
37	Bridge Replacement	East Thompson Lane over I-24 BR. ID. 19I00240015	Existing bridge: length =229.21 ft; width = 82.00 ft; built 2002	229.21	82	18,795
			Existing section: Four 12-ft travel lanes, two 8-ft shoulders, 6-ft raised median			
			Proposed section: Four 12-ft travel lanes, one 12-ft turn lane, and 12-ft shoulders on each side			
38	New Bridge	I-24 WB CL Exit Ramp to East Thompson Lane	8-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	645	31.25	20,156
39	New Bridge	East Thompson Lane On-Ramp to I-24 EB CL	8-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	519	31.25	16,219
40	New Bridge	I-24 WB CL over Briley Pkwy	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	3,455	43.25	149,429
41	New Bridge	I-24 EB CL over Briley Pkwy	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	3,616	43.25	156,392

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
42	New Bridge	I-24 WB CL Ramp over I-24 WB	8-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	1,116	31.25	34,875
43	New Bridge	I-24 EB CL Ramp over I-24 EB	8-ft outside shoulder, one 16-ft travel lane, 6-ft inside shoulder	1,002	31.25	31,313
44A	New Bridge	I-24 WB CL over Antioch Pike & RR	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	4,712	43.25	203,794
44B	New Bridge	I-24 EB CL over Antioch Pike & RR	12-ft outside shoulder, two 12-ft travel lanes, 6-ft inside shoulder	4,773	43.25	206,432
44C	Bridge Replacement	SR 255 (Harding Place) over I-24 BR. ID. 19I00240027	Existing bridge: length = 272.00 ft; width = 112.00 ft; built 1967; widened 2003	360	106	38,160
			Existing section: Eight 12-ft travel lanes, two 5-ft sidewalks			
			Proposed section: Four 12-ft travel lanes, two 12-ft turn lanes, two 2.5-ft curb & gutter, two 5-ft sidewalks, two 16-ft shoulders			

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
47	Bridge Replacement	I-24 EB over Haywood Lane BR. ID. 19I00240033	Six 12-ft travel lanes, one 8-ft inside shoulder, one 12-ft outside shoulder, two 4-ft lane separation buffers w/ flexible delineators	190	96	18,240
48	Bridge Replacement	I-24 WB over Haywood Lane BR. ID. 19I00240033	Six 12-ft travel lanes, one 8-ft inside shoulder, one 12-ft outside shoulder, two 4-ft lane separation buffers w/ flexible delineators	190	96	18,240
49	Box culvert extension	I-24 EB over Whittmore Branch BR. ID. 19I00240035	Six 12-ft travel lanes, one 8-ft inside shoulder, one 12-ft outside shoulder, two 4-ft lane separation buffers w/ flexible delineators	32	40	1,280
49	Box Culvert Extension	I-24 WB over Whittmore Branch BR. ID. 19I00240035	Six 12-ft travel lanes, one 8-ft inside shoulder, one 12-ft outside shoulder, two 4-ft lane separation buffers w/ flexible delineators	32	40	1,280
50	New structure	I-24 EB Elevated CL	Two 12-ft travel lanes, one 6-ft outside shoulder, and one 12-ft inside shoulder	10,350	42	434,700

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
51	New structure	I-24 EB Elevated CL – SR 254 (Bell Rd) Off-Ramp	Two 12-ft travel lanes, one 6-ft outside shoulder, and one 10-ft inside shoulder	770	40	30,800
52	New structure	I-24 EB Elevated CL - SR 254 (Bell Rd) On-Ramp	One 12-ft travel lane, one 6-ft outside shoulder, and one 10-ft inside shoulder	480	32	15,360
53	New structure	I-24 WB Elevated CL	Two 12-ft travel lanes, one 6-ft outside shoulder, and one 12-ft inside shoulder	10,350	42	434,700
54	New structure	I-24 WB Elevated CL - SR 254 (Bell Rd) On-Ramp	One 12-ft travel lane, one 6-ft outside shoulder, and one 10-ft inside shoulder	370	30	11,100
55	New structure	I-24 WB Elevated CL - SR 254 (Bell Rd) Off-Ramp	One 12-ft travel lane, one 8-ft outside shoulder, and one 8-ft inside shoulder	390	30	11,700
56	Bridge Replacement	Hickory Hollow Parkway over I-24 BR. ID. 19I00240085	Six 14-ft travel lanes, one 20-ft interior walkway, and two 2-ft outside shoulders	350	116	40,600

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
57	Bridge Replacement	Old Franklin Road over I-24 BR. ID. 19I00240045	Two 12-ft travel lanes, two 6-ft outside shoulders	320	40	12,800
58	Bridge Replacement	Old Hickory Blvd over I-24 BR. ID. 19I00240047	Five 12-ft travel lanes, two 12-ft outside shoulders	360	86	30,960
59A	Bridge Replacement	Waldron Road over I-24 EB BR. ID. 75I00240003	Five 12-ft travel lanes, one 12-ft striped median, and two 8-ft outside shoulders	170	88	14,960
59B	Bridge Replacement	Waldron Road over I-24 WB BR. ID. 75I00240004	Five 12-ft travel lanes, one 12-ft striped median, and two 8-ft outside shoulders	170	88	14,960
60	Bridge Replacement	SR 266 (Sam Ridley Pkwy) over I-24 EB BR. ID. 75I00240055	Six 12-ft travel lanes, one 12-ft median, two 12-ft outside shoulders	150	122	18,300

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
61	Bridge Replacement	SR 266 (Sam Ridley Pkwy) over I-24 WB BR. ID. 75I00240056	Five 12-ft travel lanes, one 24-ft median, two 12-ft outside shoulders	150	122	18,300
62	Bridge Replacement	I-24 over Rock Springs Rd & Rock Springs Creek BR. ID. 75I00240005	Six 12-ft travel lanes, one 8-ft inside shoulder, one 12-ft outside shoulder, two 4-ft lane separation buffers w/flexible delineators	250	196	49,000
63	Bridge Replacement	Rocky Fork Road over I-24 BR. ID. 75I00240007	Two 12-ft travel lanes, two 2-ft outside shoulders	320	32.5	10,400
64	Bridge Replacement	I-24 over SR 102 (Almaville Rd)/Olive Branch BR. ID. 75I00240009	Eight 12-ft travel lanes, two 10-ft inside shoulders, two 4-ft lane separation buffers w/flexible delineators.	245	124	30,380

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
65	Bridge Replacement	I-24 over Stewarts Creek BR. ID. 75I00240011	One 32-ft WB exit ramp plus gore, one 36-ft on EB entrance ramp plus gore, ten 12-ft travel lanes, two 10-ft inside shoulders, two 12-ft outside shoulders, two 4-ft lane separation buffer w/ flexible delineators	200	240	48,000
66	Bridge Replacement	Baker Road over I-24 BR. ID. 75I00240013	Two 12-ft travel lanes, two 4-ft outside shoulders	400	34	13,600

*Table Abbreviations:*

*BR. ID. – Bridge Identification Number*

*EB – Eastbound*

*FT – (Linear) Feet*

*N/A – Not Applicable*

*RR – Railroad*

*SF – Square Feet*

*WB – Westbound*

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**Table 3-3: Alternative 1 Retaining Wall Location**

ID	LENGTH (FT)	LOCATION
1	974	I-40 WB CL approaching Elm Hill Pike
2	976	I-40 EB CL approaching CSX RR bridge near Elm Hill Pike
3	475	I-40 WB CL between CSX RR bridge and Arlington Avenue
4	622	I-40 EB CL between CSX RR bridge and Arlington Avenue
5	1,290	I-40 WB CL approaching Massman Drive
6	780	I-40 WB CL from Mill Creek Culvert
7	342	I-40 WB CL approach after Mill Creek Culvert
8	299	I-40 WB GP Lane after Mill Creek Culvert
9	921	I-40 EB CL approaching Mill Creek Culvert
10	237	I-40 EB GP Lane approaching Mill Creek Culvert
11	940	I-440 WB GP Lane approaching Lyle Lane
12	562	I-440 WB GP Lane after Lyle Lane
13	502	I-440 WB CL approaching Lyle Lane
14	486	I-440 EB CL near Lyle Lane
15	391	I-24 WB CL On-Ramp at SR 155 (Thompson Lane)
16	94	I-24 WB CL On-Ramp at SR 155 (Thompson Lane)
17	350	I-24 WB CL Off-Ramp at SR 155 (Thompson Lane)
18	74	I-24 WB CL Off-Ramp at SR 155 (Thompson Lane)
19	69	I-24 EB CL Off-Ramp at SR 155 (Thompson Lane)
20	91	I-24 EB CL On-Ramp at SR 155 (Thompson Lane)
21	582	I-24 WB GP Lane near SR 155 (Briley Parkway)
22	588	I-24 EB GP Lane near SR 155 (Briley Parkway)
23	559	I-24 WB CL near SR 155 (Briley Parkway)
24	931	I-24 EB CL near SR 155 (Briley Parkway)
25	393	I-24 WB ROW Wall near SR 255 (Harding Place)
26	500	I-24 WB CL approach near SR 255 (Harding Place)
27	500	I-24 EB CL approach near SR 255 (Harding Place)

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ID	LENGTH (FT)	LOCATION
28	868	I-24 WB ROW Wall near SR 255 (Harding Place)
29	1,097	I-24 EB ROW Wall near SR 255 (Harding Place)
30	2,879	I-24 WB GP Lane southeast of SR 255 (Harding Place)
31	4,049	I-24 EB GP Lane southeast of SR 255 (Harding Place)
32	620	I-24 WB GP Lanes west of Haywood Lane
33	450	I-24 EB GP Lanes west of Haywood Lane
34	2,980	I-24 WB GP Lanes east of Haywood Lane
35	390	I-24 WB GP Lanes west of Blue Hole Road
36	1,685	I-24 EB GP Lanes west of Blue Hole Road
37	765	I-24 WB GP Lanes west of Hickory Hollow Parkway
38	475	I-24 WB GP Lanes east of Old Franklin Road
39	300	I-24 WB GP Lanes On-Ramp west at SR 171 (Old Hickory Boulevard)
40	400	I-24 EB GP Lanes east of SR 171 (Old Hickory Boulevard)
41	3,580	I-24 WB GP Lanes east of Waldron Road
42	160	I-24 EB GP Lanes On-Ramp east of Waldron Road
43	620	I-24 WB GP Lanes east of Waldron Road
44	560	I-24 WB Off-Ramp at SR 266 (Sam Ridley Parkway)
45	1,420	I-24 EB On-Ramp at SR 266 (Sam Ridley Parkway)
46	650	I-24 WB GP Lanes east of SR 266 (Sam Ridley Parkway)
47	2,080	I-24 CL Plaza On- and Off-Ramps at Haywood Lane
48	2,080	I-24 CL Plaza On- and Off-Ramps at Haywood Lane
49	410	I-24 CL Plaza On- and Off-Ramps at SR 254 (Bell Road)
50	410	I-24 CL Plaza On- and Off-Ramps at SR 254 (Bell Road)
51	1,580	I-24 CL Plaza On- and Off-Ramps at SR 254 (Bell Road)
52	1,580	I-24 CL Plaza On- and Off-Ramps at SR 254 (Bell Road)
53	2,660	I-24 CL Plaza On- and Off-Ramps at Waldron Road
54	2,660	I-24 CL Plaza On- and Off-Ramps at Waldron Road
55	2,040	I-24 CL Plaza On- and Off-Ramps at SR 266 (Sam Ridley Parkway)

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ID	LENGTH (FT)	LOCATION
56	2,040	I-24 CL Plaza On- and Off-Ramps at SR 266 (Sam Ridley Parkway)

*Table Abbreviations:*

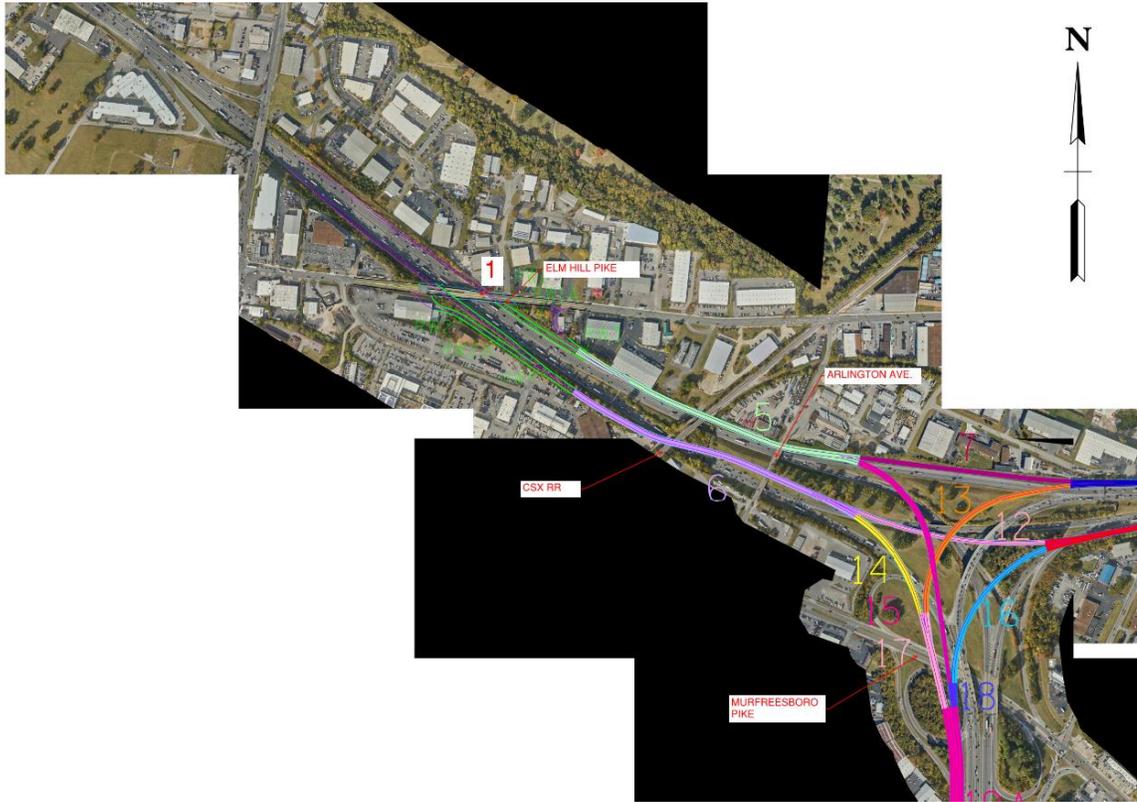
*EB - Eastbound*

*RR - Railroad*

*WB - Westbound*

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Figure 3-46: Alternative 1, Bridge and Retaining Wall Locations, Fessler's Ln to I-24/I-40 Interchange



1

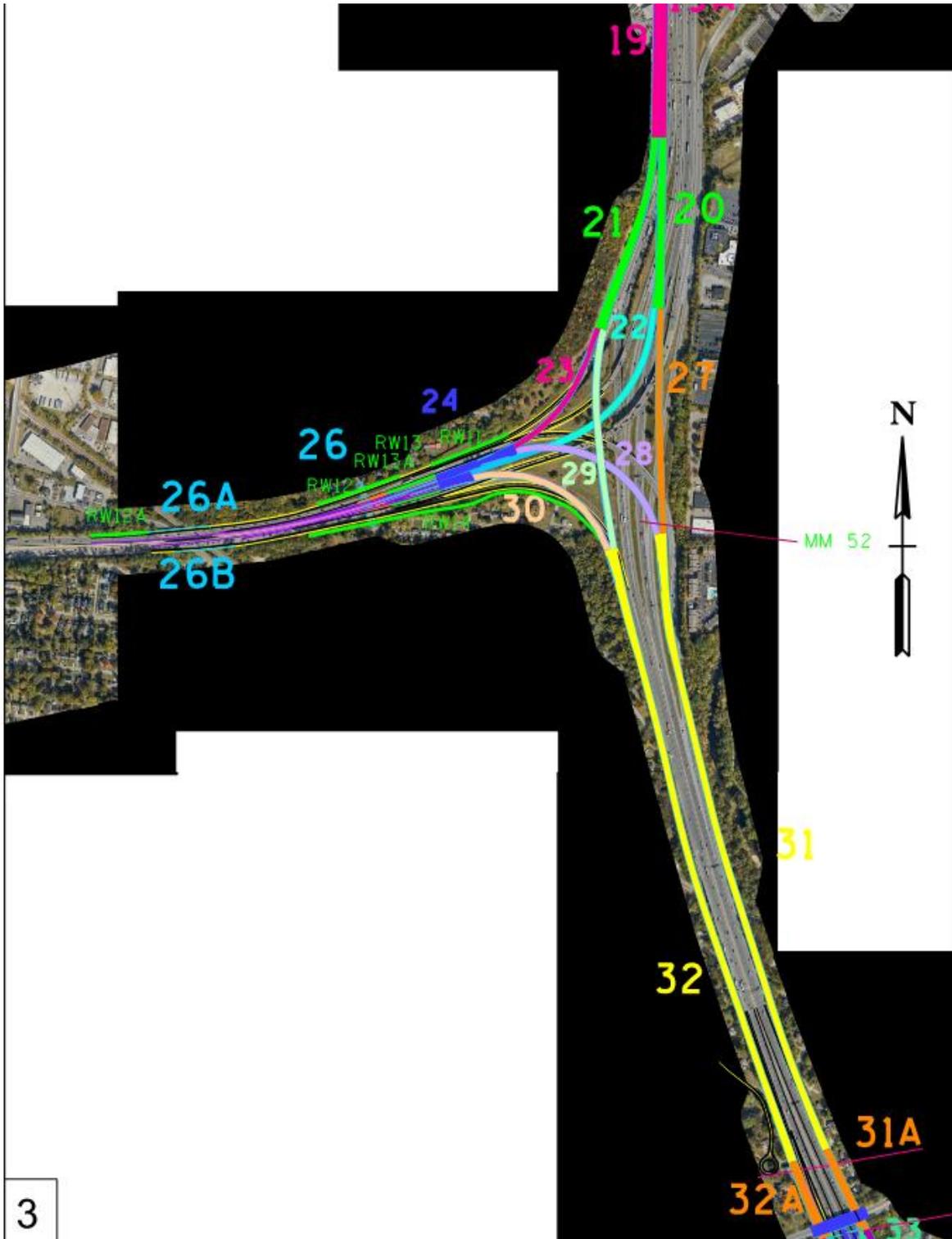
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**Figure 3-47: Alternative 1, Bridge and Retaining Wall Locations, Spence Ln to I-40/SR 155 (Briley Parkway) Interchange**



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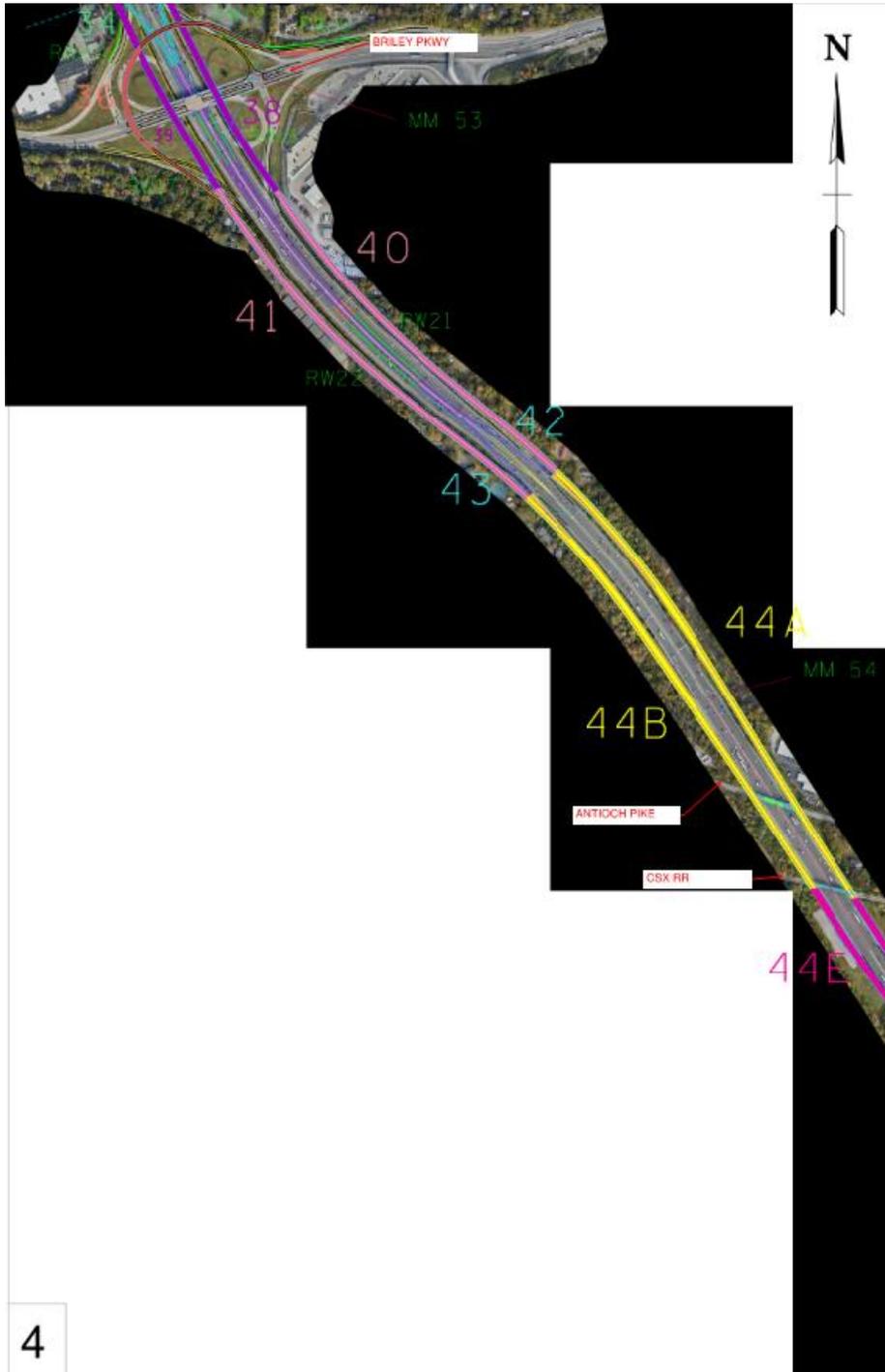
Figure 3-48: Alternative 1, Bridge and Retaining Wall Locations, Murfreesboro Pike to Glenrose Ave



3

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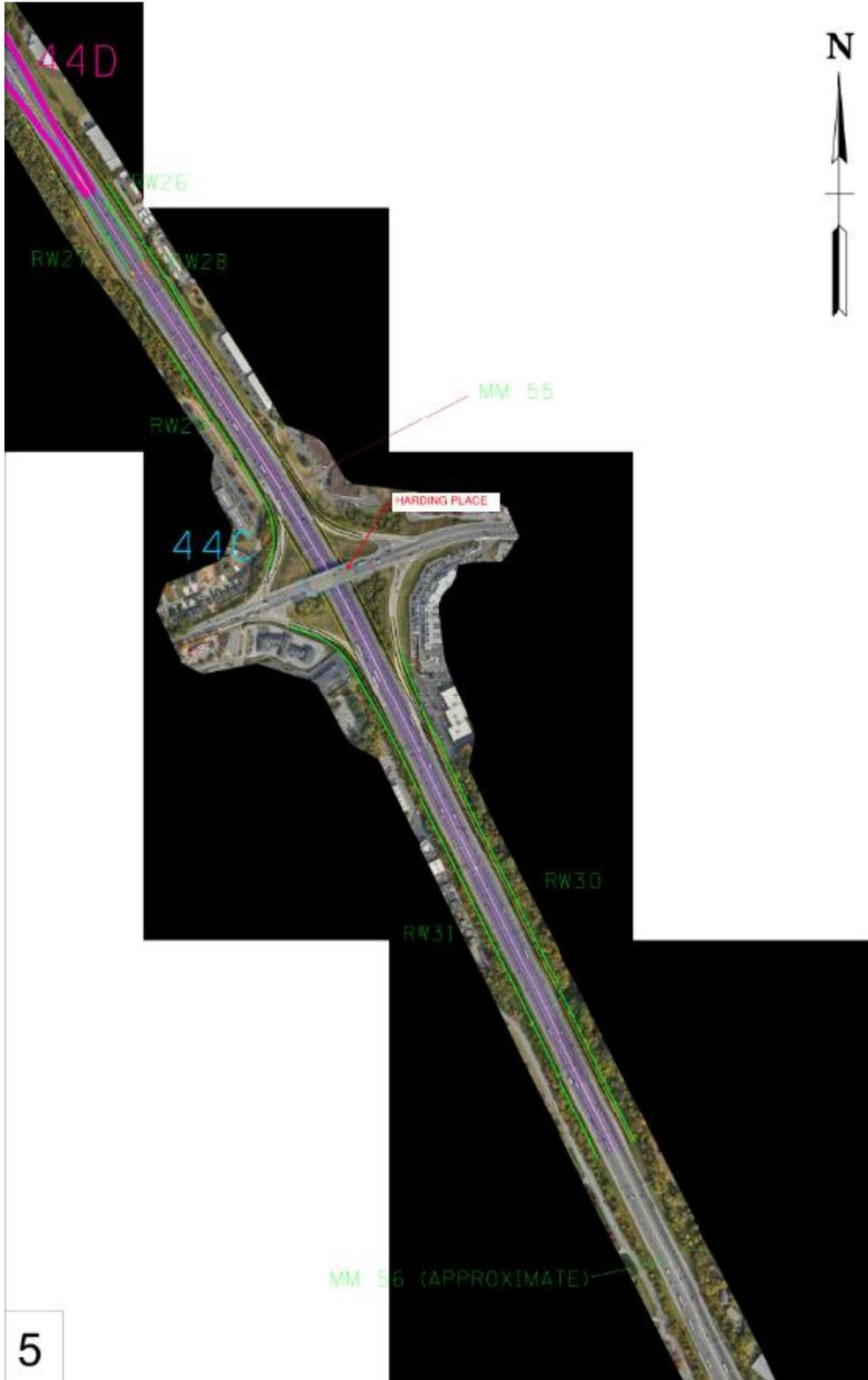
Figure 3-49: Alternative 1, Bridge and Retaining Wall Locations, East Thompson Ln to Antioch Pike



4

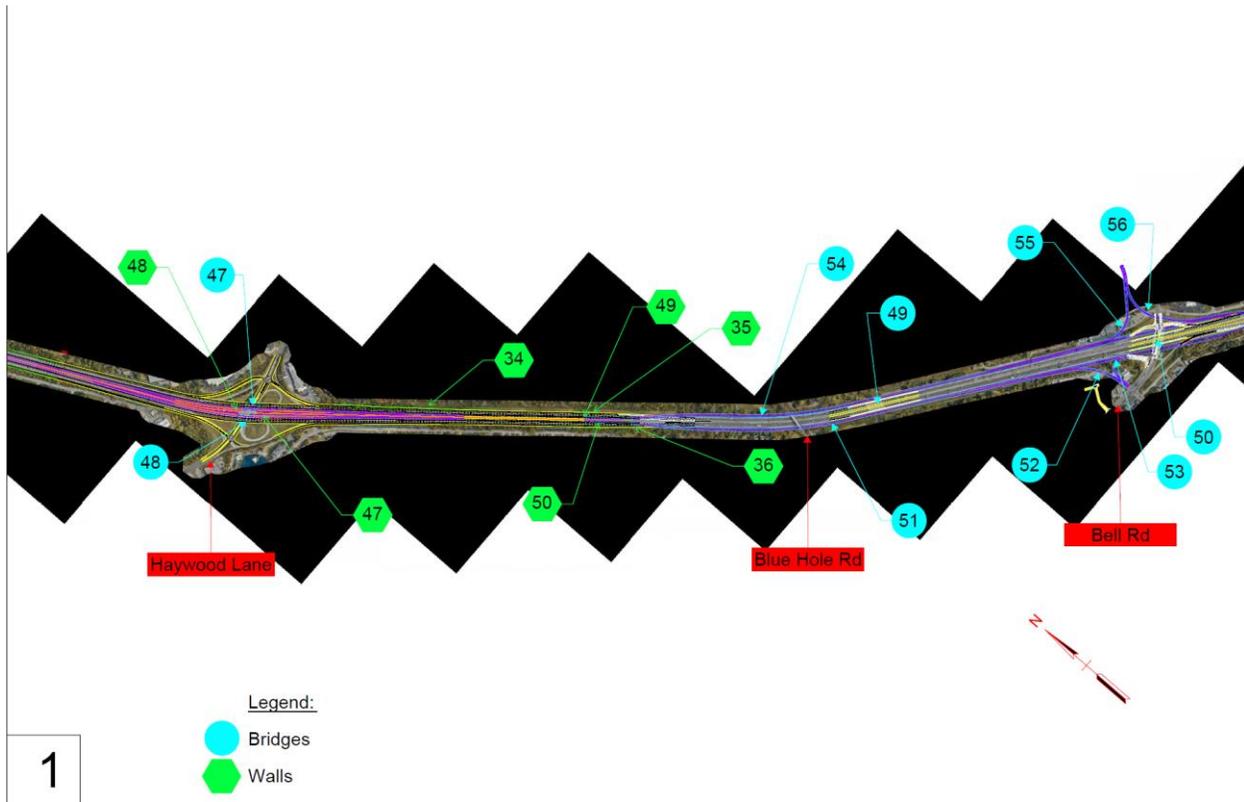
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Figure 3-50: Alternative 1, Bridge and Retaining Wall Locations, SR 255 (Harding PI) Interchange



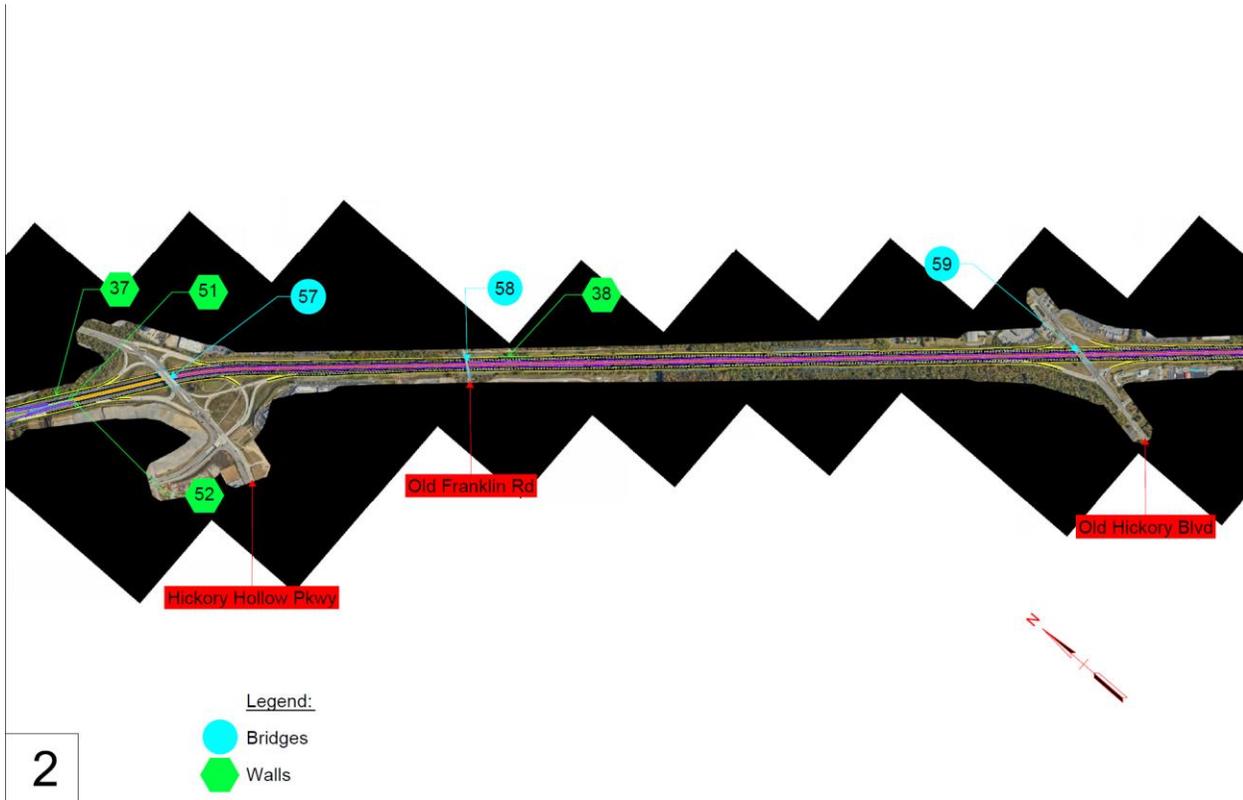
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Figure 3-51: Alternative 1, Bridge and Retaining Wall Locations, Haywood Ln to SR 254 (Bell Rd)



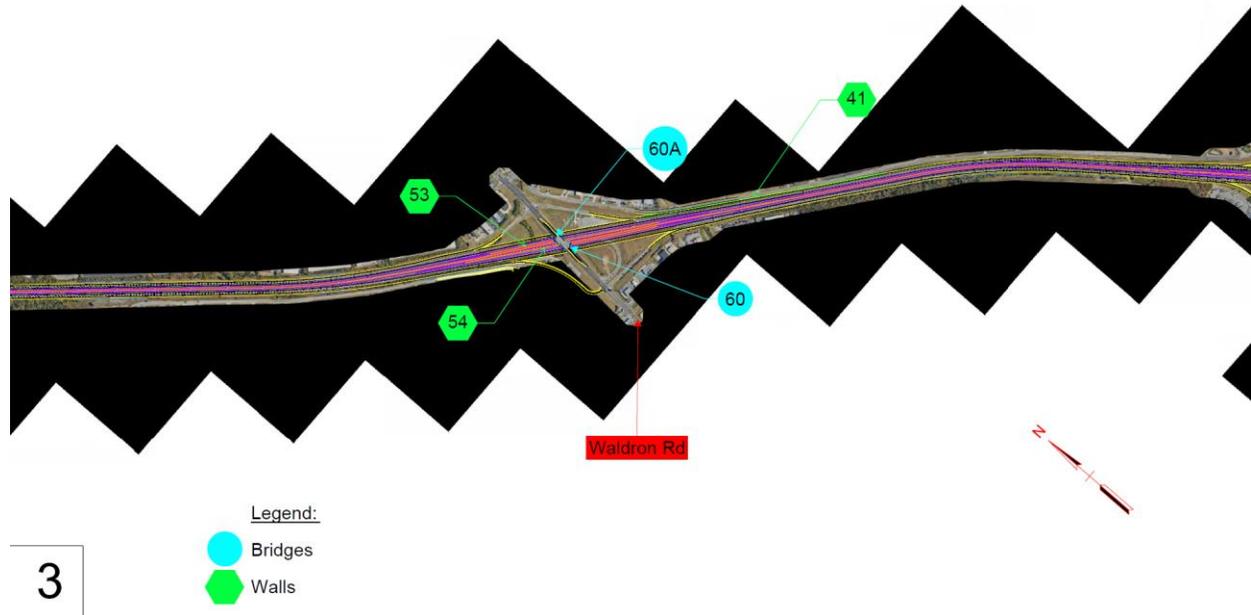
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Figure 3-52: Alternative 1, Bridge and Retaining Wall Locations, Hickory Hollow Pkwy to SR 171 (Old Hickory Blvd)



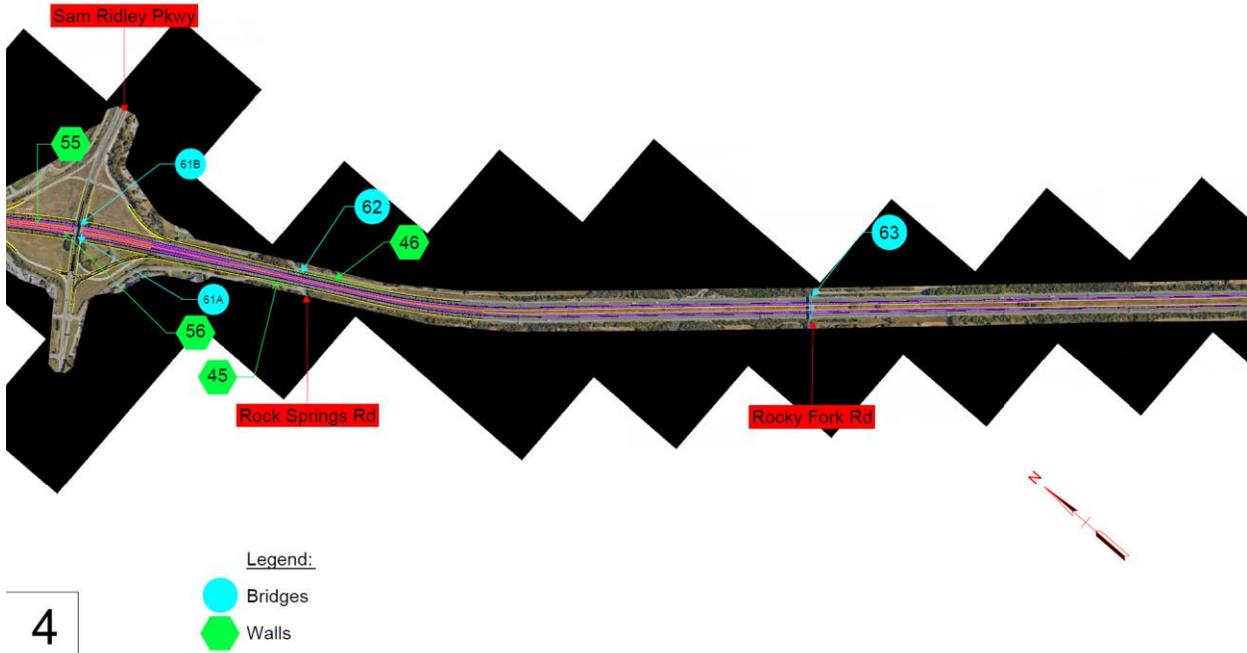
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**Figure 3-53: Alternative 1, Bridge and Retaining Wall Locations, Waldron Rd Interchange**



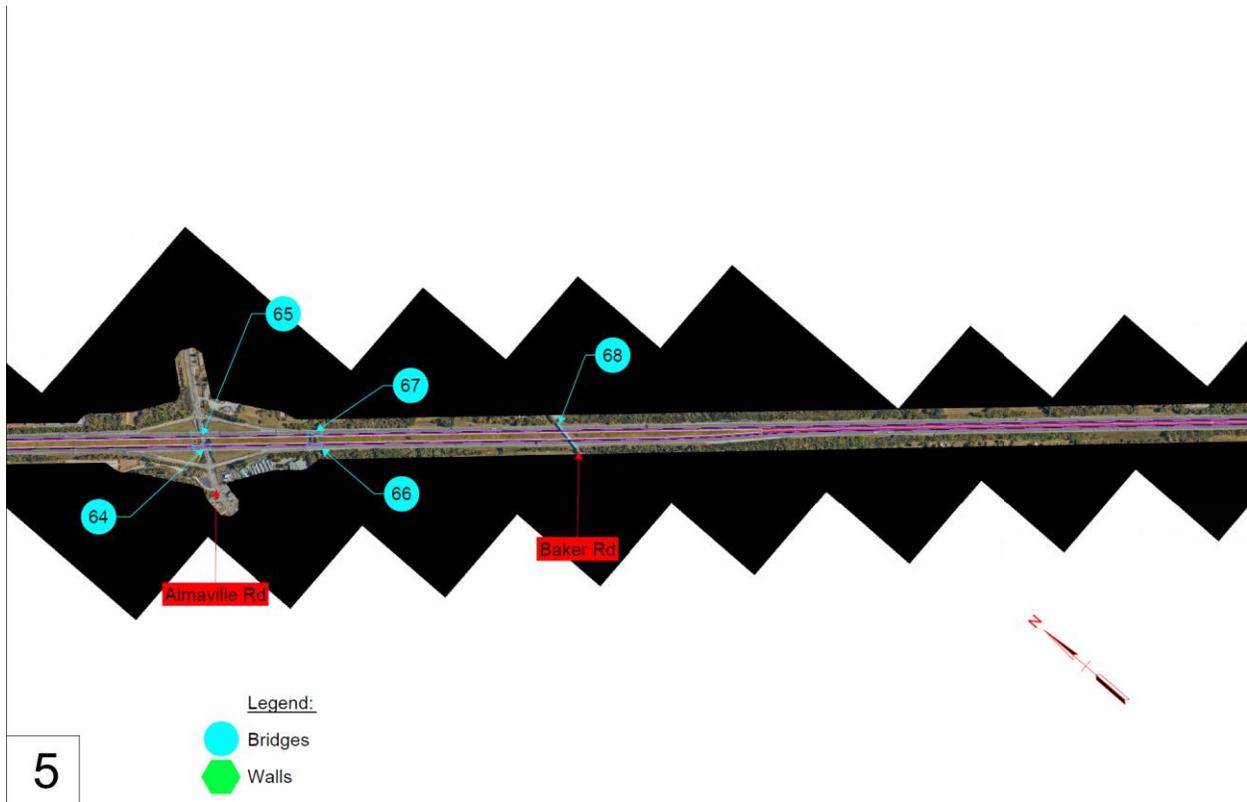
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Figure 3-54: Alternative 1, Bridge and Retaining Wall Locations, SR 266 (Sam Ridley Pkwy)



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Figure 3-55: Alternative 1, Bridge and Retaining Wall Locations, SR 102 (Almaville Rd)



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**Table 3-4: Alternative 2 Bridge Locations and Geometry**

ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
1	Bridge Replacement	I-24 CL at Elm Hill Pike	Existing bridge: length = 363.20 feet; width = 66.30 feet; built 1963, repaired 2001  Existing section: Four 12-foot travel lanes, two 6-foot sidewalks	515	74	38,110
		BR. ID. 19I00400103	Proposed section: Five 12-foot travel lanes, two 6-foot shoulders			
2	New Bridge	I-24 WB CL	6-foot inside shoulder, 12-foot travel lane, 8-foot outside shoulder	525	27.25	14,306
3	New Bridge	On-Ramp to I-24 WB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	700	43.25	30,275
4	Bridge Modification	I-24 CL at Massman Drive	Existing bridge: length = 287.00 feet; width = 46.00 feet; built 1963, widened 2003  Existing section: Two 12-foot travel lanes, two 10-foot shoulders	287	44	12,628
		BR. ID. 19I00400119	Proposed section: Potential work underneath bridge to accommodate CL			
5	New Bridge	I-24 EB CL	6-foot inside shoulder, 12-foot travel lane, 8-foot outside shoulder	1,150	27.25	31,338
6	New Bridge	On-Ramp to I-24 EB CL	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	2,175	31.25	67,969

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
7	Bridge Replacement	I-24 CL over Mill Creek	Existing bridge: length = 254.21 feet; width = 168.00 feet; built 1963, widened 1986 & 2003  Existing section: Ten 12-foot travel lanes, two 12-foot shoulders, 22-foot median	255	196	49,980
		BR. ID. 19I00400117	Proposed section: Ten 12-foot travel lanes, two 4-foot shoulders, two 12-foot shoulders, 20-foot median			
8	New Bridge	I-24 WB CL over Arlington Ave	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	1,900	43.25	82,175
9	New Bridge	I-24 WB CL	8-foot inside shoulder, 16-foot travel lane, 6-foot outside shoulder	975	31.25	30,469
10	New Bridge	I-24 WB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	2,500	43.25	108,125
11	New Bridge	I-24 EB CL over Arlington Ave	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	1,100	43.25	47,575
12	New Bridge	I-24 EB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	1,800	43.25	77,850
13	New Bridge	I-24 EB CL over I-24/I-40 Interchange	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,710	31.25	53,438

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
14	New Bridge	I-24 EB CL over I-24/I-40 Interchange	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,010	31.25	31,563
15	New Bridge	I-24 EB CL over I-24/I-40 Interchange	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,500	31.25	46,875
16	New Bridge	I-24 EB CL over I-24/I-40 Interchange	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,500	31.25	46,875
17	New Bridge	I-24 EB CL over I-24/I-40 Interchange	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	870	31.25	27,188
18	New Bridge	I-24 WB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	3,750	43.25	162,188
19	New Bridge	I-24 EB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	3,724	43.25	161,063
20	New Bridge	I-24 EB CL Ramp to I-440 WB CL	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	700	31.25	21,875
21	New Bridge	I-24 WB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	778	43.25	33,649
22	New Bridge	I-24 WB CL Ramp to I-440 WB CL	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,338	31.25	41,813

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
23	New Bridge	I-440 EB CL Ramp to I-24 WB CL	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,403	31.25	43,844
24	New Bridge	I-24 EB CL Ramp to I-24 EB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	1,245	43.25	53,846
25	New Bridge	I-440 WB CL	6-foot inside shoulder, transition from two 12-foot travel lanes to one 12-foot travel lane, transition from 12-foot outside shoulder to 8-foot outside shoulder	1,617	55.25	89,339
26	New Bridge	I-440 WB CL	6-foot inside shoulder, 12-foot travel lane, 8-foot outside shoulder	973	27.25	26,514
27	New Bridge	I-440 EB CL	6-foot inside shoulder, transition from one 12-foot travel lane to two 12-foot travel lanes, transition from 8-foot outside shoulder to 12-foot outside shoulder	1,487	55.25	82,157
28	New Bridge	I-440 EB CL	6-foot inside shoulder, 12-foot travel lane, 8-foot outside shoulder	913	27.25	24,879
29	New Bridge	I-440 EB CL Ramp to I-24 EB CL	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	730	31.25	22,813

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
30	New Bridge	I-24 WB CL between SR 155 (Briley Pkwy) and I-440 interchanges	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	5,210	43.25	225,333
31	New Bridge	I-24 EB CL between I-440 and SR 155 (Briley Pkwy) interchanges	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	5,036	43.25	217,807
32	New Bridge	SR 155 (Briley Pkwy) On-Ramp to I-24 WB CL	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	501	31.25	15,656
33	New Bridge	I-24 EB CL Off-Ramp to SR 155 (Briley Pkwy)	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	568	31.25	17,750
34	New Bridge	Off-Ramp from I-24 to SR 155 (Briley Pkwy) NB	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	1,912	31.25	59,750

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
35	New Bridge	I-24 CL On- and Off-Ramps at SR 155 (Briley Pkwy)	8-foot outside shoulders, three 12-foot travel lanes, one 12-foot turn lane	198	65.25	12,920
36	Bridge Replacement	SR 155 (Briley Pkwy) over I-24 BR. ID. 19I00240017	Existing bridge: length = 301.00 feet; width = 106.00 feet; built 2002	348	104.83	36,481
			Existing section: Six 12-foot travel lanes, two 8-foot shoulders, two 6-foot medians			
			Proposed section: Four 12-foot lanes, two 12-foot turn lanes, one 12-foot concrete median, two 10-foot shoulders			
37	New Bridge	I-24 WB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	4,024	43.25	174,038
38	New Bridge	I-24 EB CL	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	4,076	43.25	176,287
39	New Bridge	I-24 CL over I-24	8-foot outside shoulders, 16-foot travel lanes, 20-foot median	315	61.25	19,294
40	New Bridge	I-24 WB CL over I-24 WB	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	803	31.25	25,094
41	New Bridge	I-24 EB CL over I-24 EB	6-foot inside shoulder, 16-foot travel lane, 8-foot outside shoulder	683	31.25	21,344

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
42	New Bridge	I-24 WB CL over Antioch Pike & RR	12-foot outside shoulder, two 12-foot travel lanes, 6-foot inside shoulder	9,744	43.25	421,428
43	New Bridge	I-24 EB CL over Antioch Pike & RR	12-foot outside shoulder, two 12-foot travel lanes, 6-foot inside shoulder	9,760	43.25	422,120
44	Bridge Modification	SR 255 (Harding PI) over I-24 BR. ID. 19I00240027	Existing bridge: length = 272.00 feet; width = 112.00 feet; built 1967, widened 2003	360	106	38,160
			Existing section: Eight 12-foot travel lanes, two 5-foot sidewalks			
			Proposed section: Potential work underneath bridge to accommodate CL			
45	Bridge Replacement	I-24 EB over Haywood Lane BR. ID. 19I00240033	Six 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, two 4-foot lane separation buffers w/ flexible delineators	190	96	18,240
46	Bridge Replacement	I-24 WB over Haywood Lane BR. ID. 19I00240033	Six 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, two 4-foot lane separation buffers w/ flexible delineators	190	96	18,240

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
47	Box Culvert Extension	I-24 EB over Whittmore Branch BR. ID. 19I00240035	Six 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, two 4-foot lane separation buffers w/ flexible delineators	32	40	1,280
47	Box Culvert Extension	I-24 WB over Whittmore Branch BR. ID. 19I00240035	Six 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, two 4-foot lane separation buffers w/ flexible delineators	32	40	1,280
48	Bridge Replacement	Blue Hole Road over I-24 BR. ID. 19I00240037	Two 12-foot travel lanes, one 4-foot shoulder and 4-foot sidewalk	280	34.5	9,660
49	Bridge Replacement	I-24 over Mill Creek BR. ID. 19I00240039	Eight 12-foot travel lanes, two 10-foot inside shoulders and two 12-foot outside shoulder	750	140	105,000

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
50	Bridge Replacement	I-24 WB Over SR 254 (Bell Road) BR. ID. 19I00240039	Six 12-foot travel lanes, one 12-foot median and two 12-foot outside shoulders	180	100	18,000
51	New structure	I-24 EB Over SR 254 (Bell Road)	Six 12-foot travel lanes, one 12-foot median, two 12-foot outside shoulders	180	100	18,000
52	New structure	CSX RR over Bell Road	One existing rail and one proposed rail	180	30	5,400
53	Bridge Replacement	Hickory Hollow Parkway over I-24 BR. ID. 19I00240085	Six 14-foot travel lanes, one 20-foot interior walkway and two 2-foot outside shoulders	350	116	40,600
54	Bridge Replacement	Old Franklin Road over I-24 BR. ID. 19I00240045	Two 12-foot travel lanes and two 6-foot outside shoulders	320	40	12,800

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
55	Bridge Replacement	Old Hickory Blvd over I-24 BR. ID. 19I00240047	Five 12-foot travel lanes, two 12-foot outside shoulders	360	86	30,960
56	Bridge Replacement	Waldron Road over I-24 BR. ID. 75I00240003	Six 12-foot travel lanes, two 8-foot outside shoulders	310	88	27,280
57	New Structure	SR 266 (Sam Ridley Pkwy) over I-24 EB BR. ID. 75I00240055	Six 12-foot travel lanes, one 12-foot median, two 12-foot outside shoulders	150	122	18,300
58	New Structure	SR 266 (Sam Ridley Pkwy) over I-24 WB BR. ID. 75I00240056	Five 12-foot travel lanes, one 24-foot median, two 12-foot outside shoulders	150	122	18,300

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
59	Bridge Replacement	I-24 over Rock Springs Rd & Rock Springs Creek BR. ID. 75I00240005	Six 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, two 4-foot lane separation buffers w/ flexible delineators	250	196	49,000
60	New Structure	Rocky Fork Road over I-24 BR. ID. 75I00240007	Two 12-foot travel lanes, two 2-foot outside shoulders	320	32.5	10,400
61	Bridge Replacement	I-24 EB over SR 102 (Almaville Rd)/Olive Branch BR. ID. 75I00240009	Five 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, one 4-foot lane separation buffer w/ flexible delineators	300	84	25,200

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
62	Bridge Replacement	I-24 WB over SR 102 (Almaville Rd)/Olive Branch BR. ID. 75I00240010	Five 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, one 4-foot lane separation buffer w/ flexible delineators	300	84	25,200
63	New Structure	I-24 CL Access Ramp over Olive Branch	Three 12-foot travel lanes, one 6-foot outside shoulder, one 8-foot outside shoulder and two 10-foot inside shoulders	70	75	5,250
64	Bridge Replacement	I-24 EB over Stewarts Creek BR. ID. 75I00240011	Five 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder and one 4-foot lane separation buffer w/ flexible delineators	200	115	23,000
65	Bridge Replacement	I-24 WB over Stewarts Creek BR. ID. 75I00240011	Five 12-foot travel lanes, one 8-foot inside shoulder, one 12-foot outside shoulder, one 4-foot lane separation buffer w/ flexible delineators	200	115	23,000

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ID	TYPE	LOCATION	DESCRIPTION	LENGTH (FT)	WIDTH (FT)	SF
66	Bridge Replacement	Baker Road over I-24 BR. ID. 75I00240013	Two 12-foot travel lanes, two 4-foot outside shoulders	400	34	13,600

*Table Abbreviations:*

*BR. ID. – Bridge Identification Number*

*EB – Eastbound*

*FT – (Linear) Feet*

*RR – Railroad*

*SF – Square Feet*

*WB – Westbound*

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**Table 3-5: Alternative 2 Retaining Wall Location and Lengths**

ID	LENGTH (FT)	LOCATION
1	368	I-40 WB CL approaching Elm Hill Pike
2	414	I-40 EB CL approaching CSX RR bridge near Elm Hill Pike
3	780	I-40 WB CL from Mill Creek culvert
4	342	I-40 WB CL approach after Mill Creek culvert
5	299	I-40 WB GP Lane after Mill Creek culvert
6	1,134	I-40 EB CL approaching Mill Creek culvert
7	237	I-40 EB GP Lane approaching Mill Creek culvert
8	263	I-440 WB CL approach near Glenrose Avenue
9	74	I-440 WB CL approach near Glenrose Avenue
10	161	I-440 EB CL approach near Glenrose Avenue
11	1,102	I-440 EB CL approach near Glenrose Avenue
12	115	I-24 EB CL off-ramp at SR 155 (Briley Parkway)
13	79	I-24 WB CL on-ramp at SR 155 (Briley Parkway)
14	346	I-24 WB CL off-ramp at SR 155 (Briley Parkway)
15	368	I-24 EB CL on-ramp at SR 155 (Briley Parkway)
16	582	I-24 WB GP Lane near SR 155 (Briley Parkway)
17	588	I-24 EB GP Lane near SR 155 (Briley Parkway)
18	559	I-24 WB CL near SR 155 (Briley Parkway)
19	336	I-24 EB CL near SR 155 (Briley Parkway)
20	430	I-24 WB CL approach near SR 255 (Harding Place)

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ID	LENGTH (FT)	LOCATION
21	430	I-24 EB CL approach near SR 255 (Harding Place)
22	2,800	I-24 WB ROW wall near SR 255 (Harding Place)
23	2,804	I-24 EB ROW wall near SR 255 (Harding Place)
24	1,290	I-40 WB GP Lane near Massman Drive
25	620	I-24 WB GP Lanes west of Haywood Lane
26	450	I-24 EB GP Lanes west of Haywood Lane
27	2,980	I-24 WB GP Lanes east of Haywood Lane
28	390	I-24 WB GP Lanes west of Blue Hole Road
29	1,685	I-24 EB GP Lanes west of Blue Hole Road
30	1,650	I-24 EB GP Lanes east of Blue Hole Road
31	315	I-24 EB GP Lanes on-ramp west at SR 254 (Bell Road)
32	1,200	I-24 WB GP Lanes off-ramp west at SR 254 (Bell Road)
33	475	I-24 WB GP Lanes east of Old Franklin Road
34	300	I-24 WB GP Lanes on-ramp west at SR 171 (Old Hickory Boulevard)
35	400	I-24 EB GP Lanes east of SR 171 (Old Hickory Boulevard)
36	210	I-24 EB GP Lanes on-ramp at Waldron Road
37	3,580	I-24 WB GP Lanes east of Waldron Road
38	160	I-24 EB GP Lanes on-ramp east of Waldron Road
39	620	I-24 WB GP Lanes east of Waldron Road

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ID	LENGTH (FT)	LOCATION
40	560	I-24 WB off-ramp at SR 266 (Sam Ridley Parkway)
41	1,420	I-24 EB on-ramp at SR 266 (Sam Ridley Parkway)
42	650	I-24 WB GP Lanes east of SR 266 (Sam Ridley Parkway)
43	245	I-24 EB off-ramp at SR 102 (Almaville Road)
44	2,080	I-24 CL plaza on- and off-ramps at Haywood Lane
45	2,080	I-24 CL plaza on- and off-ramps at Haywood Lane
46	2,300	I-24 CL plaza on- and off-ramps at SR 254 (Bell Road)
47	2,300	I-24 CL plaza on- and off-ramps at SR 254 (Bell Road)
48	2,040	I-24 CL plaza on- and off-ramps at SR 266 (Sam Ridley Parkway)
49	2,040	I-24 CL plaza on- and off-ramps at SR 266 (Sam Ridley Parkway)
50	1,470	I-24 EB GP Lanes off-ramp at SR 102 (Almaville Road)
51	1,470	I-24 EB GP Lanes off-ramp at SR 102 (Almaville Road)

*Table Abbreviations:*

- CL – Choice Lanes*
- EB – Eastbound*
- GP – General Purpose*
- RR – Railroad*
- WB – Westbound*

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Figure 3-56: Alternative 2, Bridge and Retaining Wall Locations, Fessler's Ln to I-24/I-40 Interchange

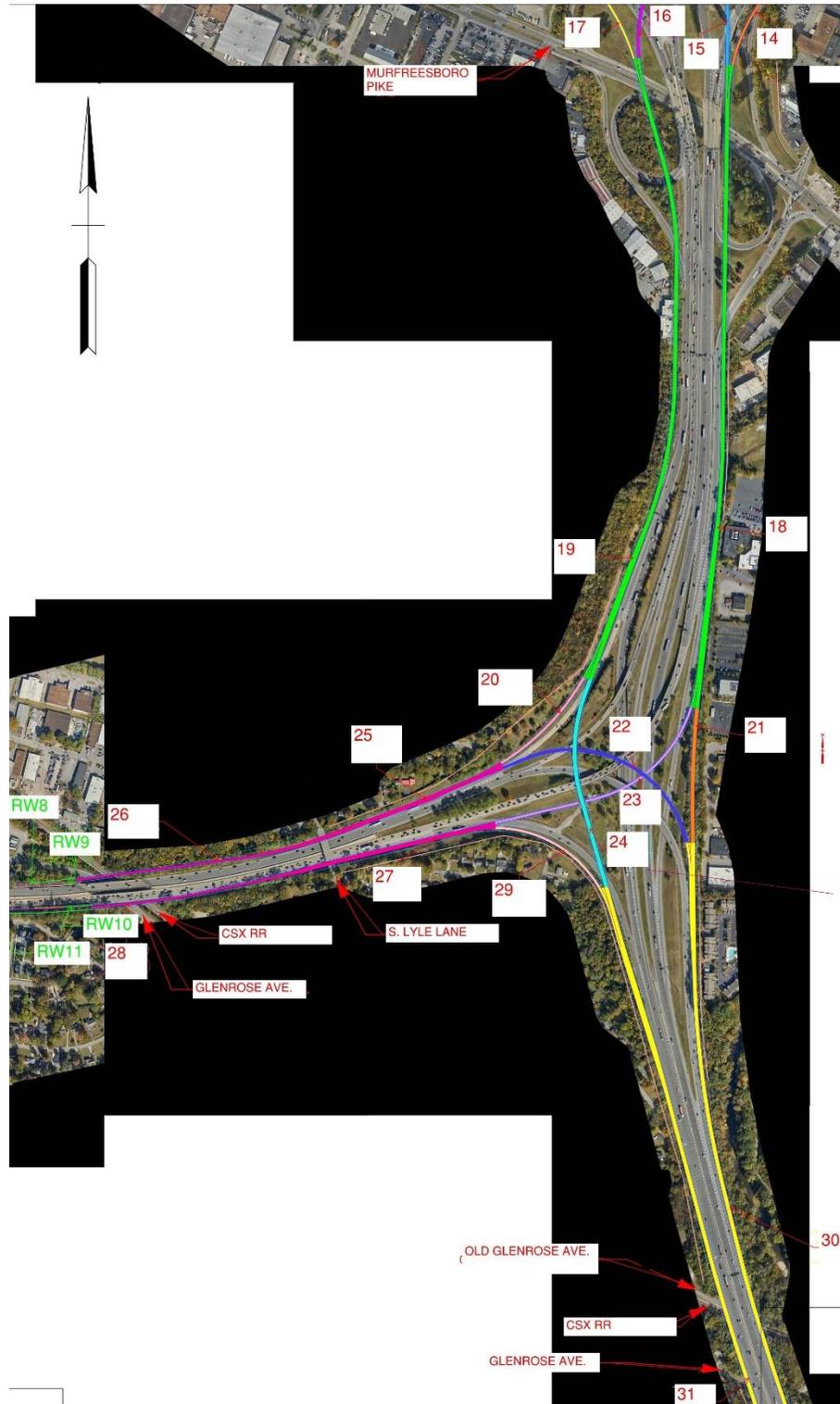


Figure 3-57: Alternative 2, Bridge and Retaining Wall Locations, Spence Ln to I-40/SR 155 (Briley Parkway) Interchange



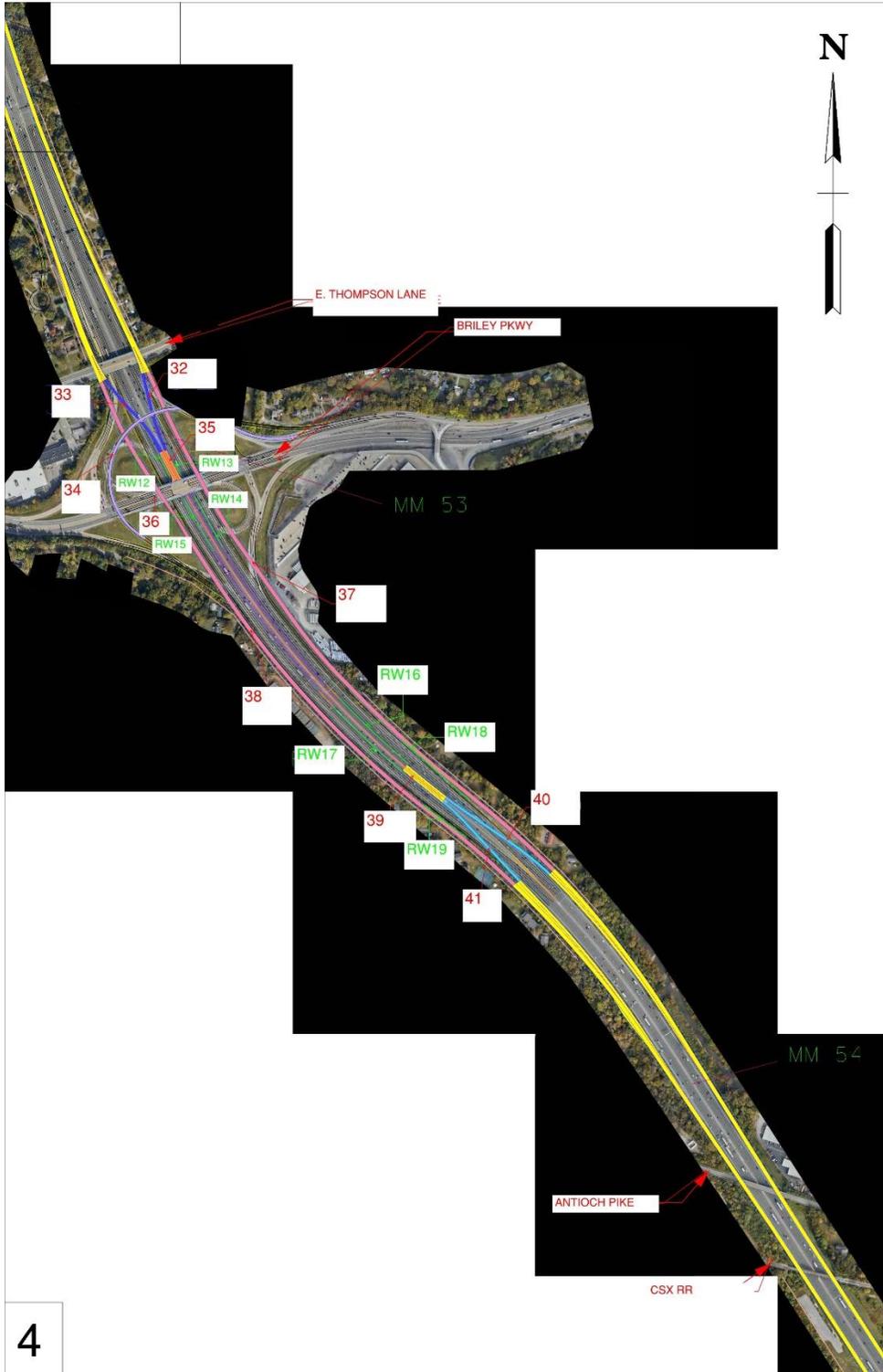
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**Figure 3-58: Alternative 2, Bridge and Retaining Wall Locations, Murfreesboro Pike to Glenrose Ave**



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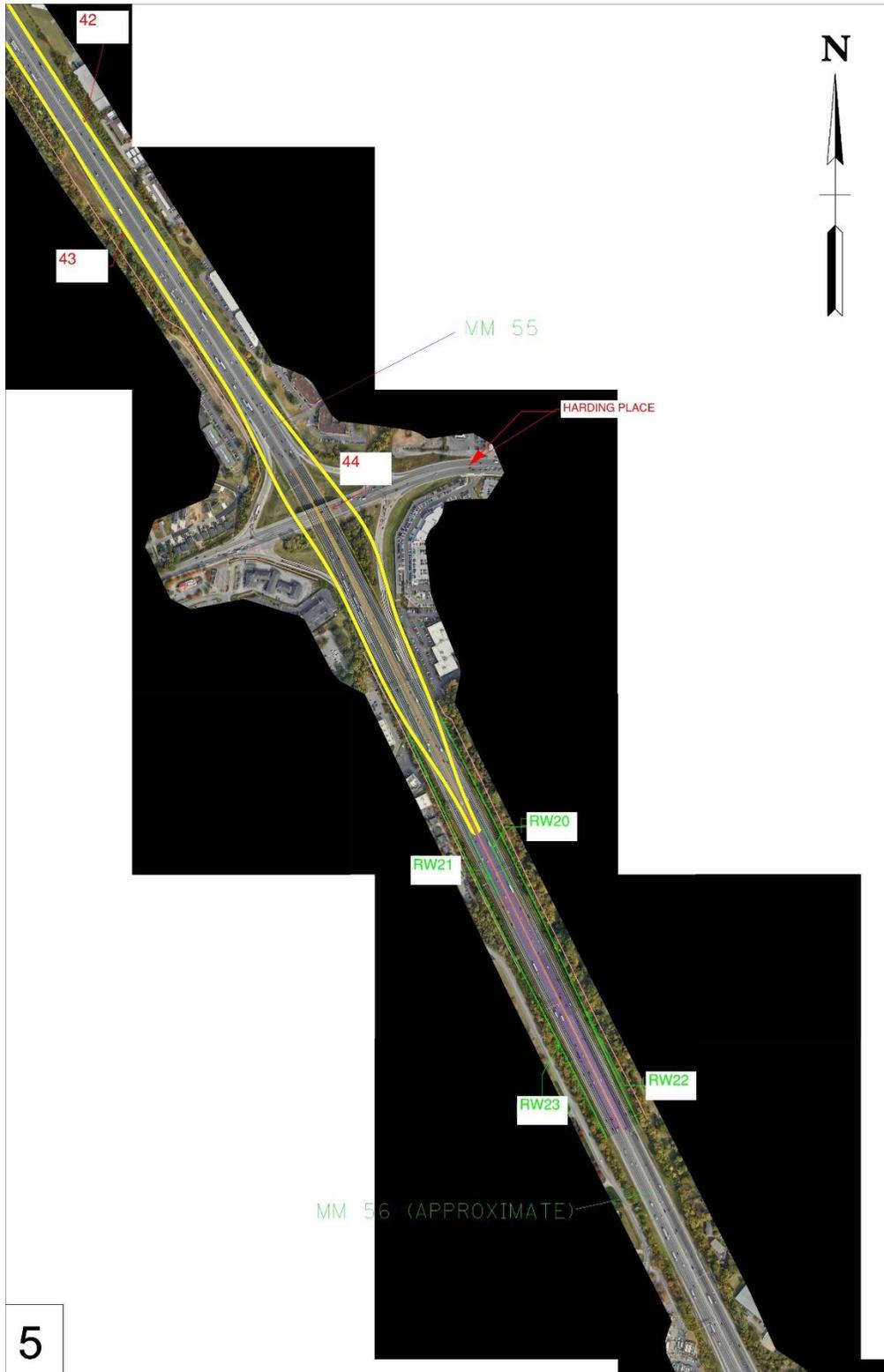
Figure 3-59: Alternative 2, Bridge and Retaining Wall Locations, East Thompson Ln to Antioch Pike



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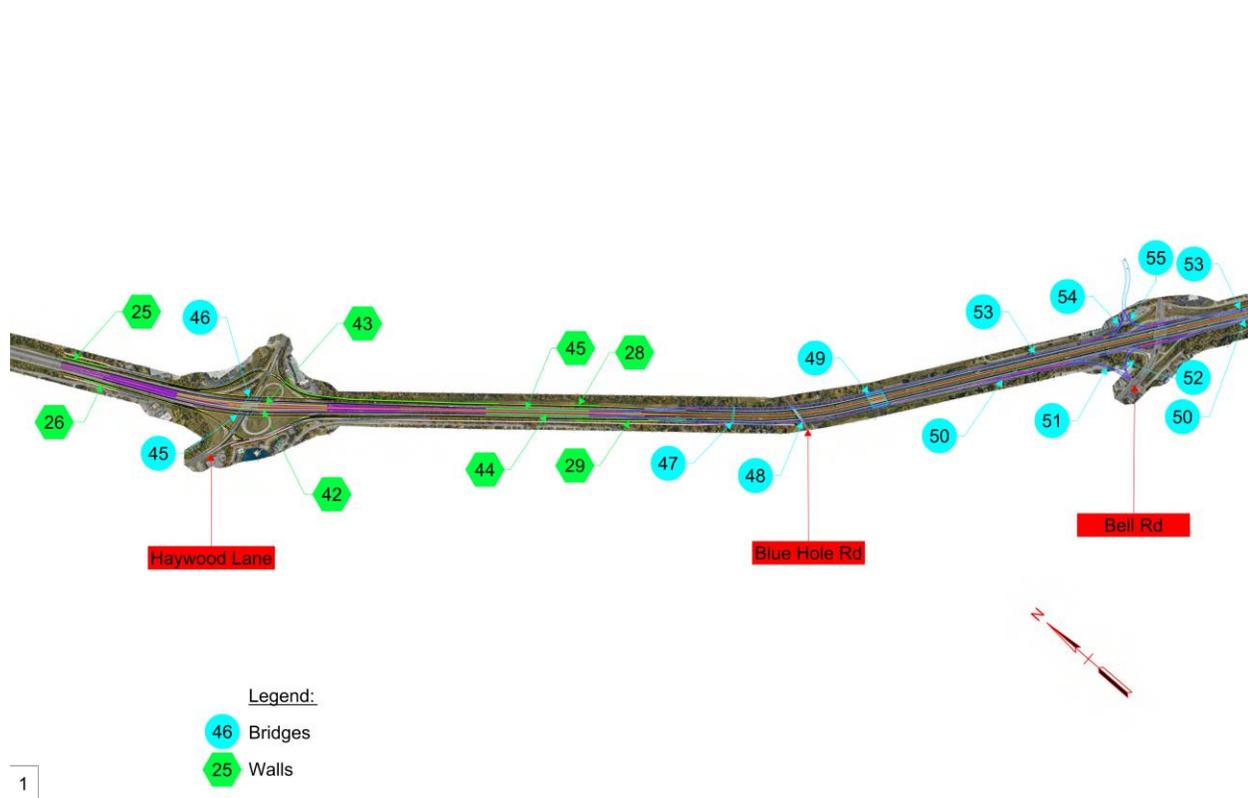
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Figure 3-60: Alternative 2, Bridge and Retaining Wall Locations, SR 255 (Harding PI) Interchange



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Figure 3-61: Alternative 2, Bridge and Retaining Wall Locations, Haywood Ln to SR 254 (Bell Rd) Interchange



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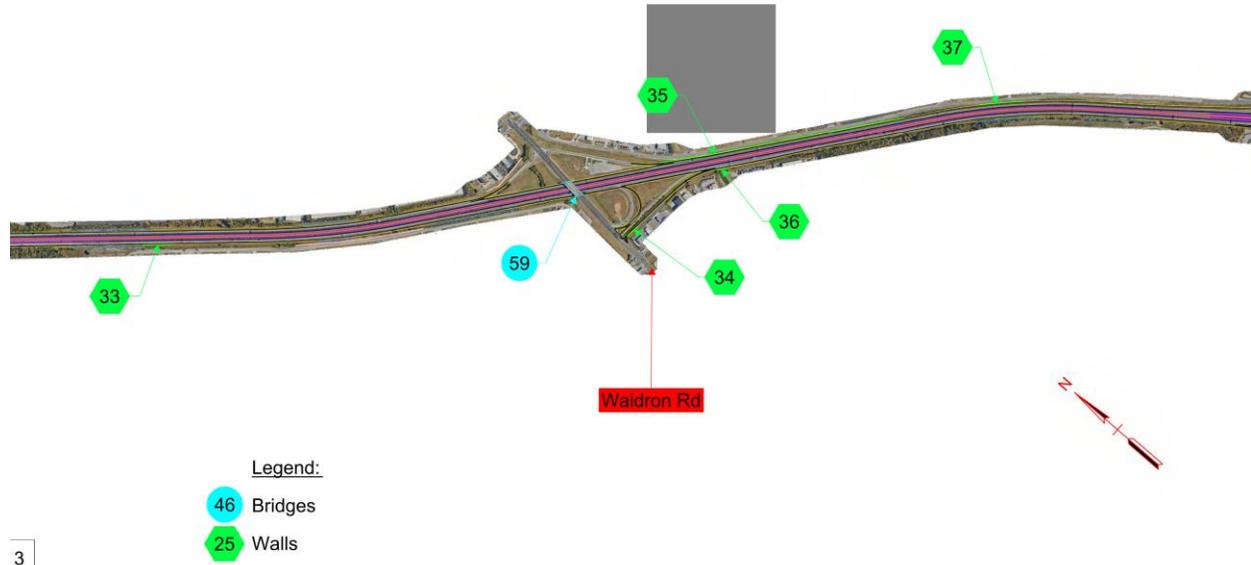
**Figure 3-62: Alternative 2, Bridge and Retaining Wall Locations, Hickory Hollow Pkwy to SR 171 (Old Hickory Blvd)**



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Figure 3-63: Alternative 2, Bridge and Retaining Wall Locations, Waldron Rd Interchange



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**Figure 3-64: Alternative 2, Bridge and Retaining Wall Locations, SR 266 (Sam Ridley Pkwy) Interchange**

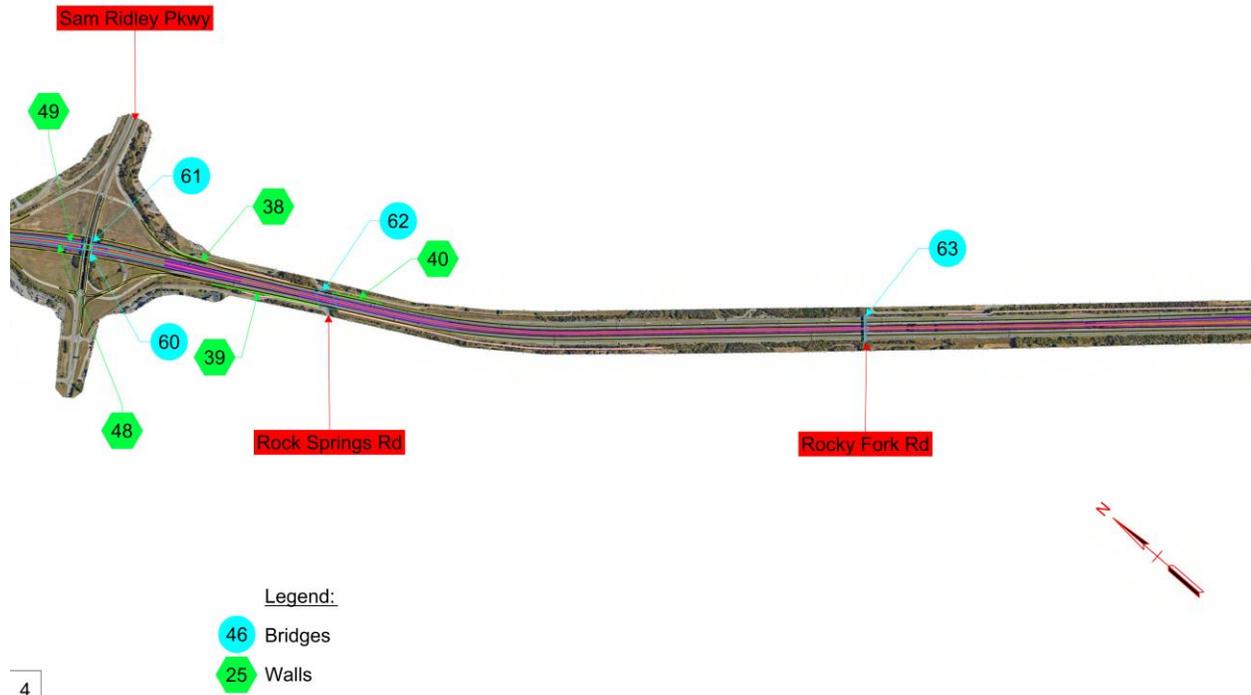
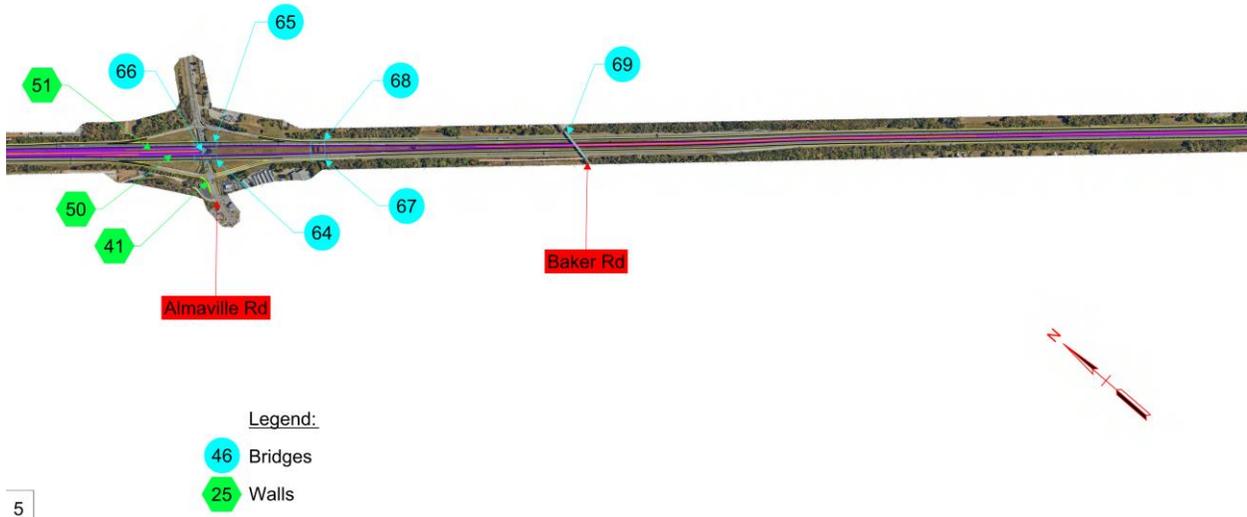


Figure 3-65: Alternative 2, Bridge and Retaining Wall Locations, SR 102 (Almaville Rd)



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## 3.3 Drainage Considerations

### 3.3.1 Major Crossings Basis of Design

H&H evaluations were performed to develop recommendations to assist in defining the technical criteria for concept and preliminary engineering at the major crossings for this proposed Project. Major crossings are over those streams in Zone A or AE special flood hazard areas as identified by the Federal Emergency Management Agency (FEMA) or according to design guidance outlined in the TDOT Design Procedure for Hydraulic Structures which states, "The Hydraulic Design and Permitting Section will be responsible for the hydraulic design of stream encroachments (bridges, culverts, channels, etc.) where the  $Q_{50}$  is greater than 500 ft<sup>3</sup>/s."

Based on the Effective Community Identification Number – Metropolitan Government of Nashville and Davidson County #470040, City of La Vergne #470167, Town of Smyrna #470169 and Unincorporated Areas of Rutherford County #470165, portions of the proposed Project are within a FEMA Zone AE floodplain with a designated floodway. Drainage, hydrology and the hydraulic design for the proposed Project roadways would conform to the requirements of the 2012 TDOT Design Procedure for Hydraulic Structures. This document is composed of ten memorandums labeled THM-01 through THM-10.

Drainage, hydrology and hydraulic design for the proposed Project roadways would also conform to the requirements of the *TN NFIP Guidance Document: No-Rise Submittals*. According to Title 44 of the Code of Federal Regulations, Section 60.3(d)(3), a community shall "prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge."

Three main criteria are set within the *TN NFIP Guidance Document: No-Rise Submittals*:

1. Special Flood Hazard Areas with Established Base Flood Elevations (Zone AE) and With Floodways Designated – 0.0-foot rise, no rise in the BFE.
2. Areas of Special Flood Hazard Zones AE with Established Base Flood Elevations but Without Floodways Designated – 1.0-foot rise allowed.
3. Streams without Established Base Flood Elevations and Floodways (A Zones) – Provide a buffer of 20 feet from the stream bank and the development/floodplain encroachment can cause 1.0 foot of rise.

If any of these criteria are not met, a Conditional Letter of Map A Revision (CLOMR)/Letter of Map A Revision (LOMR) will be required for submittal to the local floodplain manager and FEMA.

Volume One of the Metropolitan Nashville – Davidson County Stormwater Management Manual presents additional standards for construction within areas designated as floodways within the boundary of Metro Nashville.

- All floodplain alterations that result in the filling or elimination of floodplain storage shall provide compensating storage capacity by dredging out at least an equal amount of volume as occupied by fill.
- If floodplain alterations are approved and the proposed excavation, filling, or change of alignment of any existing channel under the jurisdiction of the U.S. Army Corps of Engineers (USACE) shall be approved by the USACE.

Other local ordinances including the city of LaVergne Zoning ordinance and the town of Smyrna Municipal Zoning ordinance contain floodway requirements consistent with the *TN NFIP Guidance Document: No-Rise Submittals*.

### 3.3.2 Design Frequency

Based on the design guidance outlined in the TDOT Design Procedure for Hydraulic Structures THM-03, the minimum design flood event magnitude for stream crossings on Interstates and other four or more lane routes is the 100-year design flood event. If not governed by the *TN NFIP Guidance Document: No-Rise Submittals*, the maximum acceptable rise when comparing existing conditions to proposed conditions is 1 foot.

### 3.3.3 Bridges

#### HYDRAULIC OPENING

Per THM-03, all proposed bridges shall pass the 500-year frequency storm without causing structural failure. The bridge profile should provide a minimum clearance of 1 foot above the design flood to the low chord. On this proposed Project, existing bridges to remain in place would not be modified to meet the standard of THM-03.

### 3.3.4 Culverts

As outlined in the TDOT Drainage Manual Chapter 4.03, cross structures under interstates are designed for the 50-year frequency storm and checked for the 100-year storm. Culvert structures are designed to:

1. Not significantly increase the flood hazard for adjacent property;
2. Maintain traffic on roads and streets under design flood conditions; and

3. Provide freeboard, which is defined as the allowable headwater elevation, at or below the bottom of the roadway subgrade.

Chapter 6.04.2.4.4 of the TDOT Drainage Manual outlines the following guidelines to be followed for culvert design regarding the allowable headwater elevation:

1. For any project where an existing culvert will be replaced, the performance of that culvert for the design discharge should be analyzed to determine the existing headwater elevation.
2. The headwater created by a replacement culvert at the design discharge should be no greater than the headwater created by the existing culvert.
3. For new alignment projects where a culvert is placed in a stream or sheet flow area, a reasonable effort should be made to determine the water surface elevation for the design flow prior to the project. The headwater elevation due to the new culvert should be no higher than the channel banks or no more than 1 foot above the pre-project water surface elevation, whichever is greater. The difference between the pre-project and post-project headwater surface elevations may be measured at the ROW line.

### 3.3.5 Results

The drainage crossings evaluated for this Interstate 24 Southeast Choice Lanes Project are included in **Table 3-6**. See **Figure 3-66**, **Figure 3-67** and **Figure 3-68** for a location map of the major crossings within the corridor. At the beginning of the proposed Project, data from the USACE's Hydrologic Engineering Center's River Analysis System (HEC-RAS) was requested from FEMA at all major crossings. When available this data was utilized in the review of each stream crossing and/or where roadway fill impacted these streams. When FEMA data was unavailable, HEC-RAS models were obtained from the USACE Nashville District, or new HEC-RAS models were developed using information from Flood Insurance Studies (FIS), topographic surveys and existing LiDAR models available from the state of Tennessee. See existing structure elevation drawings in **Figure 3-69**, **Figure 3-70**, **Figure 3-71**, **Figure 3-72** and **Figure 3-73**.



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**Table 3-6: Major Crossings Data**

Crossing	Existing Structure	Hydrology	Corrected Model	Hydraulic Notes
I-40 over Mill Creek  MP: 214.0	232-foot, 5-span, Concrete Girder with Concrete Deck Bridge  Bridge 19I00400117	FIS methodology: HEC-HMS 3.4 (USACE 2009) FIS 100-YR Q=30,800 CFS	Updated topography with survey and U.S. Geological Survey (USGS) Digital Elevation Model (DEM)	FIS methodology: HEC-RAS 4.1.0 (USACE 2010a) Insufficient clearance to low chord; no overtopping noted by TDOT maintenance
I-24 over Unnamed Tributary of Mill Creek  MP: 52.3	(1) 12-foot x 6-foot Concrete Box Culvert	Non-FIS structure USGS Regression Equations: 50-YR Q=528 CFS 100-YR Q=601 CFS	Not on FIS stream Developed model from topography from survey	HY-8 Sufficient freeboard to road subgrade
I-24 over Sevenmile Creek  MP: 54.5	135-foot, 3-span Concrete Girder with Concrete Deck Bridge  Bridge 19I00240021	FIS methodology: HEC-1 (USACE 1998) FIS 100-YR Q=10,590 CFS	Updated topography with survey and USGS DEM	FIS methodology: HEC-RAS 4.1.0 (USACE 2010a) Sufficient clearance to low chord

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Crossing	Existing Structure	Hydrology	Corrected Model	Hydraulic Notes
I-24 over Sorghum Branch  MP: 55.8	(2) 10-foot x 8-foot Concrete Slab Bridge  Bridge 19I00240031	FIS methodology: HEC-1 (USACE 1998) FIS 50-YR Q=2,205 CFS FIS 100-YR Q=2,485 CFS	Updated topography with survey and USGS DEM	FIS methodology: HEC-RAS 4.1.0 (USACE 2010a) Existing condition has insufficient freeboard to road subgrade; no overtopping noted by TDOT maintenance
Harding Place over Sorghum Branch	(2) 10-foot x 8-foot Concrete Slab Bridge  Bridge 19004430003	FIS methodology: HEC-1 (USACE 1998) FIS 50-YR Q=2,360 CFS FIS 100-YR Q=2,550 CFS	Updated topography with survey and USGS DEM	FIS methodology: HEC-RAS 4.1.0 (USACE 2010a) Sufficient freeboard to road subgrade
I-24 over Whittemore Branch MP: 58.26	(2) 12-foot (W) x 10-foot (H) Concrete Slab Bridge Bridge ID 19I00240035	FIS Methodology: HEC-1 (USACE 1998) FIS 50-YR Q=4,132 CFS FIS 100-YR Q=4,414 CFS	Updated with current USGS DEM	FIS Methodology: HEC-RAS 4.1.0 (USACE 2010a) Sufficient freeboard to road subgrade
I-24 over Mill Creek MP: 58.63	167-foot, 1-Span, Cast in place concrete bridge Bridge ID 19I00240039	FIS Methodology: HEC-HMS 3.4 (USACE 2009) FIS 100-YR Q=28,000 CFS	Updated with current USGS DEM	FIS Methodology: HEC-RAS 4.1.0 (USACE 2010a) Insufficient clearance, overtopped

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Crossing	Existing Structure	Hydrology	Corrected Model	Hydraulic Notes
I-24 over Collins Creek MP: 59.71	(2) 10-foot (W) x 7-foot (H) Concrete Slab Bridge Bridge ID 19I00240043	FIS Methodology: HEC-HMS 3.4 (USACE 2009) FIS 50-YR Q=2,683 CFS FIS 100-YR Q=3,000 CFS	Updated with current USGS DEM	FIS Methodology: HEC-RAS 4.1.0 (USACE 2010a) Insufficient clearance, overtopped
I-24 over West Branch Hurricane Creek MP: 63.03	(2) 10-foot (W) x 7.5-foot (H) Concrete Slab Bridge Bridge ID 19I00240049	FIS Methodology: HEC-HMS 4.0 (USACE 2013) FIS 50-YR Q=2,050 CFS FIS 100-YR Q=2,155 CFS	FEMA did not provide the current effective model USACE provided effective model that was submitted to FEMA Updated with current USGS DEM	FIS Methodology: HEC-RAS 4.1.0 (USACE 2010a) Sufficient freeboard to road subgrade
I-24 over East Branch Hurricane Creek MP: 64.27	(4) 12-foot (W) x 4-foot (H) Concrete Slab Bridge Bridge ID 75I00240001	FIS Methodology: Regression Equations (USGS 1976) FIS 50-YR Q=2,600 CFS FIS 100-YR Q= 3,300 CFS	Developed existing model from survey and USGS DEM Channel from HEC2	FIS Methodology: HEC-2 (USACE 1974) Insufficient freeboard to road subgrade

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Crossing	Existing Structure	Hydrology	Corrected Model	Hydraulic Notes
I-24 over Unnamed Tributary of East Branch Hurricane Creek MP: 64.67	(1) 10-foot (W) x 8-foot (H) Concrete Box Culvert Culvert ID 75CULV01007	Discharge Methodology: Regression Equations (USGS 2000) 50-YR Q=634 CFS 100-YR Q=722 CFS	Developed from survey	Not a FEMA-mapped stream HY-8 Sufficient freeboard to road subgrade
I-24 over Rock Springs Branch MP: 69.88	195-foot, 2-span, Steel Continuous Bridge Bridge ID 75I00240005	FIS Methodology: Regression Equations (USGS 2000) FIS 100-YR Q=2,298 CFS	FEMA did not provide the current effective model USACE provided a post-2010 flood study Updated with current USGS DEM	FIS Methodology: HEC-RAS 4.1.0 (USACE 2010a) Sufficient clearance to low chord
I-24 over Olive Branch MP: 69.88	195-foot, 3-span Reinforced Concrete Deck Girder Bridge Bridge ID 75I00240010	FIS Methodology: Regression Equations (USGS 1984) FIS 100-YR Q=4,409 CFS	Georeferenced Updated model with USACE post-2010 flood study model and topography with current USGS DEM	FIS Methodology: HEC-2 (USACE 1991) Sufficient clearance to low chord

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Crossing	Existing Structure	Hydrology	Corrected Model	Hydraulic Notes
I-24 over Stewart Creek MP: 79.38	146-foot, 3-span Reinforced Concrete Deck Girder Bridge Bridge ID 75I00240011 Bridge ID 75I00240012	FIS Methodology: Regression Equations (USGS 2000) FIS 100-YR Q=14,599 CFS	FEMA did not provide the current effective model USACE provided a post-2010 flood study Updated with current USGS DEM	FIS Methodology: HEC-RAS 4.1.0 (USACE 2010a) Insufficient clearance

*Table Abbreviations:*

*CFS – Cubic Feet per Second*

*H – Height*

*W – Width*

*YR – Year*

*Other abbreviations as previously defined.*

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### 3.3.6 Reasonable Alternatives Drainage Evaluations

The proposed CL Reasonable Alternatives along the existing Interstate corridors are previously discussed in **Section 2: Alternatives Screening & Analysis**. The following presents descriptions of drainage conditions along the corridor.

#### **I-40 OVER MILL CREEK – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL was performed utilizing the HEC-RAS 6.5.0 computer program developed by the USACE. Results of the modeling did not indicate a significant difference between the two alternatives when reviewing the bridge over Mill Creek. Both alternatives indicated additional elevated structures would be built for the CL. The clear span and low chord would remain as shown in existing conditions. Both alternatives appear to meet design criteria and regulatory floodplain requirements.

#### **I-24 OVER UNNAMED TRIBUTARY TO MILL CREEK – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL was performed utilizing the HY-8 7.60 computer program developed in coordination with the Federal Highway Administration (FHWA). Results of the modeling did not indicate a significant difference between the two alternatives when reviewing the box culvert over the Unnamed Tributary to Mill Creek. Both alternatives indicated additional elevated structures would be built for the CL and that the box culvert would not require lengthening as part of either alternative and would therefore not impact the hydraulics. Both alternatives appear to meet design criteria.

#### **I-24 ADJACENT TO MILL CREEK – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL was performed utilizing HEC-RAS 6.5.0. Results of the modeling suggest elevated CL to the outside of the existing I-24 corridor would minimize impacts to Mill Creek when compared to at-grade CL. Elevated CL would provide a no-rise scenario, while at-grade CL would create a rise in the water surface elevation between 0.2 and 0.5 feet due to the addition of fill to the floodplain and floodway. If the at-grade option is selected in areas adjacent to Mill Creek, additional coordination with FEMA and the preparation and submission of a CLOMR is anticipated. The CLOMR process may add approximately 18 months to design before construction can begin within the floodplain limits.

#### **I-24 OVER SEVENMILE CREEK – ALTERNATIVES DISCUSSION**

A preliminary analysis of elevated CL was performed utilizing HEC-RAS 6.5.0. Results of the modeling did not indicate a significant difference between the two alternatives when reviewing the bridge over Sevenmile Creek. Both alternatives indicated additional elevated structures would be built for the CL. The clear span and low chord would remain as shown

in existing conditions. Both alternatives appear to meet design criteria and regulatory floodplain requirements.

### **I-24 OVER SORGHUM BRANCH – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL was performed utilizing HEC-RAS 6.5.0. Results of the modeling did not indicate a significant difference between the two alternatives when reviewing the slab bridge over Sorghum Branch. The additional 80 feet of length needed for the slab bridge under I-24 in Alternative 1 did not change the freeboard or adversely impact the headwater. Both alternatives appear to meet design criteria and regulatory floodplain requirements.

### **HARDING PLACE OVER SORGHUM BRANCH – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL was performed utilizing HEC-RAS 6.5.0. Results of the modeling did not indicate a significant difference between the two alternatives when reviewing the slab bridge over Sorghum Branch. The slab bridge under SR 255 (Harding Place) does not require lengthening as part of either alternative and would therefore not impact the hydraulics. Both alternatives appear to meet design criteria and regulatory floodplain requirements.

### **I-24 OVER WHITTEMORE BRANCH – ALTERNATIVES DISCUSSION**

Whittemore Branch is in Mill Creek backwater from its confluence with Mill Creek to I-24 for the 100-year flood event. A preliminary analysis of at-grade versus elevated CL was performed utilizing HEC-RAS 6.5.0. Results of the modeling indicated elevated CL to the outside of the existing I-24 corridor would minimize impacts to Mill Creek when compared to at-grade CL. Elevated CL would provide a no-rise scenario, while at-grade CL could create a rise in the water surface elevation between 0.2 and 0.3 feet. A rise could be mitigated by increasing the size of the concrete slab bridge openings. Additionally, elevated CL are preferred over Whittemore Branch because of its proximity to the Mill Creek and Collins Creek crossings and the backwater from Mill Creek.

### **I-24 OVER MILL CREEK – ALTERNATIVES DISCUSSION**

The existing condition for Mill Creek overtops I-24 during the 100-year flood event spanning from the crossing to just west of the SR 254 (Bell Road) interchange. Additionally, the I-24 crossing is within the regulatory floodway. Mill Creek, as it crosses under I-24, is in an inlet-controlled scenario, with a 3.5-foot difference in elevation from downstream to upstream of the bridge for the 100-year flood. A preliminary analysis was performed utilizing HEC-RAS 6.5.0 to evaluate a widening of the existing bridge opening. An opening approximately three times the width of the existing opening was modeled and resulted in a decrease of

elevation in the upstream reach ranging from 1.4 to 2.6 feet without any adverse impact downstream.

I-24 at the Mill Creek crossing is in the floodplain under existing conditions, therefore elevated CL to the outside of the existing I-24 corridor would be preferred. At-grade CL would cause a rise in the water elevation under flood conditions when fill material is introduced. Widening of the bridge opening could mitigate rises in flood elevation that would occur along Mill Creek and the portion of Collins Creek affected by Mill Creek backwater.

### **I-24 OVER COLLINS CREEK – ALTERNATIVES DISCUSSION**

The confluence of Collins Creek with Mill Creek is just upstream of the I-24 over Mill Creek crossing. Collins Creek extends upstream adjacent to I-24 and crosses under I-24 just east of the SR 254 (Bell Road) interchange. The portion of Collins Creek from the confluence with Mill Creek to just west of SR 254 (Bell Road) is in Mill Creek backwater for the 100-year flood event. The existing condition for Collins Creek/Mill Creek backwater overtops I-24 during the 100-year flood event from the confluence to just west of the SR 254 (Bell Road) interchange. Additionally, the floodway for Collins Creek is adjacent to I-24 in this reach. The I-24 crossing over Collins Creek is overtopped by the 100-year flood event and is within the regulatory floodway.

I-24 along and over Collins Creek is in the floodplain under existing conditions, therefore elevated CL would be preferred to minimize impacts. The elevated CL alternative intends to limit fill and construction within the Collins Creek floodway but may not be completely avoided. At-grade CL would cause a rise in the water elevation the full length of Collins Creek. Widening of the bridge opening of I-24 over Mill Creek, would reduce the Mill Creek backwater elevation into Collins Creek and could mitigate rises in flood elevation within the portion of Collins Creek that is in backwater. Rises in water elevation in the remainder of Collins Creek could be mitigated by widening of the creek channel. Additionally, the concrete slab bridge would require lengthening for the at-grade CL alternative.

### **I-24 OVER WEST BRANCH HURRICANE CREEK – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL did not indicate a significant difference when reviewing the slab bridges over the west branch of Hurricane Creek. The slab bridge is not likely to require lengthening to accommodate at-grade CL.

### **I-24 OVER EAST BRANCH HURRICANE CREEK – ALTERNATIVES DISCUSSION**

A preliminary analysis of the two at-grade interchange alternatives did not indicate a significant difference when reviewing the bridges over East Branch Hurricane Creek. Neither the addition of 30 feet of length potentially needed for the slab bridge under I-24 in

Alternative 1 nor the addition of 60 feet of length for Alternative 2 changed the freeboard or adversely impacted the headwater.

### **I-24 OVER ROCK SPRINGS BRANCH – ALTERNATIVES DISCUSSION**

A preliminary analysis of at-grade versus elevated CL did not indicate a significant difference when reviewing the bridges over Rock Springs Branch. The clearance to the low chord would remain unaffected.

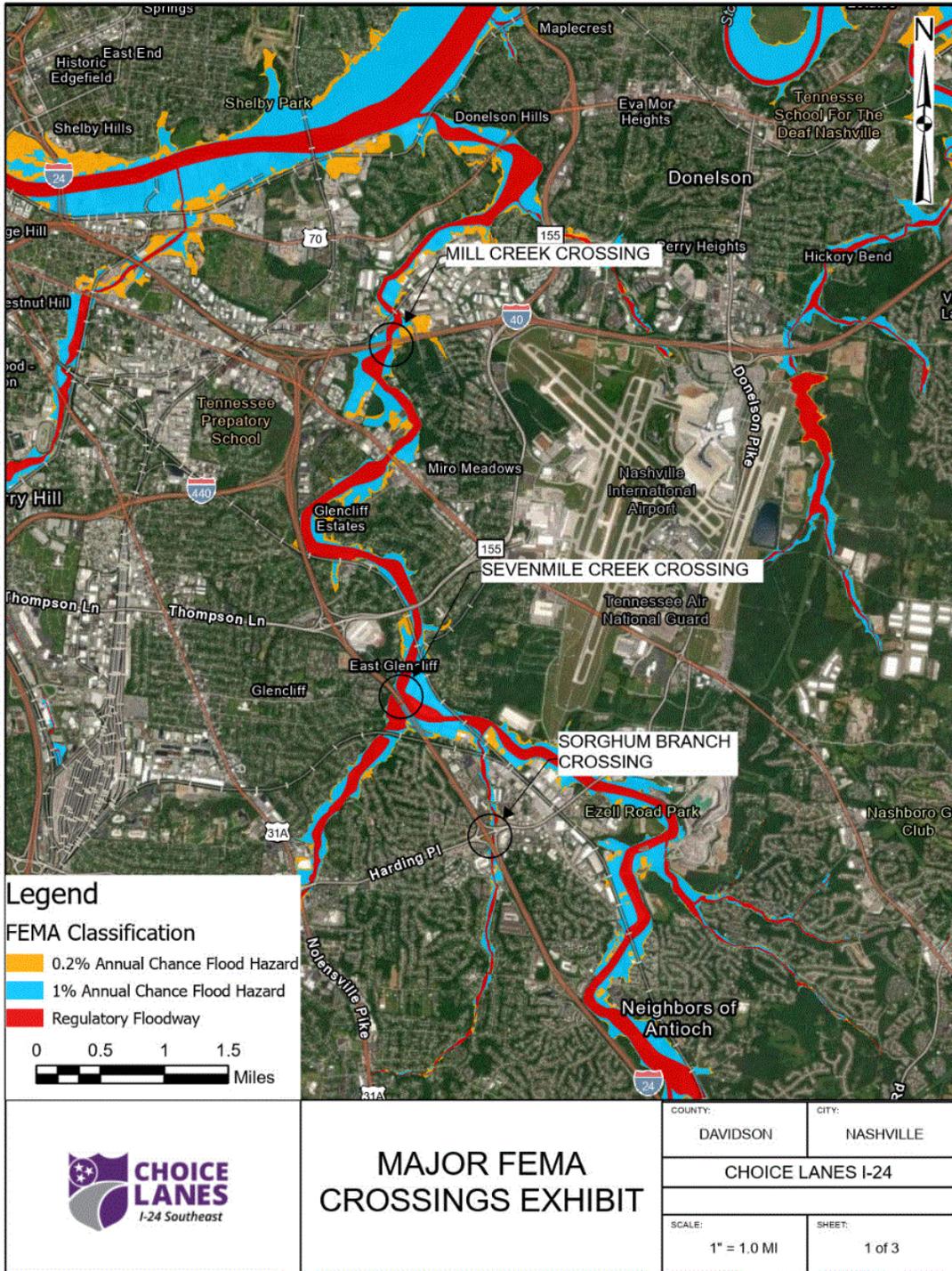
### **I-24 OVER OLIVE BRANCH – ALTERNATIVES DISCUSSION**

Olive Branch flows adjacent to SR 102 (Almaville Road) under the I-24 interchange. SR 102 (Almaville Road) lies within the existing regulatory floodway of Olive Branch. Results of a preliminary analysis indicated that single CL would minimize the impacts to the floodway versus two CL exiting at the SR 102 (Almaville Road) interchange. The preliminary analysis evaluated whether a widening of the Olive Branch channel and the associated I-24 crossings would reduce the floodplain elevation through the interchange. Results indicated that floodplain elevations could be reduced through channel widening to potentially offset increases caused by fill in the floodplain to construct the interchange, however, the floodplain would not be reduced below the grade of SR 102 (Almaville Road).

### **I-24 OVER STEWART CREEK – ALTERNATIVES DISCUSSION**

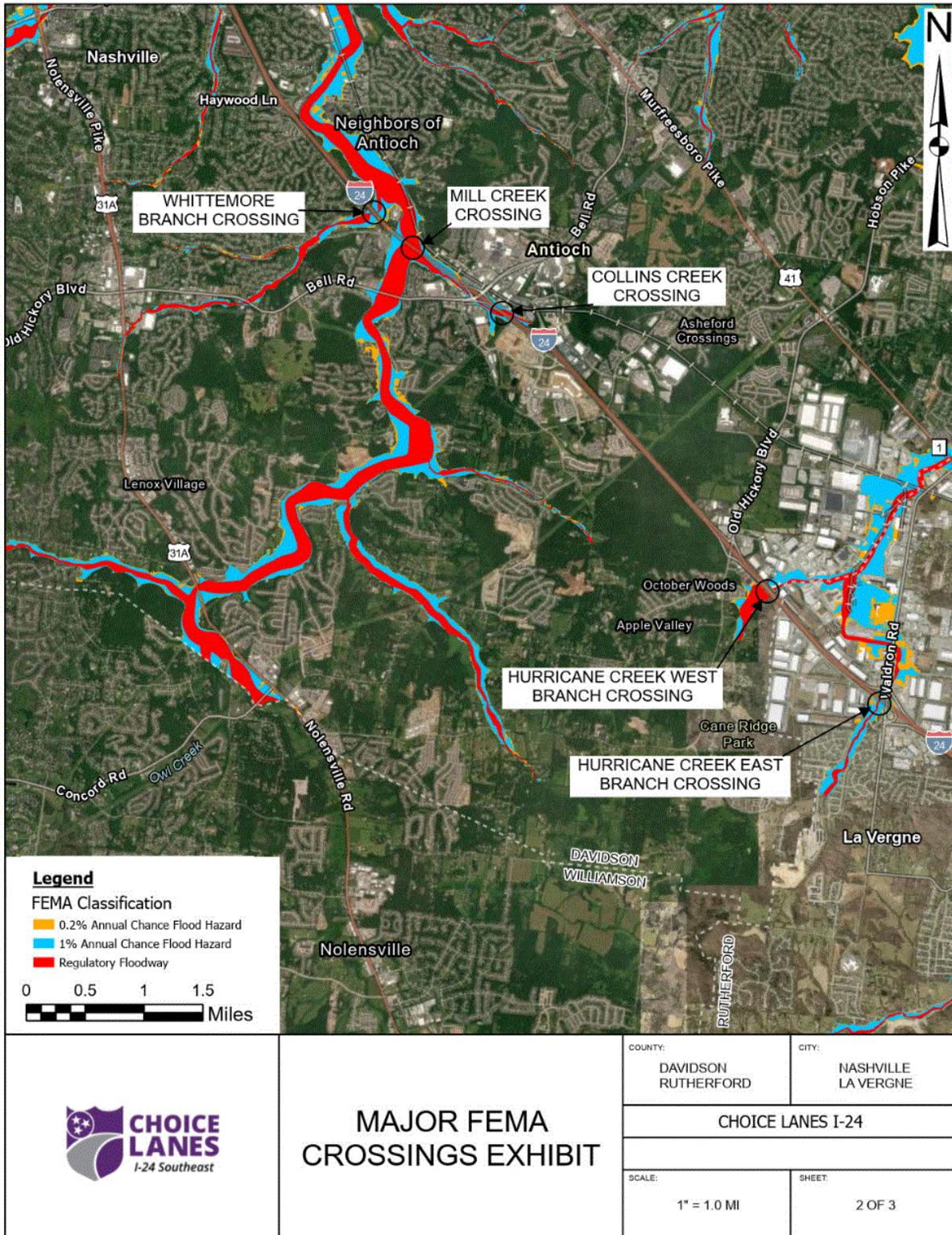
A preliminary analysis of at-grade versus elevated CL did not indicate a significant difference when reviewing the bridges over Stewart Creek. There is currently insufficient clearance to the low chord under existing conditions. Potential widening of the bridges did not change the clearance.

Figure 3-66: Major FEMA Crossings Exhibit A



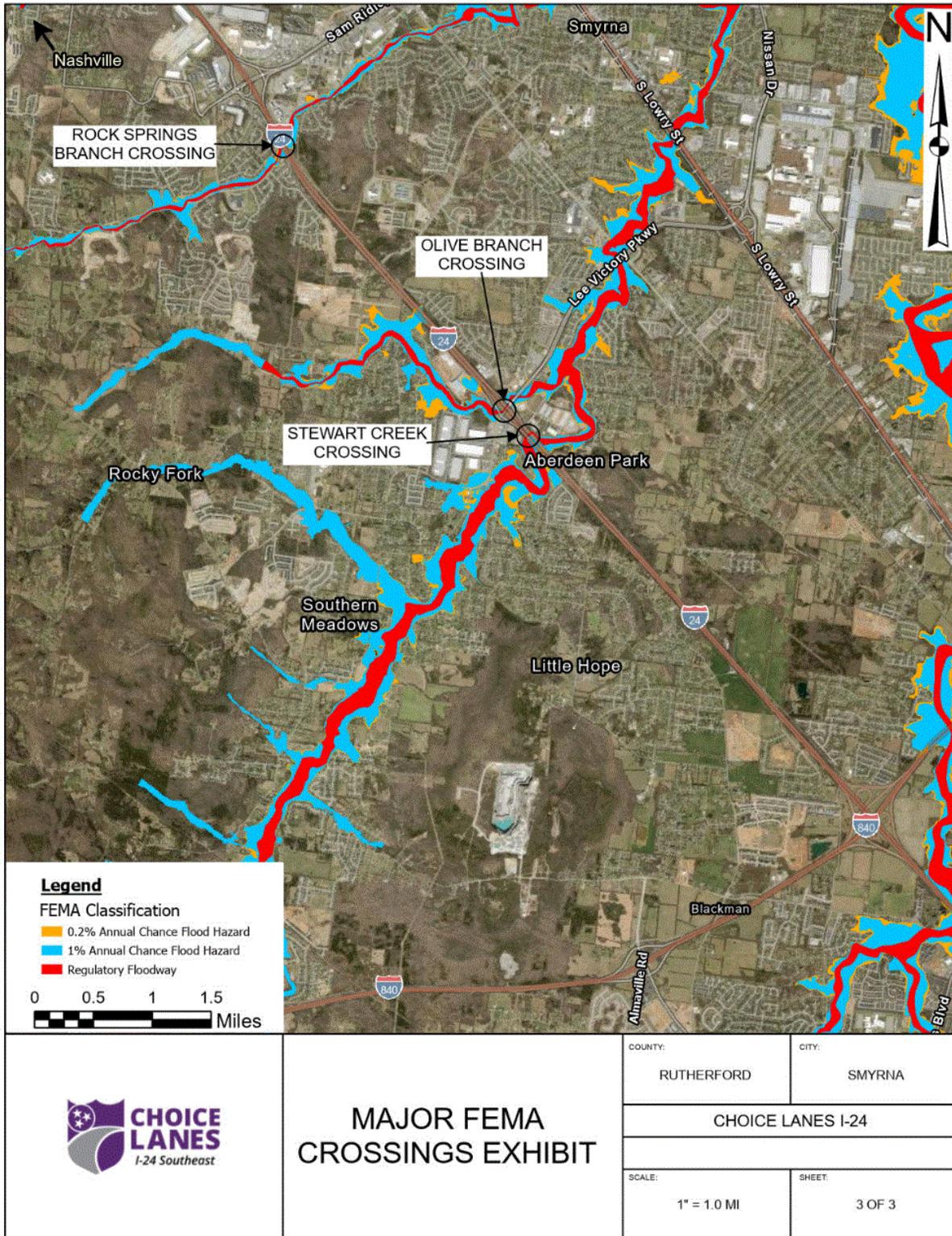
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Figure 3-67: Major FEMA Crossings Exhibit B



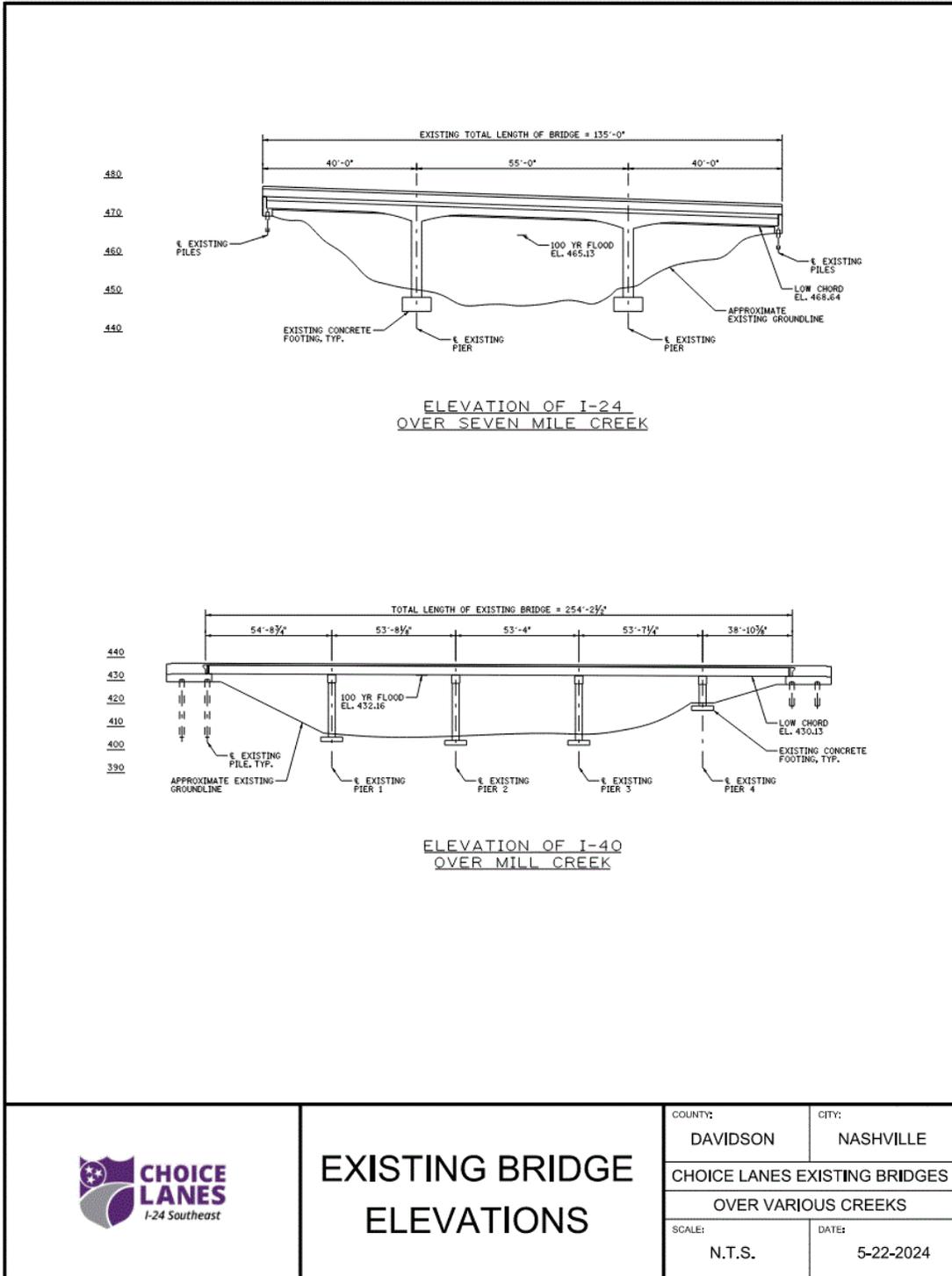
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Figure 3-68: Major FEMA Crossings Exhibit C



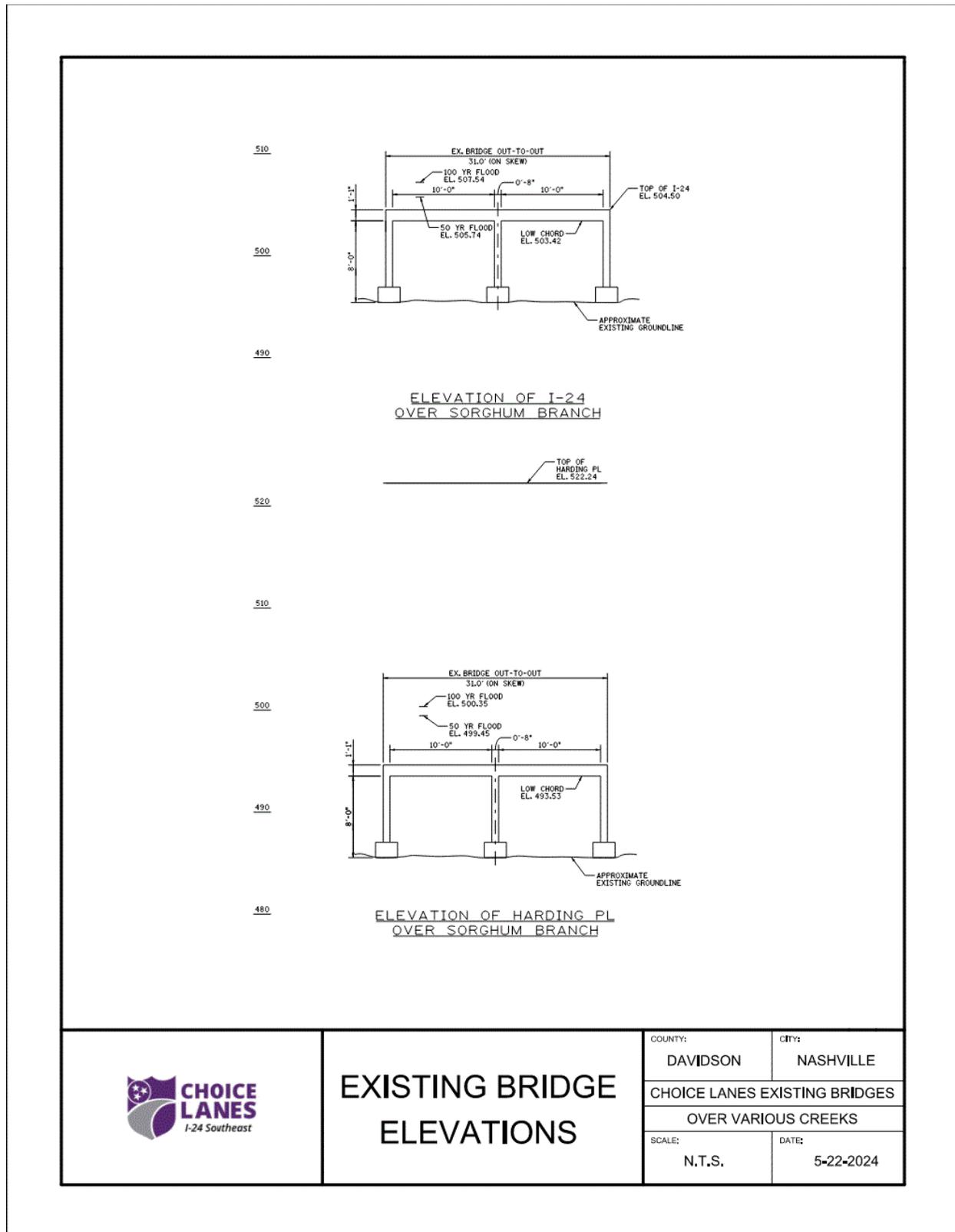
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Figure 3-69: Existing Bridge Elevations A



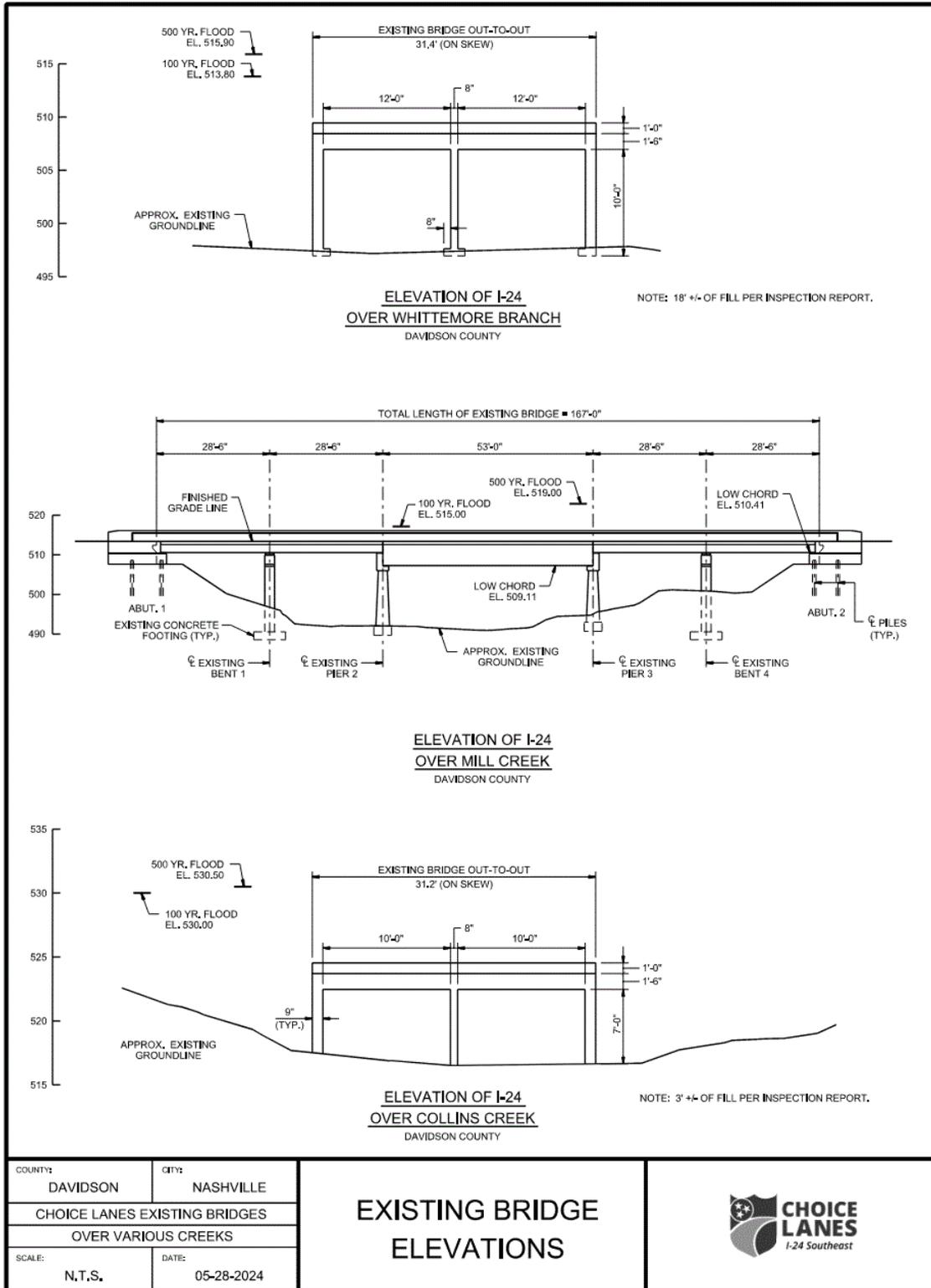
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**Figure 3-70: Existing Bridge Elevations B**



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Figure 3-71: Existing Bridge Elevations C

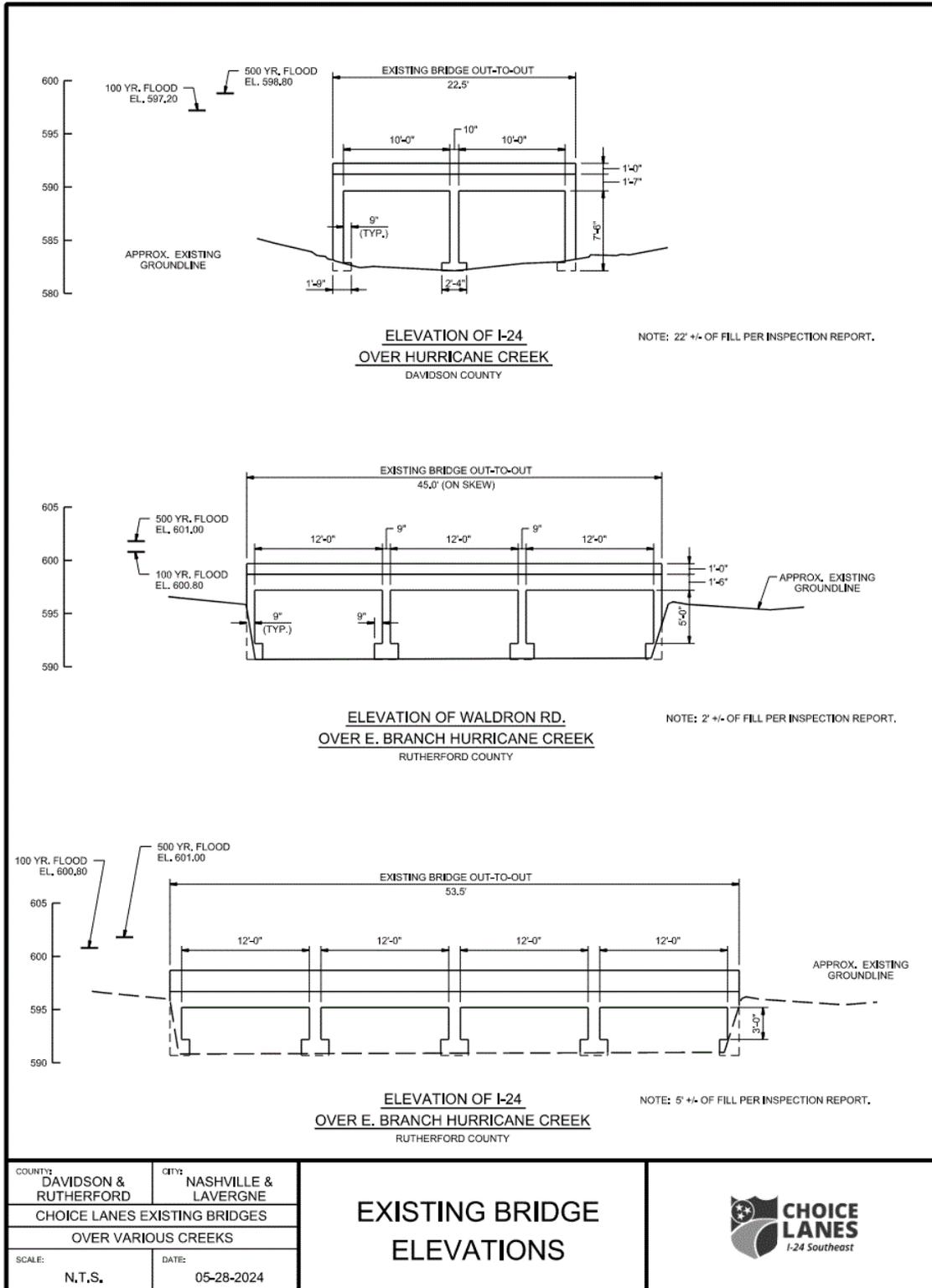


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COUNTY: DAVIDSON	CITY: NASHVILLE	<b>EXISTING BRIDGE ELEVATIONS</b>	
CHOICE LANES EXISTING BRIDGES OVER VARIOUS CREEKS			
SCALE: N.T.S.	DATE: 05-28-2024		

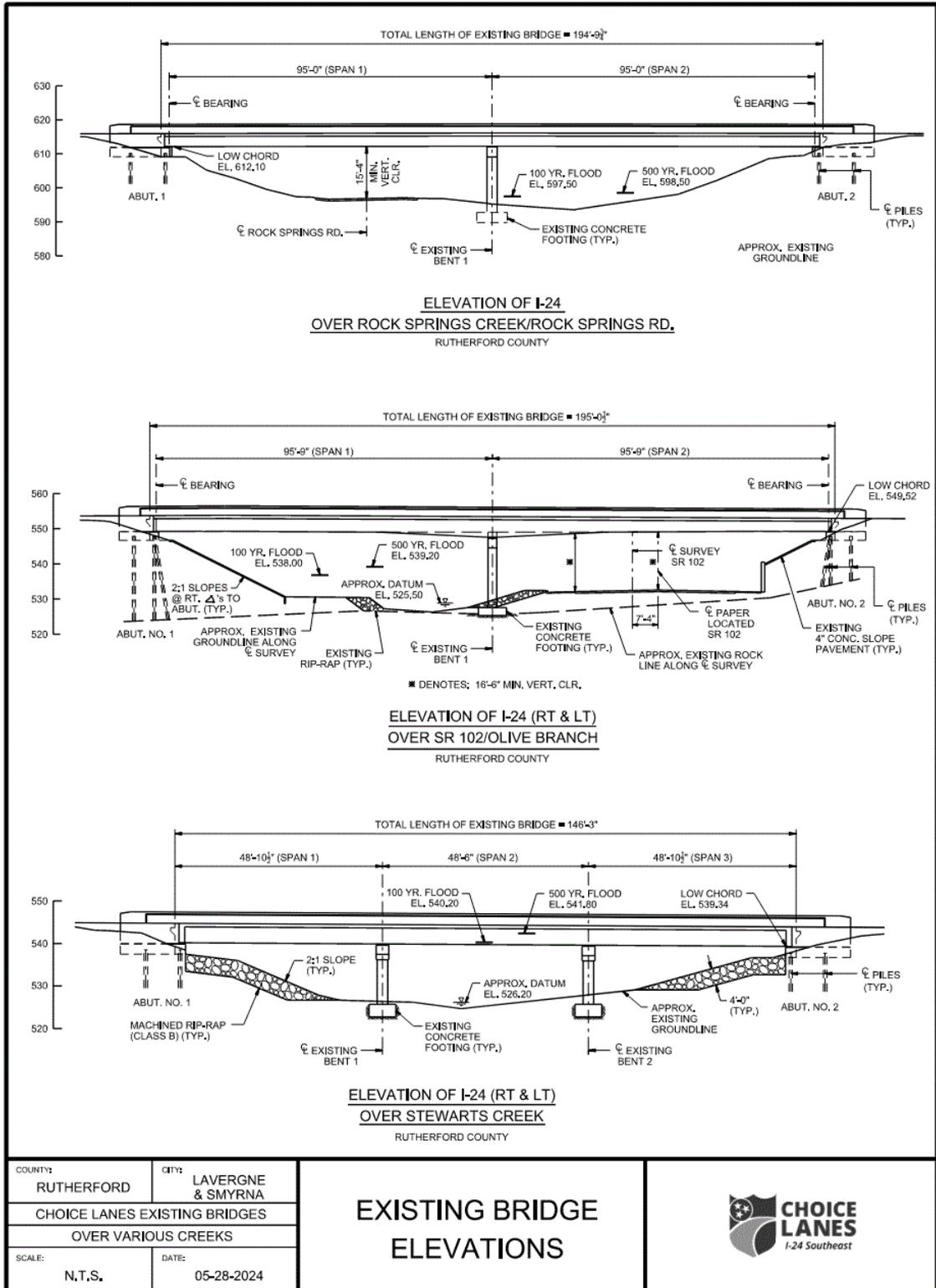
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**Figure 3-72: Existing Bridge Elevations D**



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Figure 3-73: Existing Bridge Elevations E



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## 3.4 Utilities

### 3.4.1 Basis Of Evaluation

Preliminary utility data has been collected to further establish existing conditions within the I-24 Southeast Choice Lanes Project. Information pertaining to the locations of infrastructure such as communication, natural gas, sanitary sewer, overhead (OH) electrical, gas transmission, fiber optic and water lines will be used to minimize conflicts with existing utility facilities as well as generate cost estimates should these facilities be disturbed. The utility information gathered will be used to coordinate with owners whose facilities fall within Project bounds. Plans for utility preservation or relocation where appropriate will be made utilizing data collected with a topographic survey along with data provided by utility owners. As the proposed Project progresses, the next step is to send early coordination letters to utilities within the identified corridor. An early coordination meeting with impacted utilities will be held to further identify the type, size and location of each utility. This information will be used to guide the design and better refine the risk matrix. Coordination will also include information gathering to understand long lead items related to construction and potential schedule impacts.

### 3.4.2 Identified Utilities

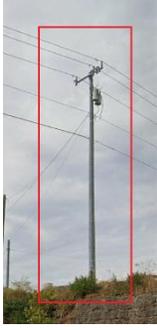
**Table 3-7** below summarizes the major utility crossings currently identified within the I-24 Southeast corridor. The table organizes crossings by section, utility type, risk category, MP and potential owner. Images have been included where pertinent. The table begins with the northwestern end of I-24 and concludes with the southeastern end of I-24. Crossings within these sections are ordered by MP and proceed in ascending order. The risk category is separated into high-, moderate- or low-risk situations depending on the potential cost that disturbing each crossing would incur. The higher the cost of disturbing the crossing, the higher the risk associated with the crossing. Potential owners of the utilities present within these limits are presumed and will be verified as the proposed Project progresses.



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**Table 3-7: Identified Utilities**

Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 West	Major OH Electric Transmission	High	I-40 EB & WB Between 212.4 and 212.6	TVA	
I-24 West	Major OH Electric Transmission	High	I-40 EB & WB Between 212.8 and 213.0	TVA	
I-24 West	Major OH Electric Transmission	Moderate	I-40 WB Between 213.4 and 213.6	NES	

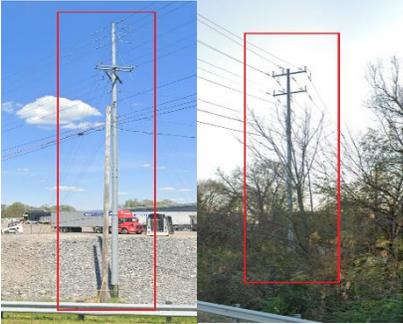
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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 West	Hazardous Liquid Transmission Pipeline	Moderate	I-40 Between 214.6 and 214.8	Colonial Pipeline	
I-24 West	Water	Low	I-40 Between 216.4 and 216.6	Metro Water and Sewer	
I-24 West	Fiber Optic	Low	I-40 Between 216.4 and 216.6	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 West	Natural Gas	Low	I-40 Between 216.4 and 216.6	Piedmont Gas Company	
I-24 West	Sanitary Sewer	Low	I-40 Between 217.0 and 217.2	Metro Water and Sewer	
I-24 West	Natural Gas	Low	I-24 Between 53.4 and 53.6	Piedmont Gas Company	
I-24 West	Sanitary Sewer	Low	I-24 Between 53.4 and 53.6	Metro Water and Sewer	

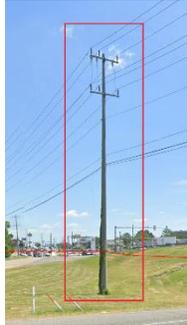
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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 West	Major OH Electric Transmission	Moderate	I-24 EB & WB Between 53.4 and 53.6	NES	
I-24 West	Fiber Optic	Low	I-24 Between 53.6 and 53.8	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 West	Fiber Optic	Low	I-24 Between 53.8 and 54.0	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 West	Sanitary Sewer	Low	I-24 Between 53.8 and 54.0	Metro Water and Sewer	
I-24 West	Water	Low	I-24 Between 53.8 and 54.0	Metro Water and Sewer	

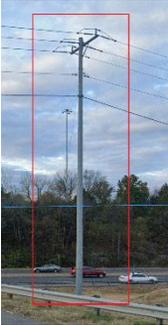
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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 West	Major OH Electric Transmission	Moderate	I-24 EB & WB Between 53.8 and 54.0	NES	
I-24 West	Major OH Electric Transmission	High	I-24 EB & WB Between 54.6 and 54.8	TVA	
I-24 West	Fiber Optic	Low	I-24 Between 55.4 and 55.6	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 West	Water	Low	I-24 Between 55.6 and 55.8	Metro Water and Sewer	

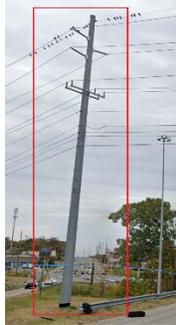
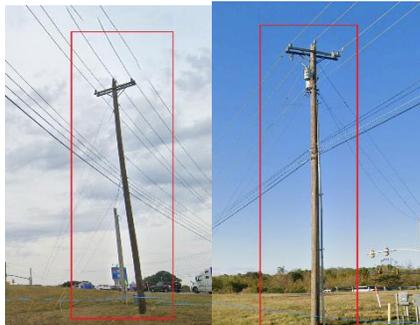
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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 West	Major OH Electric Transmission	Moderate	I-24 EB Between 55.6 and 55.8	NES	
I-24 West	Fiber Optic	Low	I-24 Between 55.6 and 55.8	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 West	Fiber Optic	Low	I-24 Between 55.6 and 55.8	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 West	Sanitary Sewer	Low	I-24 Between 55.6 and 55.8	Metro Water and Sewer	
I-24 West	Sanitary Sewer	Low	I-24 Between 55.8 and 56.0	Metro Water and Sewer	

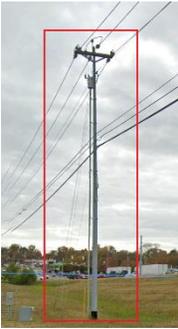
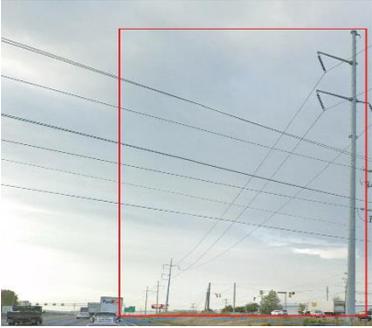
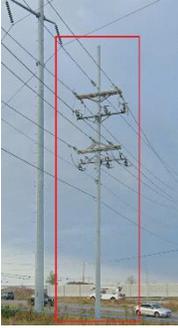
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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 East	Fiber Optic	Low	I-24 Between 56.4 and 56.6	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 East	Water	Low	I-24 Between 56.6 and 56.8	Metro Water and Sewer	
I-24 East	Fiber Optic	Low	I-24 Between 56.6 and 56.8	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 East	Major OH Electric Transmission	Moderate	I-24 WB Between 57.0 and 57.2	NES	
I-24 East	Sanitary Sewer	Low	I-24 Between 57.2 and 57.4	Metro Water and Sewer	

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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 East	Major OH Electric Transmission	High	I-24 EB Between 59.4 and 59.6	TVA	
I-24 East	Gas Transmission Pipeline	High	I-24 Between 59.6 and 59.8	TC Energy	
I-24 East	Major OH Electric Transmission	Moderate	I-24 EB & WB Between 62.4 and 62.6	NES	
I-24 East	Hazardous Liquid Transmission Pipeline	Moderate	I-24 Between 63.2 and 63.4	Colonial Pipeline	

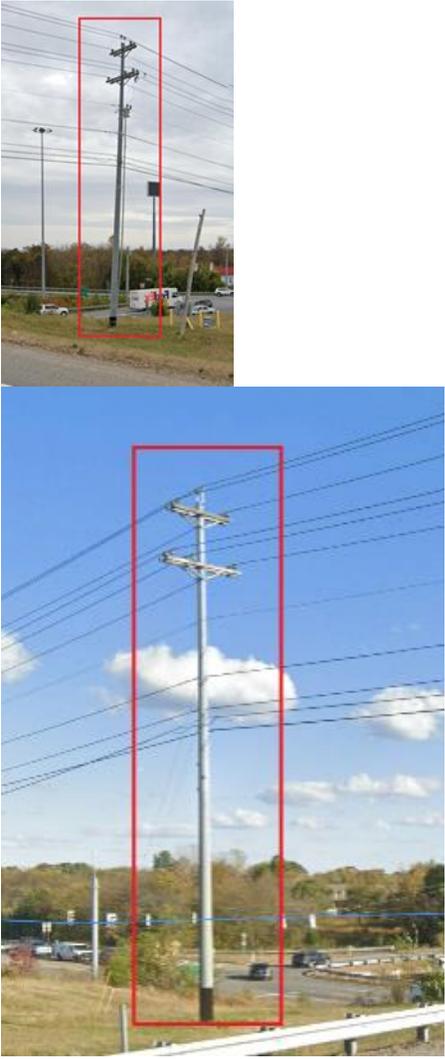
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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 East	Major OH Electric Transmission	Moderate	I-24 EB Between 64.2 and 64.4	Middle TN Electric	
I-24 East	Major OH Electric Transmission	High	Runs Along I-24 WB Between 65.2 and 65.8	TVA	
I-24 East	Major OH Electric Transmission	High	I-24 WB Between 65.6 and 65.8	TVA	

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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 East	Fiber Optic	Low	I-24 Between 65.6 and 65.8	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 East	Fiber Optic	Low	I-24 Between 66.2 and 66.4	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 East	Fiber Optic	Low	I-24 Between 66.4 and 66.6	ZAYO/ Century Link/AT&T/ Google/ Verizon	
I-24 East	Gas Transmission Pipeline	Moderate	I-24 Between 66.4 and 66.6	Enbridge	

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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 East	Major OH Electric Transmission	Moderate	I-24 EB & WB Between 69.8 and 70.0	Middle TN Electric	

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Section	Utility Type	Risk Category	MP	Potential Owner	Image (If Available)
I-24 East	Natural Gas	Low	I-24 Between 69.8 and 70.0	ATMOS/ Smyrna Utilities	
I-24 East	Sanitary Sewer	Low	I-24 Between 69.8 and 70.0	Smyrna Utilities	
I-24 East	Natural Gas	Low	I-24 Between 69.8 and 70.0	ATMOS/ Smyrna Utilities	
I-24 West/East	Communication	Moderate	Whole of I-24 Corridor	ZAYO/ Century Link/AT&T/ Google/ Verizon	

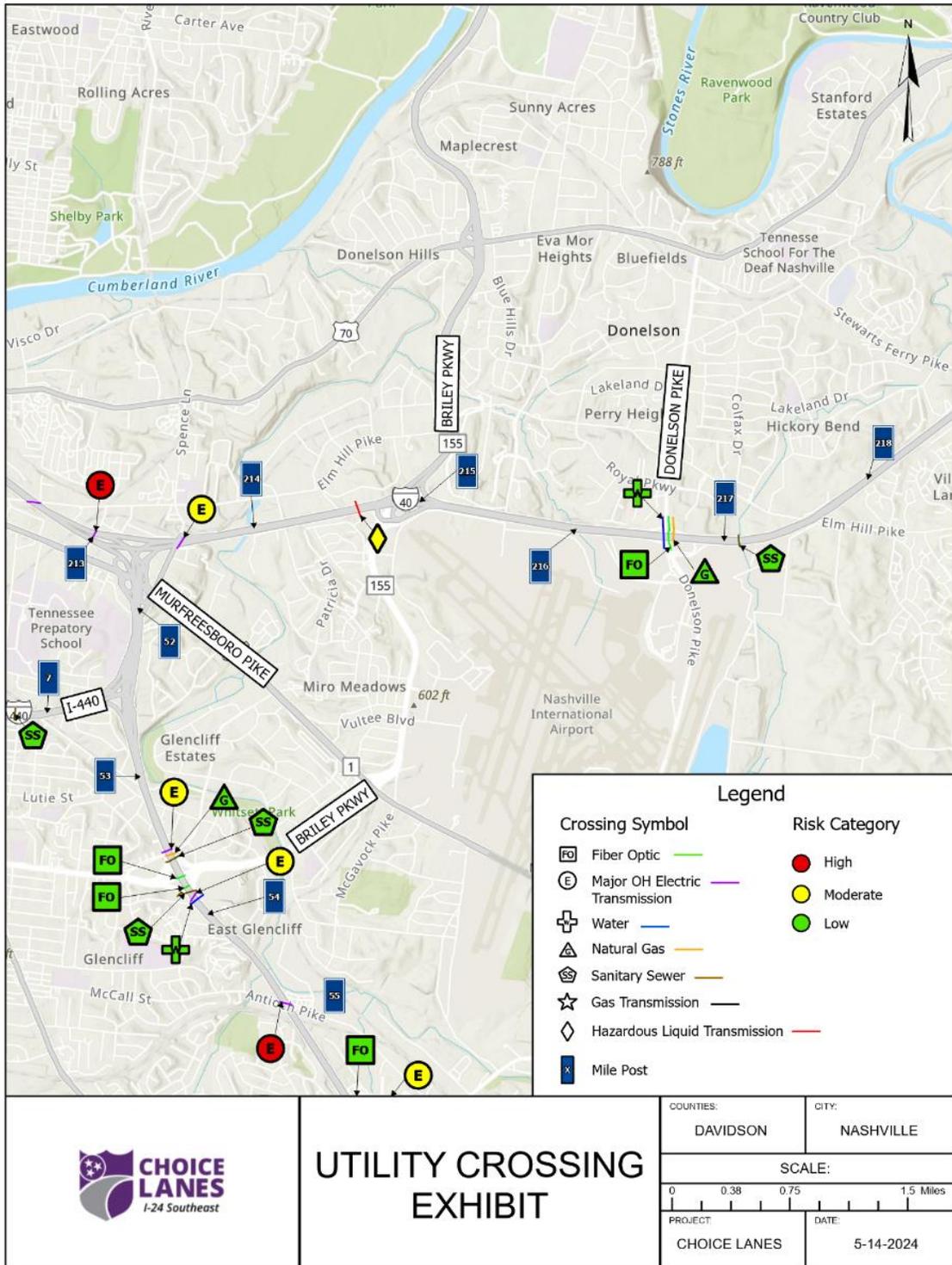
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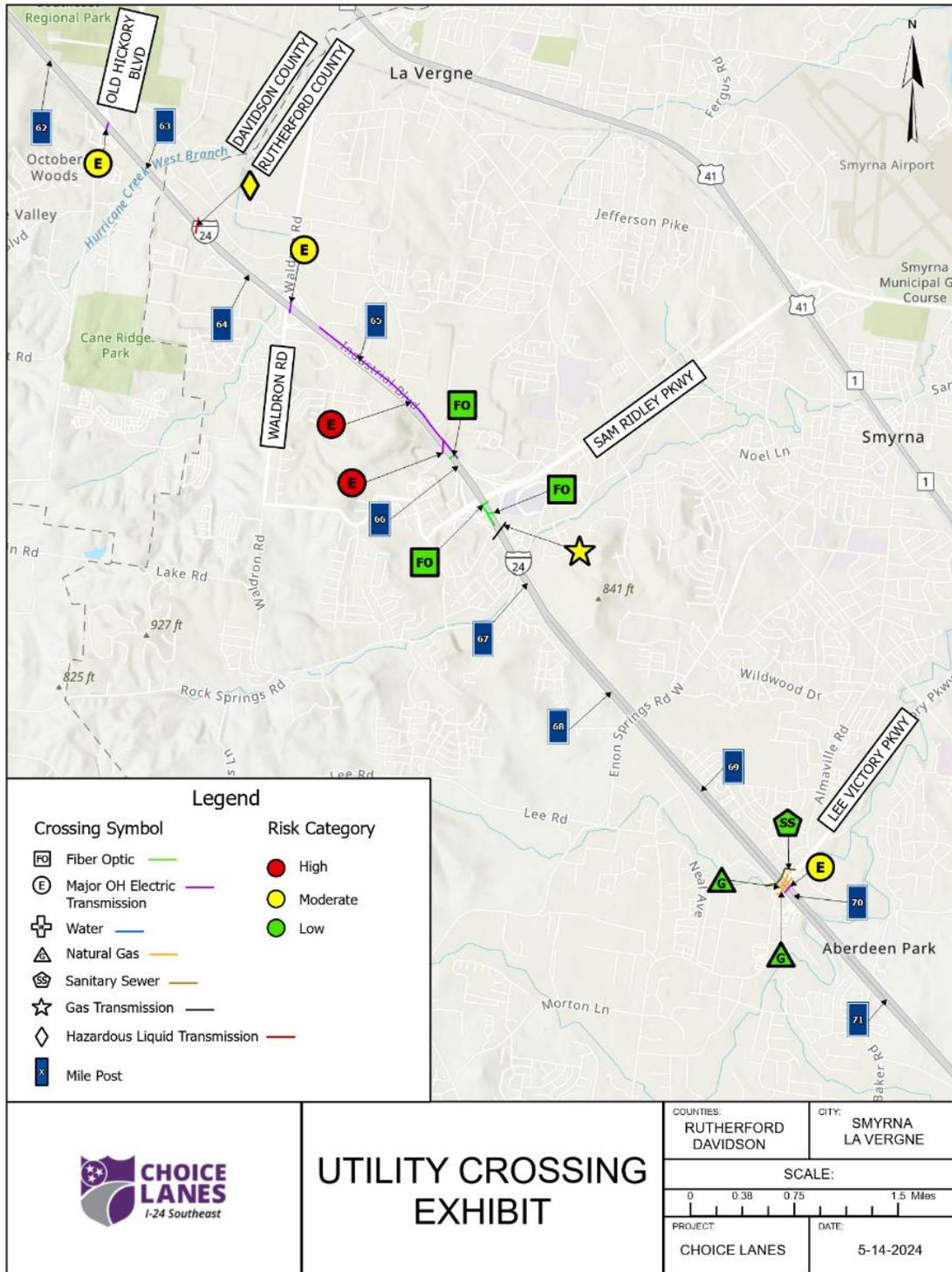
Figure 3-74: Utility Crossing Exhibit A



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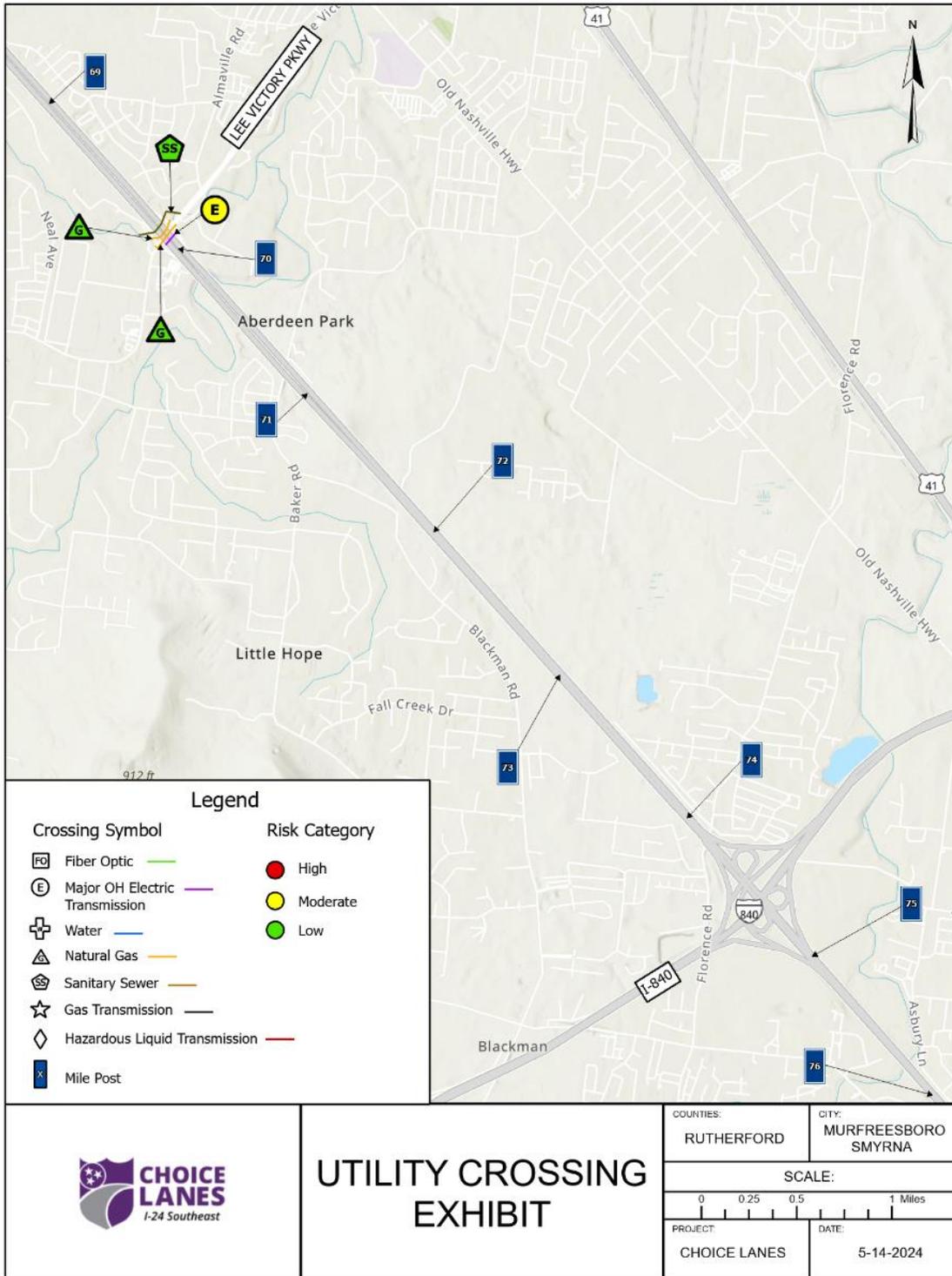


Figure 3-76: Utility Crossing Exhibit C



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Figure 3-77: Utility Crossing Exhibit D



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## 3.5 Railroad

### 3.5.1 Basis Of Evaluation

Information on the RR crossings found within the I-24 Southeast Choice Lanes Project has been gathered from the following sources:

1. Federal Railroad Administration
2. Tennessee Department of Transportation Sources
3. Tennessee Comptroller

Information pertaining to the locations will be used to minimize conflicts and relocations with existing RR crossings and will be used to coordinate with RRs whose facilities fall within the Project limits. As the proposed Project progresses, the next step is to send early coordination letters to RRs within the identified corridor. An early coordination meeting with impacted RRs will be held to further identify the crossing and potential impacts within the corridor. This information will be used to guide the design and better refine the risk matrix. Coordination will also include information gathering to understand long lead items related to construction and potential schedule impacts.

### 3.5.2 Identified Railroad Crossings

The tables below summarize the RR crossings currently found within the Project limits. The tables organize crossings by owner, TDOT crossing number, RR MP, interstate MP and ROW type. ROW type is broken into easement, fee simple, mixed and unverified land ownership types. Fee simple ownership of a property denotes that the land is owned in full by the rail company operating on it. Easement ownership of a property indicates that the land is not owned by the rail operating on it, but rather that the RR has been granted an easement from the property owner to operate on the property. Mixed ownership indicates that the property is owned through a combination of easements and/or fee simple documents. Crossings with ROW type denoted as “unverified” do not have a documented legal determination from TDOT.

Each table begins with crossings found at the western end of the alignment and ending at the eastern end of the alignment. **Table 3-8** summarizes crossings that intersect major interstates along the proposed Project and have substantial crossing data. **Figure 3-78** and **Figure 3-79** identify the location of the RR crossings within the Project alignment. Cross sections of the RR crossings are presented in **Figure 3-80** through **Figure 3-83**.

**Table 3-8: Crossings of Major Interstates with Substantial Data**

Owner & DOT Crossing #	RR MP	Location	ROW Type
Abandoned Crossing	Unknown	I-40 Between MP212.0 and 213.0	Mixed – Easement and Fee Simple
CSXT – DOT # 350235A	0BA 0186.750	I-40 Between MP212.0 and 213.0	Mixed – Easement and Fee Simple
Abandoned Crossing	Unknown	I-40 Between MP212.0 and 213.0	Mixed – Easement and Fee Simple
CSXT – DOT # 349217F	00J 0004.580	I-24 Between MP53.0 and 54.0	Easement
CSXT – DOT # 340974V	0DL 0003.170	I-24 Between MP54.0 and 55.0	Easement
CSXT- DOT # 349228T	00J 0010.980	Bell Road Interchange with I-24	Unverified

**Table 3-9** summarizes crossings that intersect side roads along with the Project limits and have substantial crossing data. These crossings will be studied further as the proposed Project progresses.

**Table 3-9: Crossings of Side Roads with Substantial Data**

Owner & DOT Crossing #	RR MP	Location	ROW Type
CSXT – DOT # 349219U	00J 0005.560	Briley Parkway	Unverified
CSXT – DOT # 643071X	00J 0011.450	Hickory Hollow	Easement

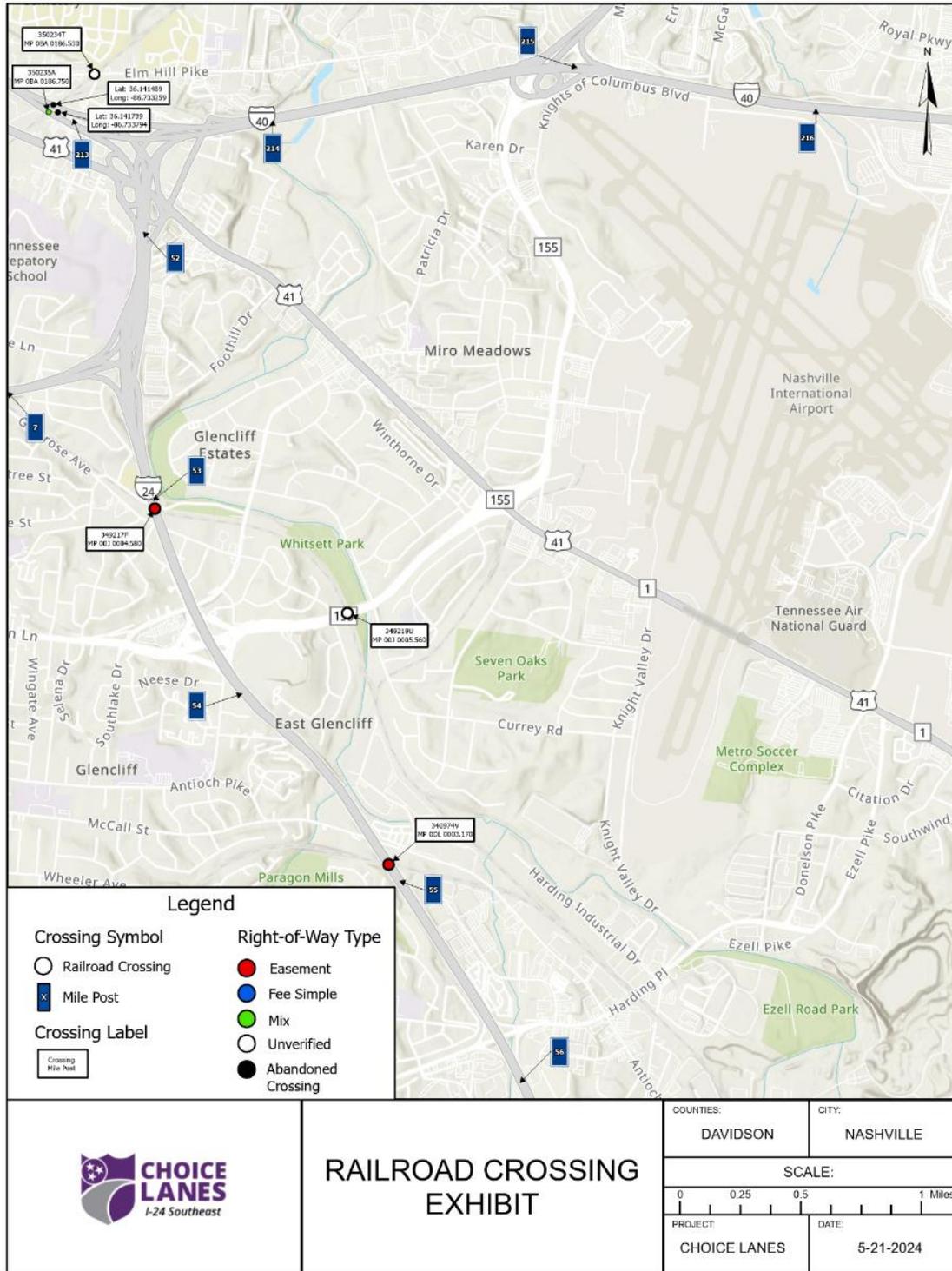
**Table 3-10** summarizes crossings that intersect side roads along the proposed Project but lack substantial crossing data. These crossings will be studied further as the proposed Project progresses.

**Table 3-10: Crossings Along Side Roads Without Substantial Crossing Data**

Owner & DOT Crossing #	RR MP	Location	ROW Type
CSXT – DOT # 350234T	0BA 0186.530	Elm Hill Pike	Unverified

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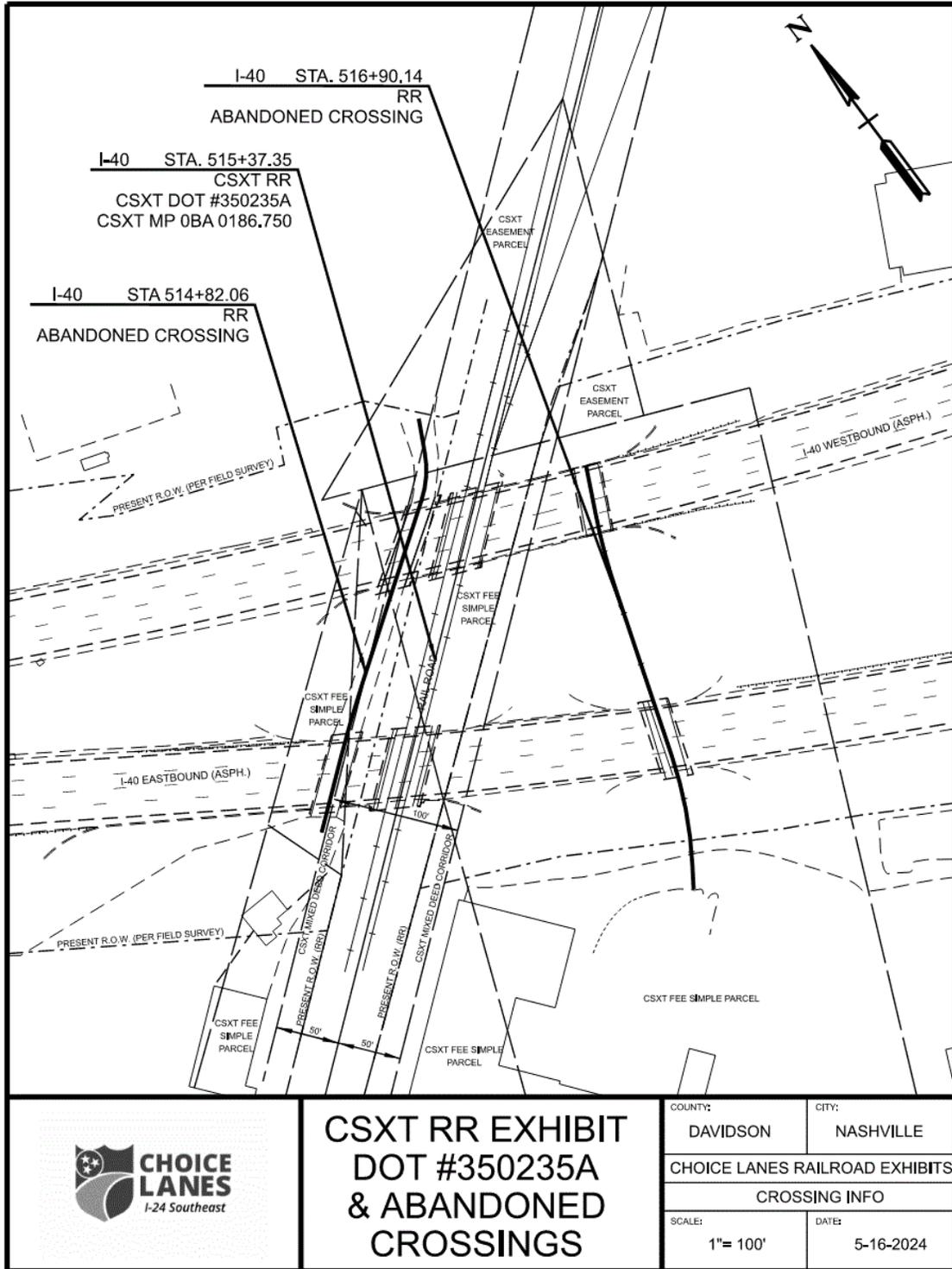
Figure 3-78: Railroad Crossing Exhibit A



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**Figure 3-80: Railroad Crossing Exhibit C**



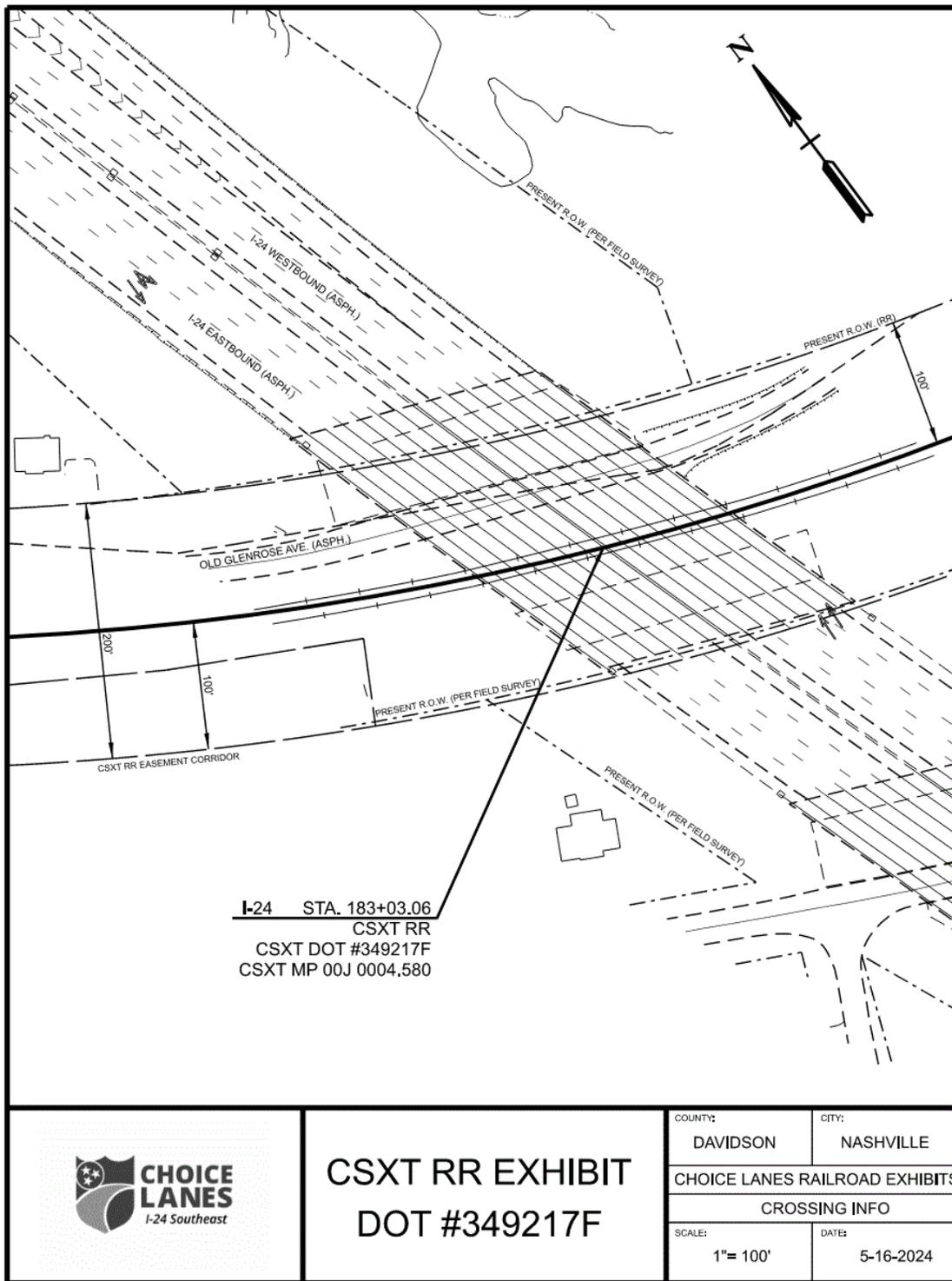
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**CSXT RR EXHIBIT  
 DOT #350235A  
 & ABANDONED  
 CROSSINGS**

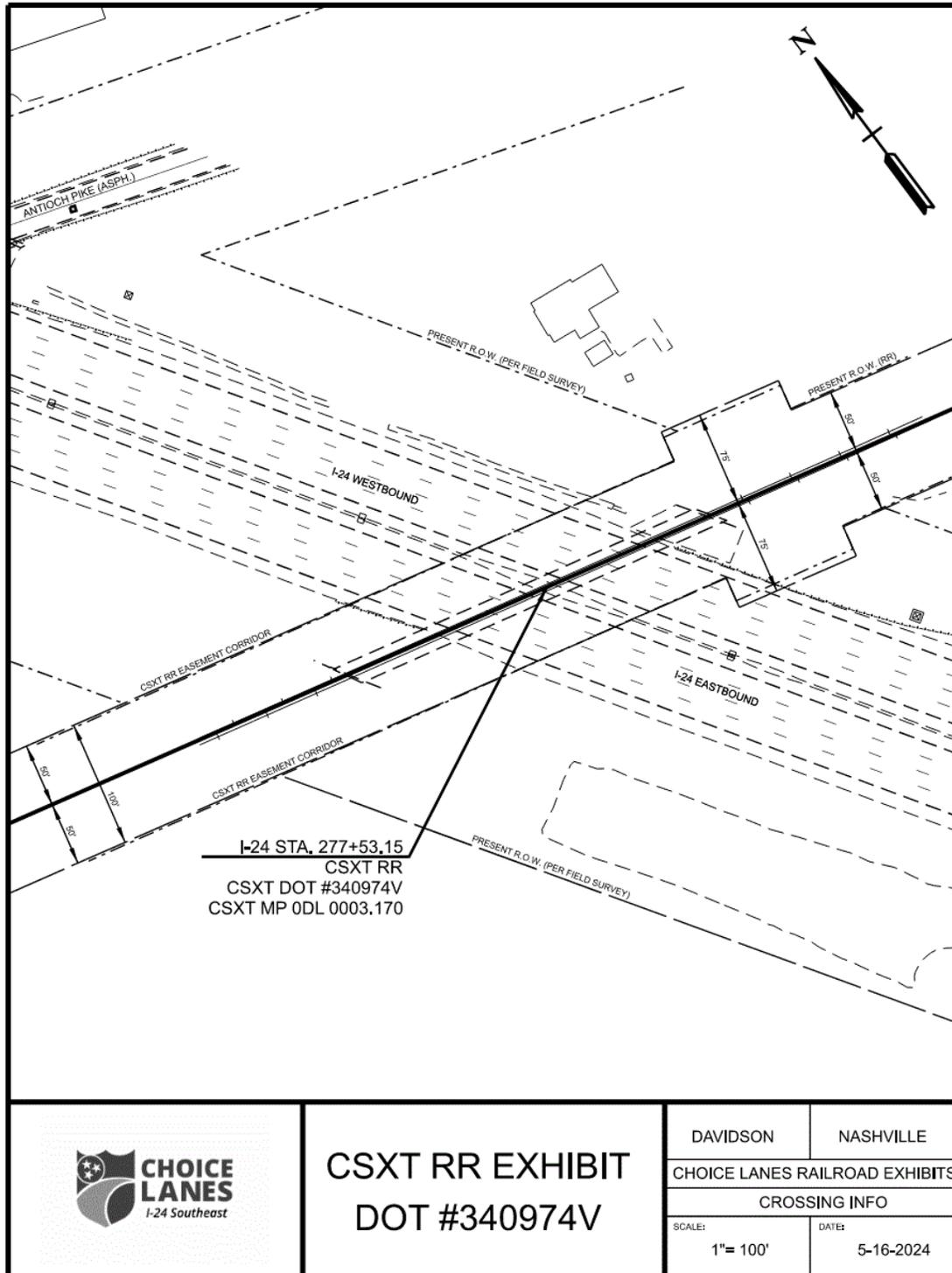
COUNTY:	CITY:
DAVIDSON	NASHVILLE
CHOICE LANES RAILROAD EXHIBITS	
CROSSING INFO	
SCALE:	DATE:
1" = 100'	5-16-2024

Figure 3-81: Railroad Crossing Exhibit D



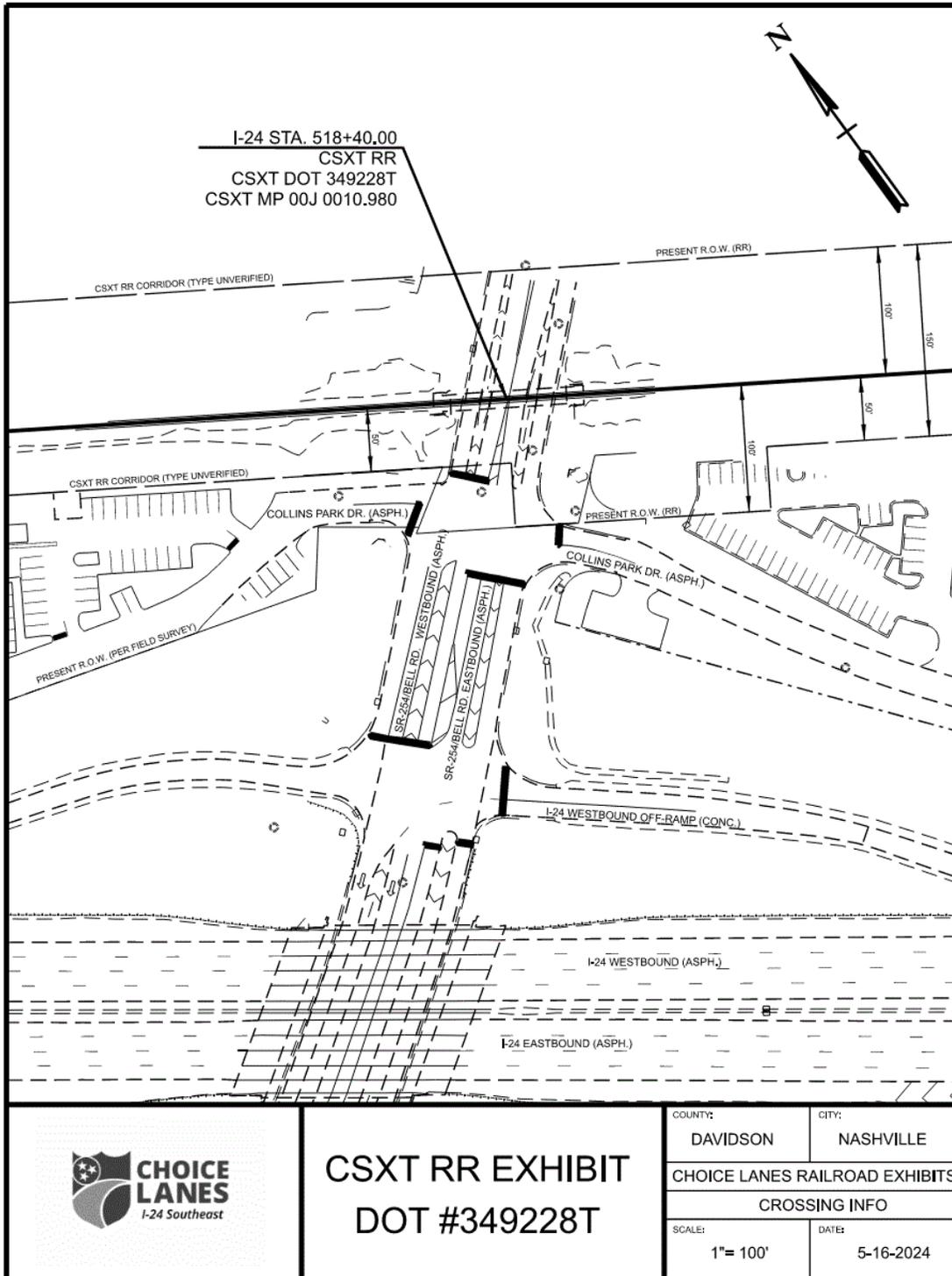
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**Figure 3-82: Railroad Crossing Exhibit E**



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Figure 3-83: Railroad Crossing Exhibit F



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## 4 RECOMMENDED PREFERRED ALTERNATIVE

The two reasonable alternatives, Alternative 1 and Alternative 2, were evaluated based on environmental and social impacts and planning-level cost estimates. **Appendix A** includes the results of the quantitative Level 3 screening. These alternatives were also presented to the public during public involvement meetings held on August 14, 21, 28 and 29, 2024. Stakeholder meetings were also held on March 24, August 7, and December 9, 2024. During these meetings, feedback and comments were received from the public, agencies and Project stakeholders that informed the selection and refinement of the Recommended Preferred Alternative (RPA).

Overall, Alternative 2 has higher impacts—specifically to streams, wetlands, floodplains and ROW acquisition—and costs over \$0.5 billion more than Alternative 1. Combined with public and stakeholder input, which expressed a general concern for property acquisition, Alternative 2 was eliminated from further consideration. However, the Alternative 2 design option at the I-24 interchange at SR 155 (Briley Parkway) and the mainline widening option between Fessler Lane and the I-24/I-40 interchange were retained for further consideration.

Based on the results of the Level 3 screening and public and stakeholder input, Alternative 1 was retained for further analysis and refinement. The results of these refinements are the Recommended Preferred Alternative, referred to as Alternative 1A. Specific refinements include:

- The limits of improvements along I-24/I-40 were extended west of Fessler Lane and farther east to SR 155 (Briley Parkway) to better accommodate the merging of Choice Lane traffic into the general-purpose lanes.
- The Choice Lane was moved to the outside of the general-purpose lanes approaching the I-40/I-24 termination direct merge, and near the Elm Hill Pike, rather than the inside as originally proposed, to address operational concerns.
- Rather than Choice Lane access at East Thompson Lane, as originally proposed, the concept from Alternative 2 was incorporated that provides Choice Lane access at Briley Parkway. This addressed stakeholder concerns with potential conflicts with planned pedestrian/bicycle improvements on E. Thompson Lane.
- Substandard bridges on I-24 are proposed to be replaced, such as at Mill Creek and Bell Road, which is driven not by the Choice Lanes but the existing bridge conditions and flooding issues at select locations.
- The Almadillo Road Diverging Diamond Interchange (DDI) was added to the Project.
- I-24 mainline road widening was optimized to better utilize existing pavement, thereby decreasing impacts where feasible.
- The design was optimized to avoid direct impacts to eligible historic properties.
- The design was updated to allow heavy commercial vehicles (HCVs) to use the CL.

- The two-lane CL section was extended to the southern end of the project.

An overview of Alternative 1A, including a project description and discussion of the refinements from Alternative 1 are presented in Section 4.1.

## 4.1 Recommended Preferred Alternative 1A

An overview of Alternative 1A is presented in Table 4-1. The following sections describe the refinements made from Alternative 1 to Alternative 1A as well as options considered and not included.

**Table 4-1: Recommended Preferred Alternative 1A Overview**

Recommended Preferred Alternative 1A
<p><b>I-24/I-40 alignment to West</b> proposes to start the two <u>EB CL at-grade</u> at approximately Fesslers Lane. The two <u>WB CL are at-grade</u> under Elm Hill Pike and then split, with one lane continuing at-grade on the outside under Fesslers Lane and the other lane elevating over I-40 WB GP lanes to the center of I-40. Fesslers Lane WB GP entrance ramp is proposed to be 2 lanes, with one connecting to the outside of I-40 WB GP and the other connecting to the inside left lane of I-40 GP. WB CL ultimately terminate as a direct merge into the GP lanes prior to the I-24/I-40 split ramps. Improvements include replacement of the I-24/I-40 bridges over Browns Creek, I24/I-40 over Nashville and Eastern railroad, Fesslers Lane overpass and widening of the WB I-24/I-40 bridge over Fairfield Avenue.</p>
<p><b>I-24/I-40 @ Elm Hill Pike</b> proposes a <u>new partial interchange</u> providing exclusive direct entry/exit ramps for entering CL traveling east and exiting the CL traveling west (no access to GP lanes is provided). The improvements include replacement of the Elm Hill Pike bridge over I-24/I-40. East of Elm Hill Pike, the CL are elevated over one active and two inactive railroad bridges; the inactive railroad bridges would be removed, and the active railroad bridges would not be impacted but do require railroad coordination.</p>
<p><b>I-24/I-40 alignment to East</b> CL are <u>elevated to the outside</u> positioning CL terminus closer to exits at SR 155 (Briley Parkway) and BNA; WB CL terminate just west of the SR 155 (Briley Parkway) interchange and EB CL terminate near the Massman overpass; Westbound CL entry is split between the inside left lane of I-40 and the ramp from Briley Parkway. Improvements include replacement of the I-40 mainline bridge over Mill Creek and the Massman Drive bridge over I-40.</p>
<p><b>I-24/I-40 Interchange</b> two-lane CL ramps are elevated, mostly to the outside, and extend over Spence Lane to the east and Arlington Avenue to the west. Improvements include replacement of the Arlington Avenue overpass bridges and the I-40 bridge over I-24 within the interchange.</p>
<p><b>I-24 mainline between I-40 and I-440</b> CL are <u>elevated both directions to the west side</u> of the mainline reducing ROW impacts and taking advantage of state property.</p>
<p><b>I-440 interchange</b> CL ramps are to the <u>inside</u> on I-440 to terminate CL with a direct merge on the inside just east of the Nolensville Pike overpass. These improvements include replacement of the I-440 east bound ramp over the I-24 interchange, South Lyle</p>

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Recommended Preferred Alternative 1A
Lane overpass, Foster Ave overpass and the pedestrian bridge over I-440. The I-440 over CSX RR/Glenrose Avenue mainline bridge will also be widened to accommodate the Choice Lanes.
<b>I-24 mainline</b> between I-440 and East Thompson Lane/SR 155 (Briley Parkway) interchange CL are <u>elevated to the outside</u> of the mainline except in the area of the Mill Creek Baptist Church cemetery where the CL weave over the I-24 GP lanes. This section of widening would require realignment of a residential community street (Joplin Drive) adjacent to I-24. Improvements include replacement of the East Thompson Lane bridge overpass, the I-24 mainline bridge over New Glenrose Avenue. Railroad coordination will be required for the existing I-24 bridges and new CL bridges over CSX.
<b>I-24 interchange @ Briley Parkway</b> is modified to provide CL access ramps within the existing interchange using a <u>CL plaza-style interchange</u> . Improvements include a new directional GP flyover ramp and removal of the existing loop ramps.
<b>I-24 mainline</b> between SR 155 (Briley Parkway) and the CSX RR bridge, just south of Antioch Pike, CL are <u>elevated to the outside</u> and travel over the CSX RR bridge and Antioch Pike. The CL transition to the median at-grade just south of the RR bridge over I-24. Improvements include replacement of the Antioch Pike overpass bridge.
<b>I-24 mainline</b> between SR 255 (Harding Place) and Haywood Lane interchange CL are <u>at-grade in the median</u> through the Harding Place interchange with minor ramp adjustments; includes replacement of the SR 255 (Harding Place) bridge over I-24 but no CL access or change in GP access at this interchange.
<b>I-24 interchange @ Haywood Lane</b> is modified to provide CL access using a <u>CL plaza-style interchange</u> ; includes modifying the existing GP interchange from a partial cloverleaf to a diamond interchange and replacing the twin I-24 mainline bridges over Haywood Lane.
<b>I-24 mainline</b> between Haywood Lane and SR 254 (Bell Road) CL are initially <u>at-grade in the median</u> , but transition to <u>elevated on the outside</u> approximately 1 mile south of Haywood Lane. Improvements include replacement of the Blue Hole Road overpass bridge, and the mainline I-24 bridge over Mill Creek which also includes approximately 0.5 miles of roadway approach work to the new bridge to address flooding issues. These bridge replacement are not required as part of the proposed CL Project but is being included in the scope of work of the Project since it is a substandard bridge that needs replacement within the Project limits.
<b>I-24 interchange @ Bell Road</b> interchange is modified to provide CL access using new <u>CL direct connection ramps</u> that provide a connection over the CSX RR to Hickory Hollow Parkway and the proposed transit center at the mall for WB CL and a connection to the Bell Road and Cane Ridge Road intersection for EB CL. No major modifications would be made to the existing GP diamond interchange ramps. Intersection and crossroad modifications include a new section of Cane Ridge Road north of Bell Road (west of the existing intersection), widening of the southern approach of Cane Ridge Road at Bell Road to add additional turn lanes, reconfiguration of business access in the northwest

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**Recommended Preferred Alternative 1A**

quadrant, and Bell Road under I-24 would be widened and restriped to optimize operations. The I-24 bridge over SR 254 (Bell Road) would be replaced. This would include approximately 0.5 miles of roadway approach work to raise the grade of I-24 to achieve the required vertical clearance over SR 254 (Bell Road). This bridge replacement is not required as part of the proposed CL Project but is being included since it is a substandard bridge that requires replacement within the Project limits and TDOT elected to include it within this Project.

**I-24 mainline** between SR 254 (Bell Road) and Hickory Hollow Pkwy (HHP) CL are elevated on the outside initially and then transition to at-grade in the median just west of the HHP bridge; includes replacements of the HHP bridge over I-24 to accommodate the CL in the median.

**I-24 mainline** between HHP and SR 171 (Old Hickory Blvd) (OHB) CL are at-grade in the median; includes overpass bridge replacement at Old Franklin Road and bridge replacement of OHB over I-24 to accommodate CL; no CL access at the OHB interchange but includes a direct merge just south of the Old Franklin Road overpass.

**I-24 mainline** between OHB and Waldron Road CL are at-grade in the median.

**I-24 interchange @ Waldron Road** interchange is modified to provide CL access using a CL plaza-style interchange; includes removing the existing loop ramp to convert to a GP diamond interchange; includes replacement of the Waldron Road bridge over I-24.

**I-24 mainline** between Waldron Road and SR 266 (Sam Ridley Parkway) (SRP) CL are at-grade in the median.

**I-24 interchange @ SRP** interchange is modified to provide CL access using a CL plaza-style interchange; includes removing the existing loop ramp to convert to a GP diamond interchange; includes replacement of the SRP bridges over I-24.

**I-24 mainline** between SRP and SR 102 (Almaville Road) CL are at-grade in the median; includes replacement of the I-24 mainline bridge over Rock Springs Road and replacement of Rocky Fork Road bridge over I-24; includes a direct merge in the median to CL just southeast of Rocky Fork Road; includes widening for deflection of GP lanes and CL alignment to outside to avoid sinkholes in median.

**I-24 interchange @ SR 102 (Almaville Road)** interchange is modified to a DDI; no CL access is planned directly at the interchange, but direct merges would be included just east and west of the interchange; includes I-24 mainline bridge replacement to accommodate the CL over SR 102 (Almaville Road).

**I-24 mainline** between SR 102 (Almaville Road) and I-840 CL are at-grade in the median and terminate approximately 1 mile before the I-840 interchange ramps with a direct merge; includes I-24 mainline bridge replacement over Stewart Creek and Baker Road bridge over I-24 to accommodate CL.

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### **4.1.1 Recommended Preferred Alternative 1A for I-24/I-40 west of Fesslers Lane (MP 212.0)**

This section is one of the western endpoints for the CL, is nearest to downtown Nashville, and provides a connection between the CL and the GP lanes. The posted speed for the mainline is 55 mph, with all proposed ramps being designed at either the mainline speed or according to the purpose of the ramp.

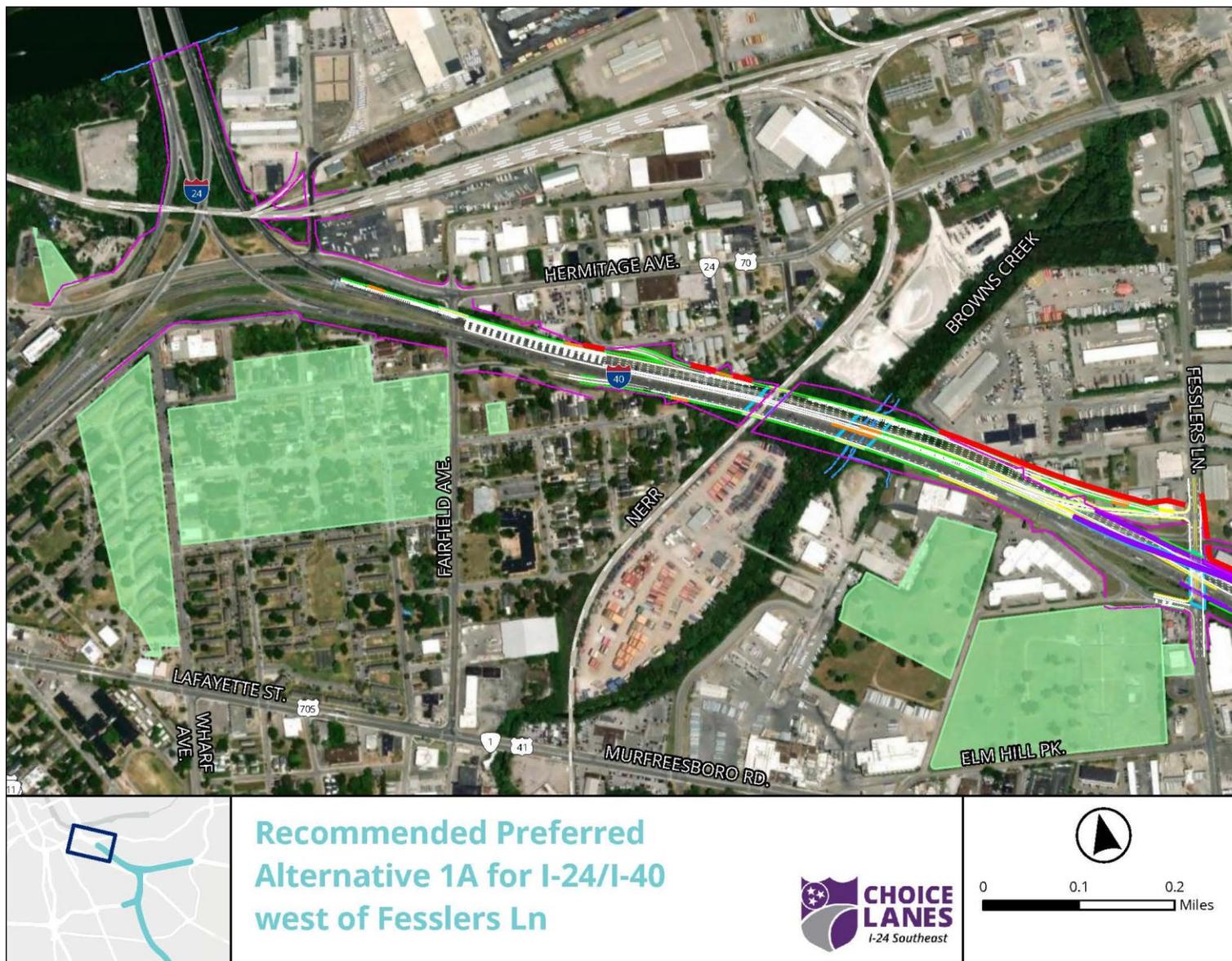
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Figure 4-1: RPA 1A for I-24/I-40 west of Fessler's Ln (MP 212.0)



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## MAINLINE

The improvements along I-24/I-40 were extended west of Fesslers Ln to help improve operations at the termination of the westbound CL into the GP lanes along I-24/I-40. The westbound CL are at-grade under Elm Hill Pike and then split, with one lane continuing at-grade on the outside under Fesslers Lane and the other lane elevating over Fesslers Lane and I-40 westbound GP lanes to the median of I-40. Fesslers Lane westbound GP entrance ramp is proposed to be two lanes, with one connecting to the outside of I-40 westbound GP and the other elevating over I-40 westbound GP, merging with the westbound CL, and connecting to the inside left lane of I-40 GP. Both changes would reduce the weaving necessary for motorists to continue their preferred route at the I-24 and I-40 split. The westbound CL ultimately terminate as a direct merge into the GP lanes prior to the I-24/I-40 split.

In the eastbound direction, a new auxiliary lane would be added between Fairfield Avenue on-ramp and Fesslers Lane off-ramp. The eastbound CL start at-grade on the outside at approximately Fesslers Lane.

Other improvements include the replacement of the I-24/I-40 bridge over Brown's Creek and the I-24/I-40 bridge over the NERR tracks and the widening of the westbound I-24/I-40 bridge over Fairfield Avenue.

## CROSSROADS

The Fesslers Lane bridge over I-24/I-40 would be replaced to allow the widened mainline and CL to pass underneath. The intersection with the westbound on-ramps would be relocated north to allow the ramps to enter the outside and median of westbound I-40.

## STRUCTURES

Bridge replacements and new bridges and retaining walls would be required to accommodate this alternative. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 1A – Fesslers Lane over I-24/I-40 (bridge replacement)
  - 1B – I-40 over Brown's Creek (bridge replacement)
  - 1C – I-40 over NERR (bridge replacement)
  - 1D – I-40 over Fairfield Ave (bridge widening)
  - 5A – I-40 WB CL over Fesslers Lane and I-40 WB inside CL (new bridge)
  - 5B – I-40 WB on-ramp from Fesslers Lane (new bridge)
  - 5C – I-40 WB CL, extension of 5A and 5B (new bridge)

- Retaining Walls: 13 new retaining walls would be included in this section (1D, 1E, 1F, 1G, 1H, 1J, 1K, 1L, 1M, 1N, 1P, 1R, and 1S).

#### **4.1.2 Recommended Preferred Alternative 1A for I-24/I-40 from Fesslers Lane (MP 212.0) to I-24/I-40 Interchange (MP 213.0)**

Between the Fesslers Lane overpass and the I-24/40 interchange, the proposed CL are to the outside and are transitioning between at-grade and elevated. Proposed CL are two 12-foot lanes in either direction, at a minimum, and a new exclusive CL connection is provided at Elm Hill Pike. This section also includes CL bridges over one active and two inactive railroad bridges. The inactive railroad bridges would be removed. The active railroad bridge would not be impacted but does require railroad coordination. The posted speed for the mainline is 55 mph, with all proposed ramps being designed at either the mainline speed or according to the purpose of the ramp.

Figure 4-2: RPA 1A for I-24/I-40 from Fessler's Ln (MP 212.0) to I-24/I-40 Interchange (MP 213.0)



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## MAINLINE

This alternative was refined based on comments received from the public and agencies during the public involvement period. Comments were received regarding the termination of CL in the median which may create an undesirable weave for the larger volume of traffic that seeks to take westbound I-24 less than a mile from the CL direct merge. The alternative was also refined to minimize impacts to the active CSX RR bridge and the historically eligible properties along this section of the corridor between Arlington Avenue and Elm Hill Pike. The proposed CL would be elevated over the CSX RR bridge and Arlington Avenue but then would descend to be at-grade adjacent to I-24/I-40 as they near Elm Hill Pike. In this alternative, the proposed CL would split to provide one CL to/from a new partial interchange at Elm Hill Pike. These proposed ramps would be elevated structures and require additional proposed ROW to accommodate.

The eastbound CL would begin near the Fesslers Lane overpass as a two-lane exit from the GP lanes.

In the westbound direction, the CL would split just west of Elm Hill Pike, with one lane elevating and crossing I-40 westbound GP lanes to the center of I-40, before crossing over Fesslers Lane. The other lane would continue on the outside and go underneath Fesslers Lane. The intent of this braided configuration is to minimize concerns with weaving movements prior to the I-24/I-40 split.

This alternative minimizes the number of changes to the existing GP lanes in the section but does require some additional widening to accommodate the CL as they come down to grade. This widening would likely encounter existing rock material and require additional rock excavation.

This mainline configuration was included in Reasonable Alternative 2 and was modified in the refinements for the Recommended Preferred Alternative as outlined above and in the previous section. Reasonable Alternative 1 was not selected due to the operational concerns raised with terminating CL on the inside, the weaving operational issues that may arise, and the desire to minimize impacts to the adjacent historic properties.

## CROSSROAD

The Elm Hill Pike bridge over I-24/I-40 would be replaced to allow the widened mainline and CL to pass underneath. Two new three-way intersections would be added for the eastbound CL entrance ramp and the WB CL exit ramp to Elm Hill Pike. The off-ramp intersection would be stop-controlled for left-turns and yield-controlled for right turns from the ramp. A new left-turn land and storage area would be introduced for traffic entering the eastbound on-ramp. The Arlington Avenue bridges over I-24/I-40 will also be replaced as part of the scope of this project.

## STRUCTURES

Bridge replacements and new bridges and retaining walls would be required to accommodate this alternative. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 1 – Elm Hill Pike over I-24/40 (bridge replacement)
  - 5 – I-40 WB CL over CSX and Arlington Avenue (new bridge)
  - 6 – I-40 EB over CSX and Arlington Avenue (new bridge)
  - Inactive railroad bridges over I-40 EB and WB (bridge removal)
  - 7A – Arlington Avenue over I-24/I-40 EB (bridge replacement)
  - 7B – Arlington Avenue over I-24/I-40 WB (bridge replacement)
- Retaining Walls: Six new retaining walls would be included in this section (1. 1A, 2, 2A, & 3).

### 4.1.3 Recommended Preferred Alternative 1A for I-40 from I-24/I-40 Interchange (MP 213.0) to SR 155 (Briley Parkway) (MP 215.0)

The I-40 mainline section from I-24/I-40 Interchange to SR 155 (Briley Parkway) is the eastern end along I-40 for the CL in this phase and provides a connection between the CL and the GP lanes near SR 155 (Briley Parkway). The posted speed for I-40 is 55 mph, with all elements designed at the mainline speed, or if necessary, according to the purpose of the ramp.

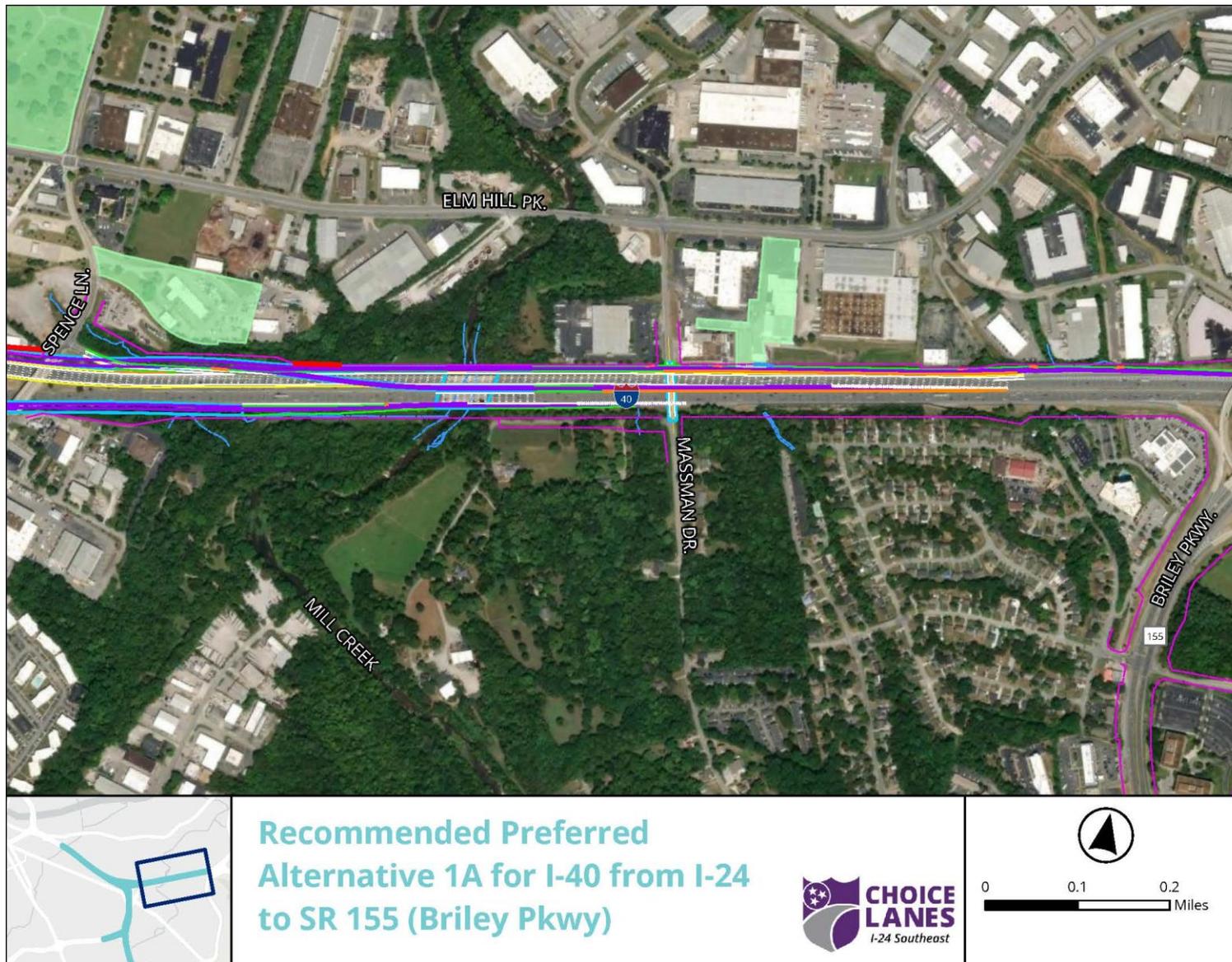
In the eastbound direction, one CL from I-40 and one CL from I-24 would merge and continue east of Spence Lane as a two CL elevated section. The two CL would taper to one CL and then direct merge into I-40 GP lanes between Mill Creek and Massman Drive.

Access to the westbound CL would be provided in two ways to avoid weaving of existing vehicles across GP lanes, one lane on the inside and one lane to the outside of the GP lanes.

This section includes height restrictions as you approach the SR 155 (Briley Parkway) interchange due to the proximity of the airport runways located to the southeast. These existing height restrictions limit the ability to add new connections or ramps to SR 155 (Briley Parkway) without violating those restrictions. There are also historic properties on the north side of I-40 adjacent to the existing ROW. Based on these limitations, it was determined that the most logical termination point for the proposed CL along this section was to the west of the interchange.

The posted speed for the mainline is 55 mph, with all proposed ramps being designed at either the mainline speed or according to the purpose of the ramp.

Figure 4-3: RPA 1A for I-40 from I-24 (MP 213.0) to SR 155 (Briley Parkway) (MP 215.0)



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## MAINLINE

The proposed improvements within this section are intended to provide direct access between the CL and the GP lanes along I-40 west of the SR 155 (Briley Parkway) interchange.

Motorists traveling from southbound SR 155 (Briley Parkway) would be able to enter the CL by taking the existing ramp to westbound I-40 and remaining in the right lane, which would lead them directly into the westbound CL. Motorists entering I-40 from northbound SR 155 (Briley Parkway) or already traveling westbound on I-40 would access the CL via an additional at-grade open merge point on the inside of I-40 west of SR 155 (Briley Parkway). At approximately Mill Creek, the inside CL would elevate and cross over westbound I-40 GP lanes and merge with the CL on the outside of the GP lanes which are also on bridge structure. Three CL lanes would span over Spence Lane and connect to I-24 as described in the following section.

In the eastbound direction, one CL from westbound I-24 and one CL from eastbound I-40 would merge on structure elevated over Spence Lane. The two CL would continue east and taper to one CL at approximately Mill Creek and then merge directly into the eastbound I-40 GP lanes at approximately Massman Drive. This would allow CL users the time to decide if they are exiting I-40 at SR 155 (Briley Parkway) or if they would like to continue east along I-40 to either the airport or some other destination.

These improvements require changes to the I-40 GP lanes through this section. Westbound I-40 would need to be shifted to the north to accommodate the new inside CL lane. The existing bridge over Mill Creek would be replaced. The proposed CL would require the replacement or addition of several bridges and retaining walls within the section.

## CROSSROAD

The Massman Drive overpass would be replaced and lengthened to allow the westbound CL and GP lanes to pass under. The Spence Lane off-ramp and crossroad would not be modified and the CL would be elevated over the existing roads.

## STRUCTURES

Bridge replacements and new bridges and retaining walls would be required to accommodate this alternative. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

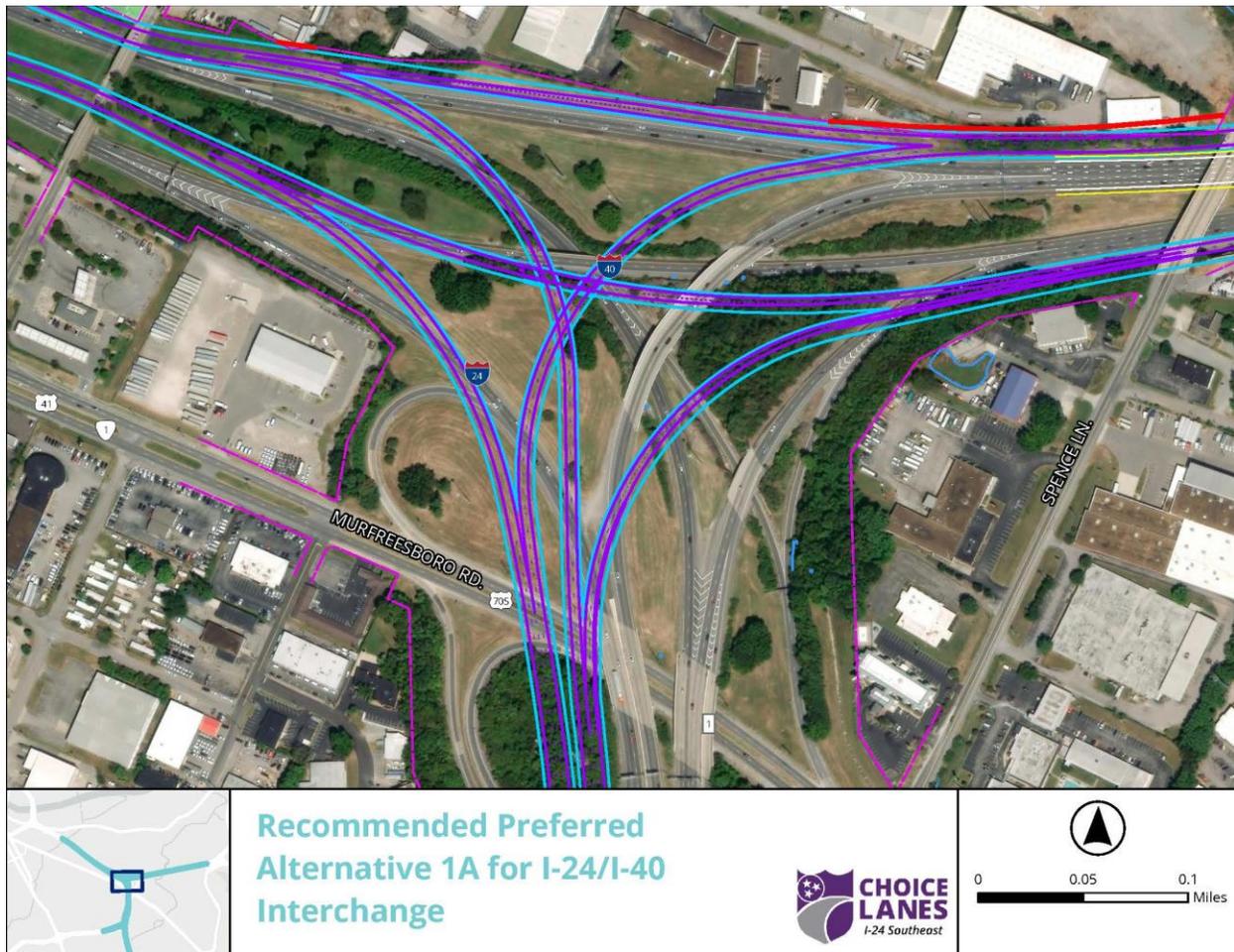
- Bridges:
  - 8A – I-40 WB over Mill Creek (bridge replacement)

- 8B – I-40 EB over Mill Creek (bridge replacement)
- 9 – Massman Drive over I-40 (bridge replacement)
- 10 – I-40 WB CL over Spence Lane and Spence Lane off-ramp (new bridge)
- 10A – I-40 WB CL and Ramp B6 (new bridge)
- 10B – I-40 WB CL (new bridge)
- 11 – I-40 EB CL over Spence Lane (new bridge)
- Retaining Walls: Eight new retaining walls would be included in this section (5, 5A, 5B, 6, 7, 9, 9A, 10)

#### **4.1.4 Recommended Preferred Alternative 1A for I-24/I-40 Interchange (MP 213.0)**

The I-24/I-40 Interchange provides a connection between I-24 and I-40, east of downtown Nashville. The proposed improvements include adding directional connections for CL between I-24 and I-40 as well as continuous CL along I-40. . The design speed of the ramps is intended to be a minimum of 50 mph, as the space and geometry allow. Some ramps may be reduced to 45 mph depending on how and where the ramps need to tie together and whether the required geometry can meet the higher design speeds.

Figure 4-4: RPA 1A for I-24/I-40 Interchange (MP 213.0)



## MAINLINE

The proposed CL are four-lanes in either direction on the west side of I-24 GP lanes as they approach from the east and cross over Murfreesboro Road. The CL ramp connections include:

- Westbound I-24 to eastbound I-40 starts as two CL and tapers to one CL before merging with the eastbound CL
- Westbound I-24 to westbound I-40 is two CL before merging with the westbound CL
- Westbound I-40 to eastbound I-24 is two CL from when it diverges from the I-40 through CL to when it joins the eastbound I-40 to eastbound I-24 CL
- Eastbound I-40 to eastbound I-24 is two CL from when it diverges from the I-40 through CL to when it joins the westbound I-40 to eastbound I-24 CL

The CL that continue along I-40 through the system interchange are two CL at the diverge with the CL ramps to I-24 and then taper to one CL prior to being joined by the CL ramps from I-24.

This interchange configuration has attributes of Reasonable Alternatives 1 and 2 but was modified in the refinements for the Recommended Preferred Alternative. Ramp alignments and potential vertical grades were designed to avoid conflicts with existing infrastructure and all proposed elements would be elevated in the interchange. The number of CL on the ramps were increased to primarily two CL to better accommodate CMVs.

## **CROSSROAD**

No modifications to the Murfreesboro Road interchange are proposed as part of the Recommended Preferred Alternative.

## **STRUCTURES**

The proposed CL are completely elevated in this interchange and would require new bridges. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

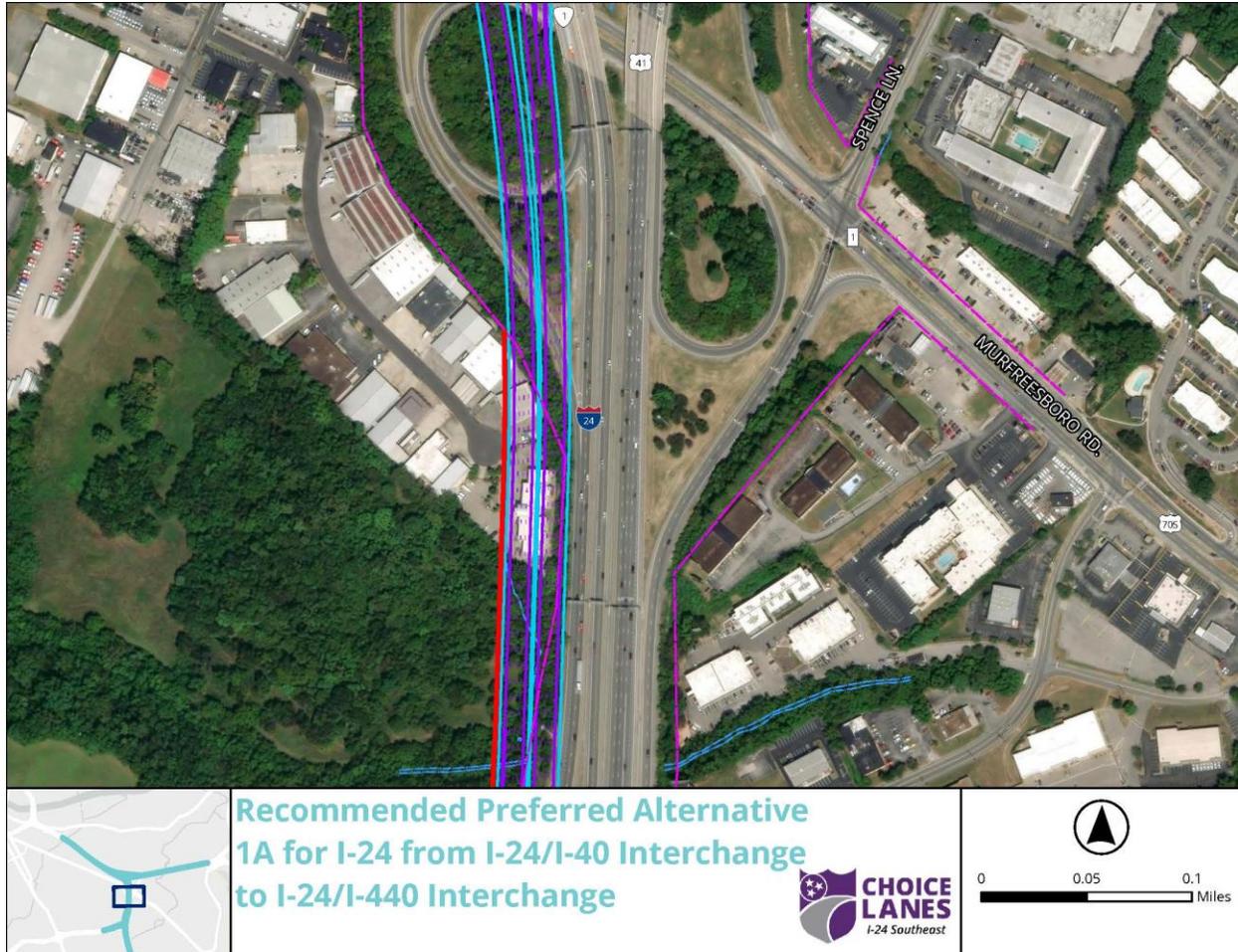
- Bridges:
  - 7 – I-40 WB CL continuing to I-40 WB CL (new bridge)
  - 7C- I-40 bridge over I-24 (bridge replacement)
  - 12 – I-40 EB CL continuing to I-40 EB CL (new bridge)
  - 13 – I-40 WB CL ramp over I-40 WB, I-40 EB and I-24 (new bridge)
  - 14 – I-40 EB CL Ramp B2 over I-24 (new bridge)
  - 15 – I-40 WB CL Ramp B1 over Murfreesboro Pike, I-24 EB, and I-24 WB (new bridge)
  - 16 – I-40 EB CL Ramp B4 over Murfreesboro Pike, I-24 EB, and I-24 WB (new bridge)
  - 17 – I-40 EB CL Ramp B2 and B3 over Murfreesboro Pike (new bridge)
- 18 – I-24 WB CL and I-40 EB CL Ramp B4 (new bridge) Retaining Walls: No new retaining walls would be required in this section.

### **4.1.5 Recommended Preferred Alternative 1A for I-24 from I-24/I-40 Interchange (MP 51.5) to I-24/I-440 Interchange (MP 53.0)**

The I-24 mainline section from I-24/I-40 Interchange to I-24/I-440 Interchange is relatively short but provides an important connection between the two interchanges. Within this section, there is an existing interchange with Murfreesboro Pike and the GP lanes along I-24 are barrier-separated in various ways to channelize directional travel to/from I-24/I-40/I-440 and Murfreesboro Pike. The proposed CL in this section would not provide direct access to the GP lanes nor Murfreesboro Pike and only provide a connection between the interchanges of I-24/I-40 and I-24/I-440. The decision to omit connections to the GP lanes and Murfreesboro Pike was made based on the existing channelization of movements

along I-24, as well as the close proximity of adjacent system-to-system interchanges. Providing additional new connections in this area would have added to the complexity of the area and potentially increased the confusion for motorists. The proposed CL would be four 12-foot CL in either direction with a design speed of 55 mph, or greater, for the entire section.

**Figure 4-5: RPA 1A for I-24 from I-24/I-40 Interchange (MP 51.5) to I-24/I-440 Interchange (MP 53.0)**



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## MAINLINE

These proposed improvements locate the proposed CL along the west side of I-24 on elevated structures over the existing infrastructure. Both directions of travel are on the same side, on separate structures.

This mainline configuration was included in Reasonable Alternative 1 and was modified in the refinements for the Recommended Preferred Alternative. The refinements were primarily driven by refinements of the designs at the I-24/I-40 interchange and I-24/I-440 interchange. The entering and exiting system interchange ramps were widened from one

CL to two CL to better accommodate CMVs. The width of the CL in this section were widened from two CL to four CL in either direction to distribute vehicles from the two interchanges.

## CROSSROAD

No modifications to the Murfreesboro Road interchange are proposed as part of the Recommended Preferred Alternative.

## STRUCTURES

The proposed CL are completely elevated in this section and would require new bridges. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

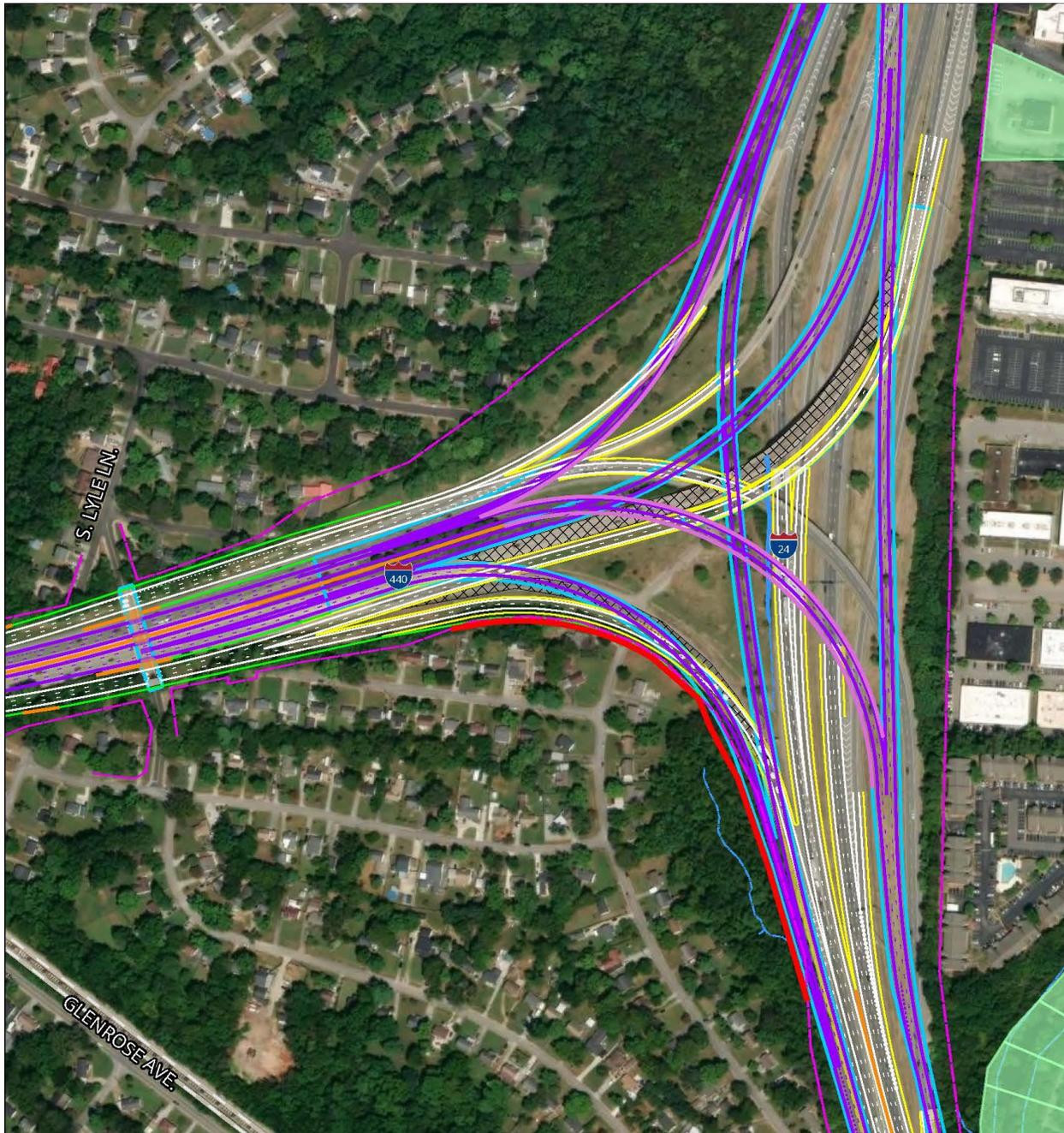
- Bridges:
  - 18 – I-24 WB CL and I-40 EB CL Ramp B4 (new bridge)
  - 19 – I-24 CL EB (new bridge)
  - 19A – I-24 CL WB (new bridge)
  - 20 – I-24 WB CL to I-40 CL Ramps (new bridge)
  - 21 – I-24 EB CL to I-24 EB and WB CL Ramps (new bridge)
- Retaining Walls: No new retaining walls would be required in this section.

### 4.1.6 Recommended Preferred Alternative 1A for I-24/I-440 Interchange (MP 53.0)

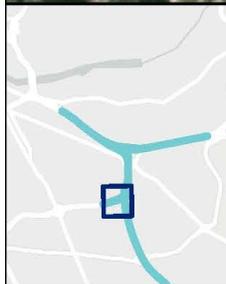
The I-24/I-440 Interchange is located approximately 4,000 feet south of the I-24/I-40 interchange and many of the existing GP lanes and proposed CL are interrelated in their connections. The proposed improvements at this interchange would provide direct access for all travel directions between the two interstates. CL ramps to and from I-440 would be two-lane ramps and the I-24 to I-24 connections for I-24 mainline CL would also be two lanes.

While the intent is to maintain a minimum of 55 mph design speed for the proposed CL within this interchange (based on posted speeds for the GP lanes), the ramps between I-24 (south of the interchange) and I-440 need to be reduced based on the alignment and grade that can be achieved.

Figure 4-6: RPA 1A for I-24/I-440 Interchange (MP 53.0)



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Recommended Preferred  
Alternative 1A for I-24/  
I-440 Interchange



0 0.04 0.08  
Miles

## MAINLINE

The proposed improvements to the I-24/I-440 Interchange would connect the proposed CL along I-24 to CL down the center of I-440. As described in the previous section, the CL approaching and departing to and from the west are four lanes in either direction. The CL approaching and departing from the east are three lanes in either direction at the merge/diverge points for the directional ramps and ramps continuing along I-24. The CLs transition to two lanes in either direction immediately east of the merge and diverge points and continue as two CL in either direction in the next section.

For the CL entering westbound I-440, the eastbound I-24 to westbound I-440 ramp would taper from two CL to one CL before joining the westbound I-24 to westbound I-440 ramp. The WB I-24 to WB I-440 ramp would be continuously two CL as it traverses the interchange and joins the eastbound I-24 to westbound I-440 ramp. The combined three CL would continue in the westbound direction along I-440 with a taper from three CL to two CL starting at South Lyle Lane.

The eastbound I-440 CL approaches the interchange with three CL under South Lyle Lane. The lanes split at South Lyle Lane creating ramps with two CL connecting to both eastbound I-24 and westbound I-24. The CL ramp to eastbound I-24 tapers to one CL before joining I-24 CL. The CL ramp to westbound I-24 remains two CL as it joins I-24 CL.

All CL ramps within the interchange area would be elevated structures and the alignments and grades have been laid out to reduce the impacts to existing infrastructure, but some shifting of the I-440 GP lanes are required to accommodate the proposed CL as they head to the west. The elevated bridges would be at-grade as they approach the South Lyle Lane overpass, which would be replaced to allow the CL and GP lanes to pass underneath.

This interchange configuration was included in Reasonable Alternative 1 and was modified in the refinements for the Recommended Preferred Alternative. The entering and exiting system interchange ramps were widened from one CL to two CL to better accommodate CMVs. The width of the CL in this section along I-440 were widened from two CL to three CL in either direction to distribute vehicles to and from the two interstates. To accommodate the additional CL in the median of I-440, the I-440 GP lanes were shifted north and south. This shift requires reconstruction and realignment of the directional GP lane ramps to connect to the shifted lanes. The ramps connecting to westbound I-440 only need nominal reconstruction. However, the eastbound GP lane directional ramps connecting to I-24 in both directions are completely rebuilt on new alignments, including a new bridge for the eastbound I-440 to westbound I-24 ramp as it goes over I-24 GP lanes.

## CROSSROAD

The South Lyle Lane overpass would be replaced and lengthened to allow the CL and GP lanes to pass under.

## STRUCTURES

The proposed CL may require the replacement of existing noise walls within the interchange area. As noted previously, all ramps would be elevated through this interchange and would require new bridges and retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 22 – I-440 EB CL Ramp to I-24 WB CL Ramp C3 (new bridge)
  - 23 – I-440 WB Ramp C2 over Ramp 22 and Ramp 33 (new bridge)
  - 24 – I-24 CL ramps to I-440 WB CL (new bridge)
  - 24A – I-440 Ramps C1 and C2 (new bridge)
  - 24B – I-440 Ramps C3 and C4 (new bridge)
  - 26 – South Lyle Lane over I-440 (new bridge)
  - 27 – I-24 WB CL over I-24 WB Ramp (new bridge)
  - 27A – I-440 EB GP Ramp to I-24 WB GP (bridge replacement)
  - 28 – I-24 WB CL Ramp to I-440 WB CL (Ramp C1) (new bridge)
  - 29 – I-24 EB CL Ramp over I-24 WB CL Ramp (new bridge)
  - 30 – I-440 EB CL Ramp to I-24 EB CL (Ramp C4) (new bridge)
- Retaining Walls: Four new retaining walls would be included in this section (11, 13, 13A, and 14)

### 4.1.7 Recommended Preferred Alternative 1A for I-440 from Nolensville Pk (6.2) to I-24/I-440 Interchange (MP 7.2)

This section is one of the western endpoints for the CL and provides a connection to/from the GP lanes along I-440. In this current phase, the proposed CL taper from three lanes in either direction under South Lyle Lane to two lanes and then to one lane before merging in and out of the existing GP lanes east of US41A/Nolensville Pike.

The potential to extend the CL farther west along I-440 is being evaluated in an ongoing planning study. The intent of the proposed improvements in this Project is to accommodate the potential future improvements.

The design speed for the CL is a minimum of 55 mph, based on posted speeds along I-440, with all curves and tapers/merges designed accordingly.

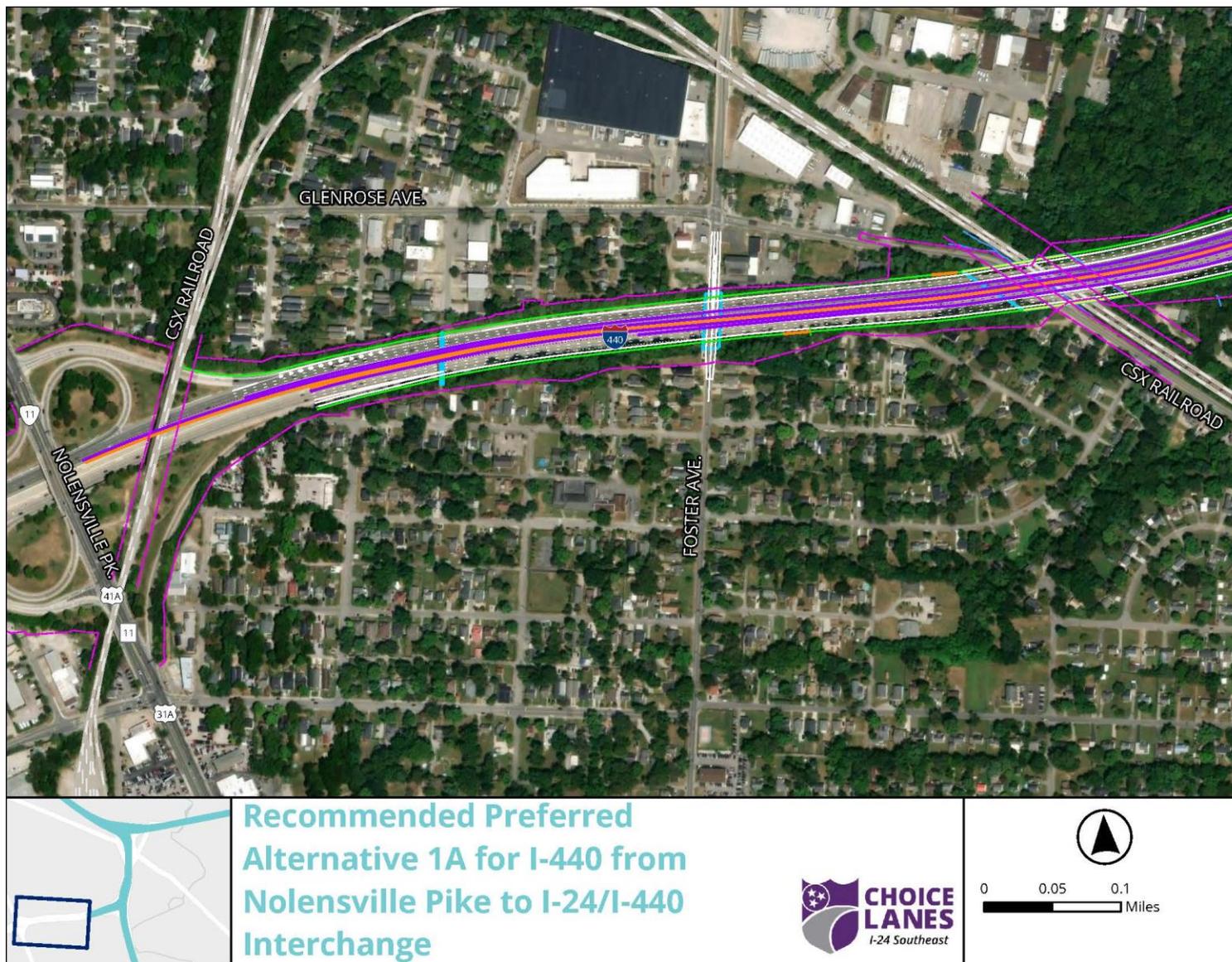


PRELIMINARY GEOMETRIC ALTERNATIVES SCREENING  
**CHAPTER 4: RECOMMENDED PREFERRED ALTERNATIVE**

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Figure 4-7: RPA 1A for I-440 from Nolensville Pike (MP 6.2) to I-24/I-440 Interchange (MP 7.2)



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## MAINLINE

In the eastbound direction, the proposed CL start as a single lane added to the inside of the eastbound GP lanes between Nolensville Pike and Foster Avenue. A second CL is added just west of the Glenrose Avenue/CSX overpass and a third CL is added just east of the Glenrose Avenue/CSX overpass. Three CL continue east to connect to I-24 as described in the previous section.

In the westbound direction, as noted in the previous section, three CL pass under South Lyle Lane. Just west of South Lyle Lane, a lane drops via a tapered merge and two CL cross over the Glenrose Avenue/CSX overpass. At approximately Foster Avenue, another CL is dropped via a tapered merge. The last CL direct merges into the leftmost GP lane just east of the Nolensville Pike overpass.

To accommodate the new CL, the GP lanes are shifted north and south. Additional improvements due to this shift include realignment of the Nolensville Pike on-ramp, replacement of the pedestrian bridge over I-440, replacement of the Foster Avenue overpass, and widening of the I-440 mainline bridge over Glenrose Ave and CSX tracks.

This mainline concept was included in Reasonable Alternative 1 but was significantly modified in the refinements for the Recommended Preferred Alternative. As described in the previous section, the number of CL on the directional system interchange ramps was increased to better accommodate CMVs. This resulted in more CL at the connection to I-440 and the need to extend the lanes and lane drops farther west along I-440. In Reasonable Alternative 1, the CL started and ended at approximately Glenrose Ave. In the Recommended Preferred Alternative, they start and end closer to Nolensville Pike (3500 feet farther west).

## CROSSROAD

The Foster Avenue overpass would be replaced and lengthened to allow the CL and GP lanes to pass under. No modifications along Nolensville Pike would be included in the Project.

## STRUCTURES

The proposed CL may require the replacement of existing noise walls within the section. While the CL would be mostly at-grade in this section, there are impacts to existing bridges, which would require replacement or widening, as well as a need for additional proposed retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 26A – I-440 WB over Glenrose Ave and CSX (bridge widening)
  - 26B – I-440 EB over Glenrose Ave and CSX (bridge widening)
  - 26C – Foster Avenue over I-440 (bridge replacement)
  - 26D – Pedestrian bridge over I-440 (bridge replacement)
- Retaining Walls: Four new retaining walls would be included in this section (12, 12A, 14, and 14A)

#### 4.1.8 Recommended Preferred Alternative 1A for I-24 from I-440 (MP 53.0) to SR 155 (Briley Parkway) (MP 54.0)

This mainline section of I-24 runs from the I-24/I-440 interchange to the SR 155 (Briley Parkway) interchange. Due to existing constraints (environmentally sensitive areas, floodplains and potential historic properties) along the section, there was only one reasonable improvement proposed. The proposed improvements along the section would provide two 12-foot CL in either direction, with a minimum design speed of 55 mph, though much of the section is able to meet a much higher design speed.

**Figure 4-8: RPA 1A for I-24 from I-440 (MP 53.0) to SR 155 (Briley Pkwy) (MP 54.0)**



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## MAINLINE

The proposed improvements include CL being elevated to the outside of I-24. The CL are elevated through this section due to a significant choke point along the route at the location noted by the green shading in **Figure 4-8**. The green shaded property shown in the figure above is a historic church/cemetery property along the western side of I-24 which approaches the edge of the I-24 shoulder and is also constrained by Mill Creek and a recreational park along the east side. Mill Creek has an exceptionally large regulatory floodway and floodplain that would be negatively impacted by any additional roadway fill. In addition, there is a CSX RR crossing and residential communities adjacent to this section of the interstate. Due to these sensitive areas, the CL are elevated to minimize the potential impacts. Additional non-penetrative ground sensing testing would be beneficial in this area during the Project development to fully understand the constraints within and around the cemetery.

This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was modified in the refinements for the Recommended Preferred Alternative to shift the alignment over the existing GP lanes to eliminate impacts to the historic church/cemetery property.

## CROSSROAD

The I-24 bridge over New Glenrose Avenue will be replaced as a part of the scope of this project.

## STRUCTURES

As previously noted, the westbound CL would be elevated over the westbound GP lanes and eastbound CL would be elevated and on the east side of I-24 in this section. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

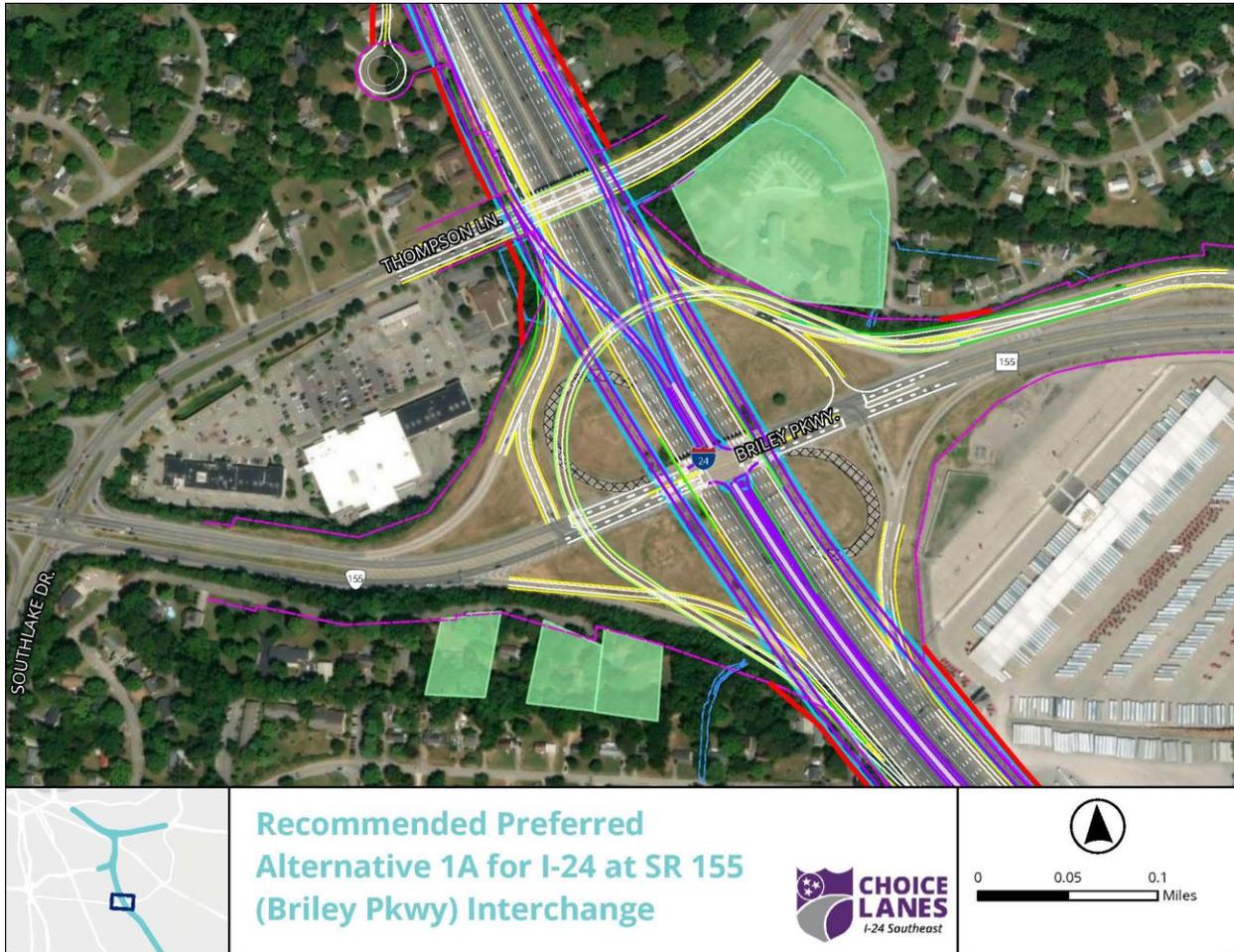
- Bridges:
  - 31 – I-24 WB CL from I-440 to SR 155 (Briley Parkway) (new bridge)
  - 32 – I-24 EB CL from I-440 to SR 155 (Briley Parkway) (new bridge)
  - 36A – I-24 mainline bridge over New Glenrose Avenue (bridge replacement)
- Retaining Walls: No new retaining walls would be required in this section.

### 4.1.9 Recommended Preferred Alternative 1A for I-24 at SR 155 (Briley Parkway) Interchange (MP 54.0)

This existing interchange is a primary access point to SR 155 (Briley Parkway) for motorists in the area, with SR 155 (Briley Parkway) providing a connection to I-40 and the airport to

the north and east. East Thompson Lane is located immediately to the north of SR 155 (Briley Parkway), intersecting it to the west of the interchange. The proposed improvements at this interchange would provide two 12-foot CL in either direction, elevated to the outside of I-24. The design speed would be at least 55 mph based on posted speeds along the GP lanes. The improvements also provide connection points between the GP and CL within the interchange area.

**Figure 4-9: Recommended Preferred Alternative 1A for I-24 at SR 155 (Briley Pkwy) Interchange (MP 54.0)**



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**MAINLINE/INTERCHANGE**

The proposed improvements include CL elevated through the interchange with a direct connection for CL to SR 155 (Briley Parkway). The existing loop ramps at the SR 155 (Briley Parkway) interchange would be removed and the movements would be accommodated by a flyover ramp for westbound SR 155 (Briley Parkway) to eastbound I-24 and a left turn for eastbound SR 155 (Briley Parkway) to westbound I-24. The CL would connect to SR 155 (Briley Parkway) via a plaza-style intersection at the intersection point of I-24 and SR 155

(Briley Parkway). This new connection point would provide a left-turn lane and a right-turn lane on each CL approach, as well as left-turn movements from SR 155 (Briley Parkway) in both directions. This intersection would be signalized and would require coordination with the existing ramp signals on either side.

It is important to note that the proposed configuration of the interchange is intended to eliminate any potential ROW impacts to the Glencliff United Methodist Church and the existing Glencliff Court road.

The proposed plaza intersection would require pushing the existing mainline GP lanes on I-24 to the outside to accommodate the additional width of the CL near SR 155 (Briley Parkway). This widening would require additional ROW and impact the bridges at East Thompson Lane and SR 155 (Briley Parkway). The existing GP ramps would need to be shifted as well before tying back into the existing alignments.

This interchange configuration was included in Reasonable Alternative 2 and was refined in the development of the Recommended Preferred Alternative. Modifications included refining the design of the ramps to minimize impacts to adjacent historic properties. Reasonable Alternative 1 was not selected due to conflicts with planned projects on East Thompson Lane and to minimize impacts to adjacent historic and environmentally sensitive properties.

## **CROSSROAD**

The eastbound CL would impact Joplin Drive. New ROW would be acquired in the residential area and Joplin Drive would be realigned to connect into Joplin Circle.

The Thompson Lane overpass would be replaced to allow the realigned GP lanes and ramps to pass underneath.

The existing SR 155 (Briley Parkway) bridge over I-24 would remain.

## **STRUCTURES**

The CL would be completely elevated which would require new bridges. The GP widening noted previously would also require the replacement of overpasses within the interchange. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

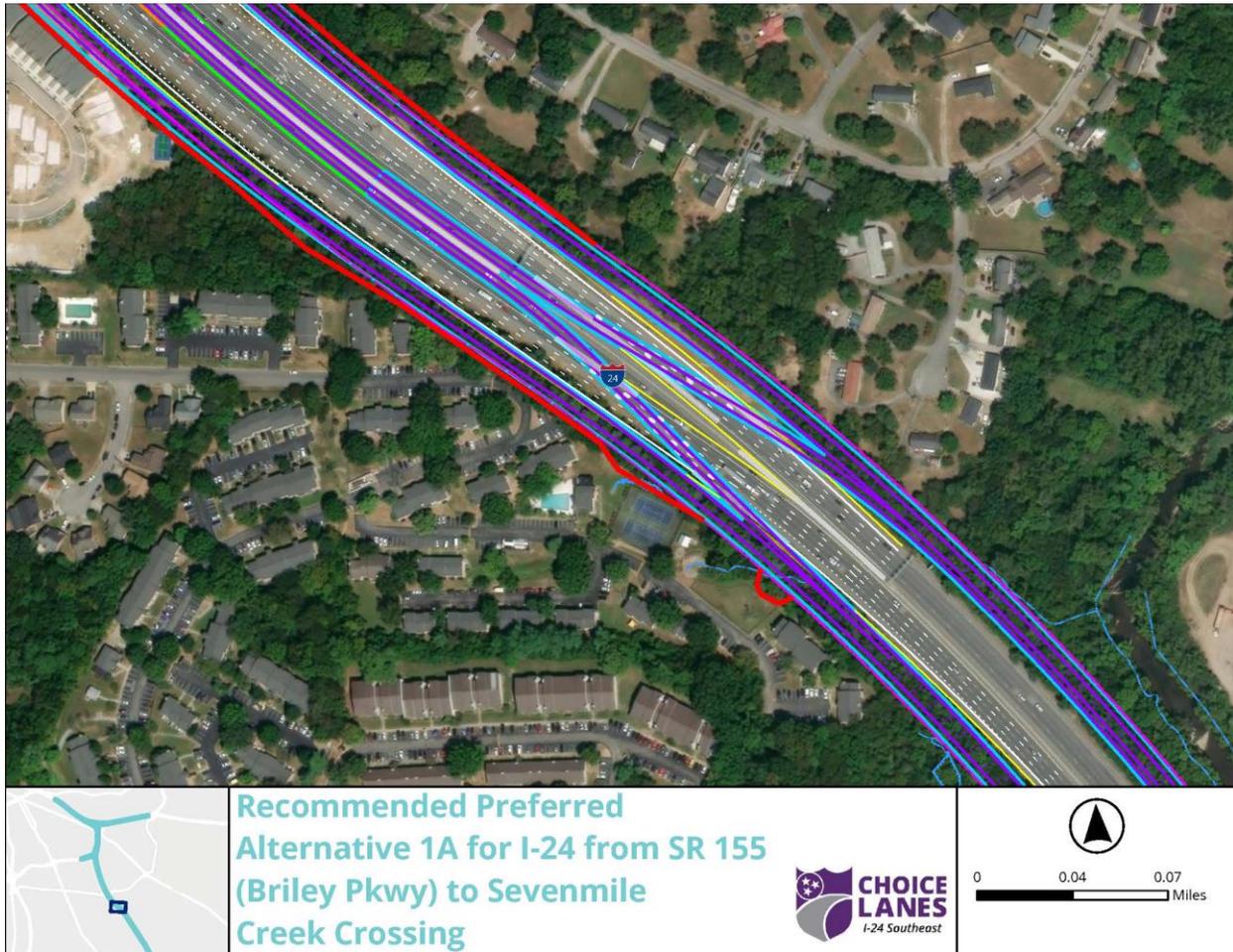
- Bridges:
  - 31A – I-24 WB CL over E. Thompson Lane and Mill Creek (new bridge)
  - 32A – I-24 EB CL over E. Thompson Lane and Mill Creek (new bridge)
  - 33 – I-24 EB CL Ramp to Briley Parkway (new bridge)

- 34 – Briley Parkway to I-24 WB CL Ramp (new bridge)
- 35 - I-24 EB/WB CL Ramps to Briley Parkway (new bridge)
- 36 – Briley Parkway Ramp to I-24 EB (new bridge)
- 37 – East Thompson Lane over I-24 (bridge replacement)
- 38 – I-24 WB CL over Briley Parkway (new bridge)
- 39 – I-24 EB CL over Briley Parkway (new bridge)
- 40 – I-24 WB elevated CL from Briley Parkway to median CL Ramp (new bridge)
- 41 – I-24 EB elevated CL from Briley Parkway to median CL Ramp (new bridge)
- Retaining Walls: Six new retaining walls would be included in this section (15, 16, 17, 18, 19, and 20)

#### **4.1.10 Recommended Preferred Alternative 1A for I-24 from SR 155 (Briley Parkway) (MP 54.0) to 4,000 West of SR 255 (Harding Place) (MP 55.0)**

This mainline section of I-24 connects the SR 155 (Briley Parkway) interchange to approximately 4,000 feet west of the SR 255 (Harding Place) interchange. The proposed improvements along this section would provide two 12-foot CL in either direction and directional access to the GP lanes near SR 155 (Briley Parkway). The posted speed changes along this section, from 55 mph near SR 155 (Briley Parkway) to 70 mph progressing east. The design speed for the CL is 70 mph for the main lanes and variable for ramps.

**Figure 4-10: RPA 1A for I-24 from SR 155 (Briley Pkwy) (MP 54.0) to Sevenmile Creek Crossing (MP 54.5)**



### MAINLINE

Immediately east of the SR 155 (Briley Parkway) interchange, an at-grade access point to and from CL to GP lanes is provided (in going east and outgoing west). The proposed CL are elevated to the outside of I-24 through this section. The at-grade access is proposed as one CL in either direction and would elevate as they head east away from SR 155 (Briley Parkway), before splitting to become single-lane CL ramps. These ramps would then stay elevated, cross over each travel direction of I-24 before connecting with the elevated mainline CL on either side of the interstate. To accommodate the movement of the CL ramps from at-grade along the inside of I-24 to elevated along the outside, the GP lanes would require shifting to the outside. Due to this shift, I-24 would need to be widened to accommodate the existing number of GP lanes. Based on potential negative impacts to the Mill Creek and Sevenmile Creek floodways, the intent is that this widening would be completed north of that area.

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Both Reasonable Alternatives proposed elevating the CL to both sides of I-24 as you head east along the alignment. The CL are elevated to minimize impacts of roadway fill to the Sevenmile Creek and Mill Creek Floodways (bottom of **Figure 4-10**), which then requires the CL to stay elevated over the Antioch Pike and CSX RR overpasses to the east.

This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

## **CROSSROAD**

No crossroad improvements or changes are included in this section.

## **STRUCTURES**

The CL would be elevated which would require new bridges and retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 42 – I-24 WB CL Ramp over I-24 WB (new bridge)
  - 43 – I-24 EB CL Ramp over I-24 EB (new bridge)
  - 43A – I-24 EB and WB LC over I-23 EB and WB (new bridge)
  - 44A – I-24 WB CL over Sevenmile Creek, Antioch Pike and CSX RR (new bridge)
  - 44B – I-24 EB CL over Sevenmile Creek, Antioch Pike and CSX RR (new bridge)
- Retaining Walls: Two new retaining walls would be included in this section (21 and 22)

### **4.1.11 Recommended Preferred Alternative 1A for I-24 from 4,000' West of SR 255 (Harding Place) (MP 55.0) to SR 255 (Harding Place) (MP 56.0)**

This section of I-24 connects the SR 155 (Briley Parkway) interchange to the SR 255 (Harding Place) interchange. The proposed improvements along this section would provide two 12-foot CL in either direction and directional access to the GP lanes near SR 155 (Briley Parkway). The design speed for the CL is 70 mph for the main lanes and variable for ramps.

**Figure 4-11: RPA 1A for I-24 from 4,000' West of SR 255 (Harding PI) (MP 55.0) to Interchange (MP 56.0)**



## MAINLINE

In the Recommended Preferred Alternative, the CL are elevated and enter this section on the outside. The CL shift to at-grade in the center of I-24. This shift would be accomplished by carrying both of the elevated CL over the I-24 GP lanes to meet in the center of I-24. The four CL would be separated by a median barrier. As the CL shift to the center, I-24 would be widened to accommodate the current number of GP lanes. This widening would require some rock excavation along the west side of I-24 and retaining walls to limit ROW acquisitions along the east side of I-24.

The proposed mainline configuration was included in Reasonable Alternative 1. In this section of interstate, the differences in the reasonable alternatives were primarily being driven by the selection of the interchange alternatives at adjacent interchanges. Reasonable Alternative 1 is compatible with adjacent Recommended Preferred Alternatives. Reasonable Alternative 2 was eliminated due to compatibility.

## CROSSROAD

The Antioch Pike bridge over I-24 will be replaced as part of the scope of the project.

## STRUCTURES

The CL would be elevated in portions of this section, which would require new bridges and retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 43B – Antioch Pike over I-24 (bridge replacement)
  - 44A – I-24 WB CL over Sevenmile Creek, Antioch Pike and CSX RR (new bridge)
  - 44B – I-24 EB CL over Sevenmile Creek, Antioch Pike and CSX RR (new bridge)
  - 44D – I-24 WB CL near Harding Place (new bridge)
  - 44E – I-24 EB CL near Harding Place (new bridge)
- Retaining Walls: Four new retaining walls would be included in this section (26, 27, 28, and 29)

### 4.1.12 Recommended Preferred Alternative 1A for I-24 at SR 255 (Harding Place) Interchange (MP 56.0)

While there are no proposed direct connections to SR 255 (Harding Place) from the CL, the improvements would carry two CL in either direction through the SR 255 (Harding Place) interchange. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

Figure 4-12: RPA 1A for I-24 at SR 255 (Harding Pl) Interchange (MP 56.0)



### MAINLINE/INTERCHANGE

The proposed CL would remain at-grade in the center of I-24. In this configuration, I-24 would be widened to the outside on both sides to accommodate the existing number of GP lanes. As I-24 passes under SR 255 (Harding Place), the additional horizontal width required would result in replacement of the existing SR 255 bridge over I-24. All ramps serving the existing interchange would be shifted to accommodate the change in location of the GP lanes before tying back into the existing I-24 alignment as they approach SR 255 (Harding Place).

This mainline configuration was included in Reasonable Alternative 1 and was not modified in the refinements for the Recommended Preferred Alternative. Reasonable Alternative 2 was eliminated due to the costs of an extended elevated section compared to the at-grade section which had similar impacts.

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## CROSSROAD

The SR 255 (Harding Place) bridge over I-24 would be replaced. No other improvements or changes along Harding Place are included.

## STRUCTURES

The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 44C – SR 255 (Harding Place) over I-24 (bridge replacement)
- Retaining Walls: Three new retaining walls would be included in this section (29, 30, and 31)

### **4.1.13 Recommended Preferred Alternative 1A for I-24 from SR 255 (Harding Place) (MP 56.0) To Haywood Lane (MP 57.0)**

This section of I-24 runs from the SR 255 (Harding Place) interchange to the Haywood Lane interchange. The proposed improvements along this section would provide two 12-foot CL in either direction along the route. The design speed is 70 mph for the section.

**Figure 4-13: RPA 1A for I-24 from SR 255 (Harding PI) (MP 56.0) to Haywood Ln (MP 57.0)**



## MAINLINE

The proposed CL are located at-grade along the center of I-24 for the entire section. In this configuration, I-24 would be widened to the outside on both sides to accommodate the existing number of GP lanes.

To minimize the property impacts to homes along I-24 within this section, proposed retaining walls would be required along much of the section. This mainline configuration was included in Reasonable Alternative 1 and was not modified in the refinements for the Recommended Preferred Alternative. In this section of interstate, the differences in the reasonable alternatives were primarily driven by the selection of the interchange alternatives at adjacent interchanges. Reasonable Alternative 1 is compatible with adjacent Recommended Preferred Alternatives.

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## CROSSROAD

No crossroad improvements or changes are included in this section.

## STRUCTURE

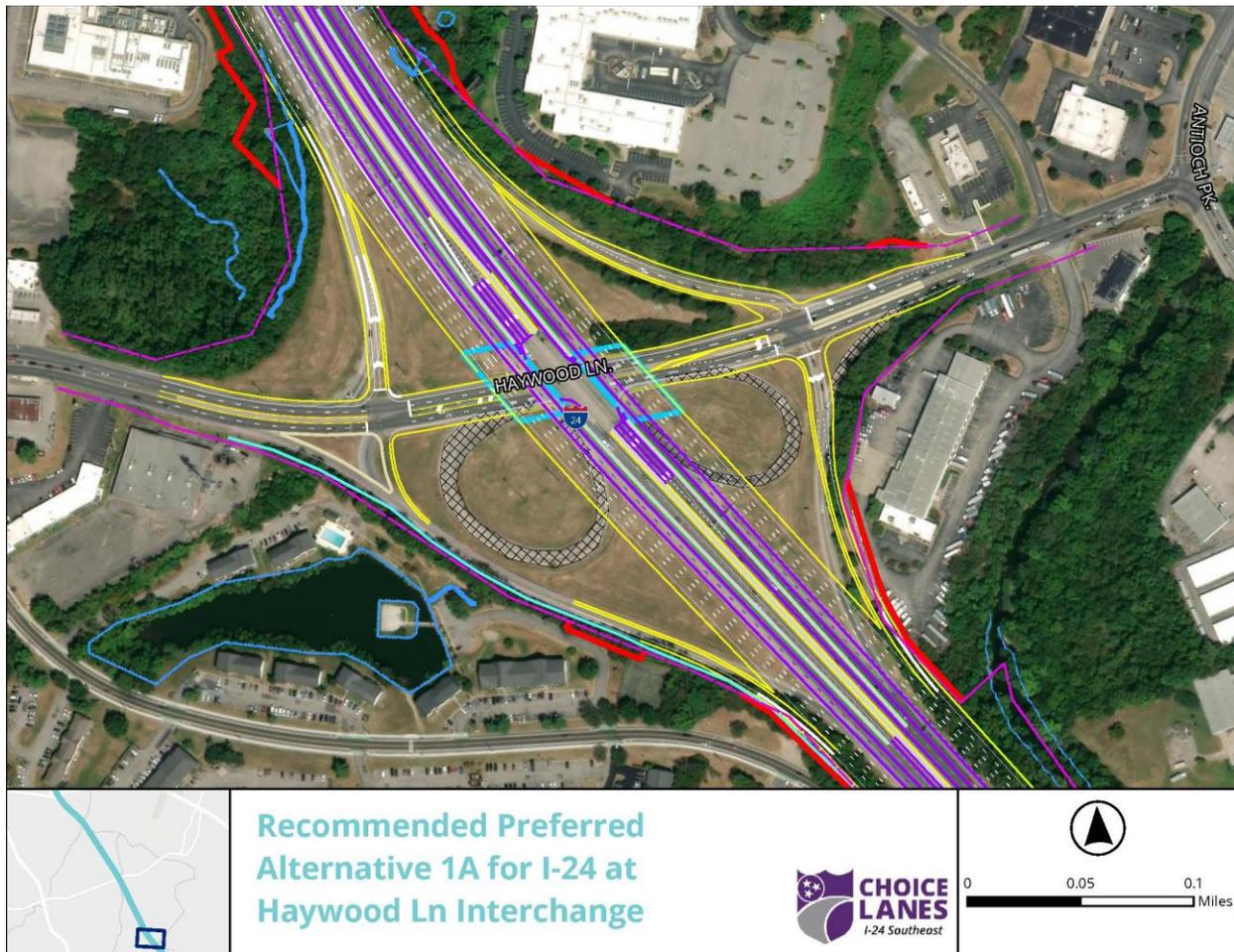
The CL are entirely at-grade in this section, so no bridge work is required. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges: None
- Retaining Walls: Two new retaining walls would be included in this section (30 and 31)

### 4.1.14 Recommended Preferred Alternative 1A for I-24 at Haywood Lane Interchange (MP 57.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, at-grade to the inside of I-24. The improvements also provide a connection between the CL and Haywood Lane at a new plaza-style intersection in the center of the interchange. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

Figure 4-14: RPA 1A for I-24 at Haywood Ln Interchange (MP 57.0)



### MAINLINE/INTERCHANGE

This alternative proposes an interchange modification at the I-24/Haywood Lane Interchange to convert the existing partial cloverleaf interchange to a diamond interchange. This modification includes the addition of new direct connection CL ramps that connect to Haywood Lane through a new intersection within the median of the proposed modified diamond interchange. The existing partial cloverleaf ramps would be replaced, creating a diamond interchange for the GP lanes. The I-24 bridge over Haywood Lane would be replaced with two new bridge structures to accommodate the widening of I-24 and proposed interchange modifications. The CL ramps to Haywood Lane would be accomplished by ramping down from the I-24 and using retaining walls to minimize the width of impacts required to overcome the grade differential. The widening would require rock cuts at the southwest quadrant adjacent to the ramps' convergence with the I-24 GP lanes and the northeast quadrant for the majority of the ramps' length from Haywood Lane to I-24. It would also require additional ROW along the southwest, southeast, and northeast quadrant of the ramps. A retaining wall would also be required at the westbound off-ramp.

This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

## CROSSROAD

Haywood Lane would be modified to accommodate the removal of the loop ramps and inclusion of new all-way signalized intersections at the ramp termini. Modifications to the lane configurations include: 1) the eastbound off-ramp would include two right-turn lanes and one left-turn lane; 2) the westbound off-ramp would include two left-turn lanes and one right-turn lane; and 3) the eastbound Haywood Lane would include dual left-turn lanes to the west-bound on-ramp.

## STRUCTURES

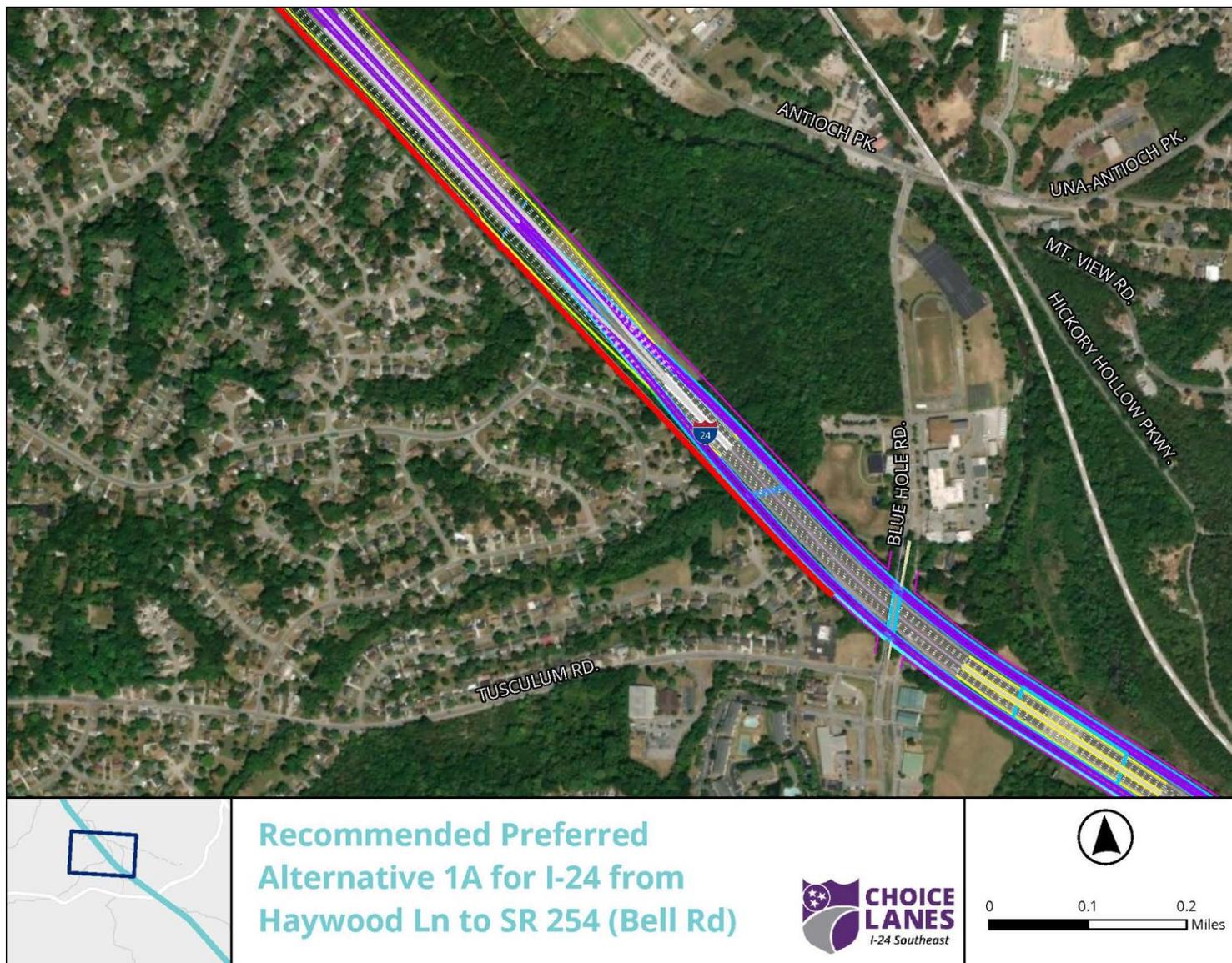
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 47 – I-24 EB over Haywood Lane (bridge replacement)
  - 48 – I-24 WB over Haywood Lane (bridge replacement)
- Retaining Walls: Five new retaining walls would be included in this section (32, 33, 34, 47, and 48)

### 4.1.15 Recommended Preferred Alternative 1A for I-24 from Haywood Lane (MP 57.0) to SR 254 (Bell Road) (MP 59.0)

This section of I-24 runs from the Haywood Lane interchange to the SR 254 (Bell Road) interchange. The proposed improvements within this section would provide two 12-foot CL in either direction partially within the median of I-24 and partially on the outside of the I-24 GP lanes. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp. This configuration is proposed to minimize impacts to the regulated floodway.

Figure 4-15: RPA 1A for I-24 from Haywood Ln (MP 57.0) to SR 254 (Bell Rd) (MP 59.0)



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## MAINLINE

This alternative proposes an at-grade typical section for the section immediately to the east of the Haywood Lane interchange, including four GP lanes and two CL to the inside in either direction separated by a 4-foot buffer and flexible delineators. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. Along this section, rock cut and additional ROW would be required due to the proximity of Apache Trail and residences to the south of I-24. Apache Trail lies approximately 35 feet from the ROW. Along the north side of I-24, a retaining wall would be required due to the proximity of the Mill Creek floodplain at approximately MP 57.6.

Approximately 0.9 miles east of the Haywood Lane interchange, the CL begin to elevate and transition to the outside of the GP lanes, and they would require the use of retaining walls and structures to be elevated. Once the transition of the CL to the outside occurs, the GP lanes would remain as currently configured. The proposed typical section for the CL includes two lanes in either direction with a 12-foot shoulder on the inside and 6-foot shoulder on the outside. Along this section, the CL would be fully elevated creating an overpass over Blue Hole Road. Farther east, the I-24 bridge over Mill Creek would be replaced with a longer bridge to minimize the impact to the regulated floodway.

This mainline configuration was included in Reasonable Alternative 1 and was modified to expand the scope of the bridge replacements over Mill Creek as outlined above in the refinements for the Recommended Preferred Alternative. Reasonable Alternative 2 was not selected due to increased impacts to adjacent floodplains, streams, parks, and other environmentally sensitive resources with this proposed alternative.

## CROSSROAD

The CL would span over Blue Hole Road, but this bridge is included in the project scope for replacement..

## STRUCTURES

The CL would be elevated in portions of this section, which would require new bridges and retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

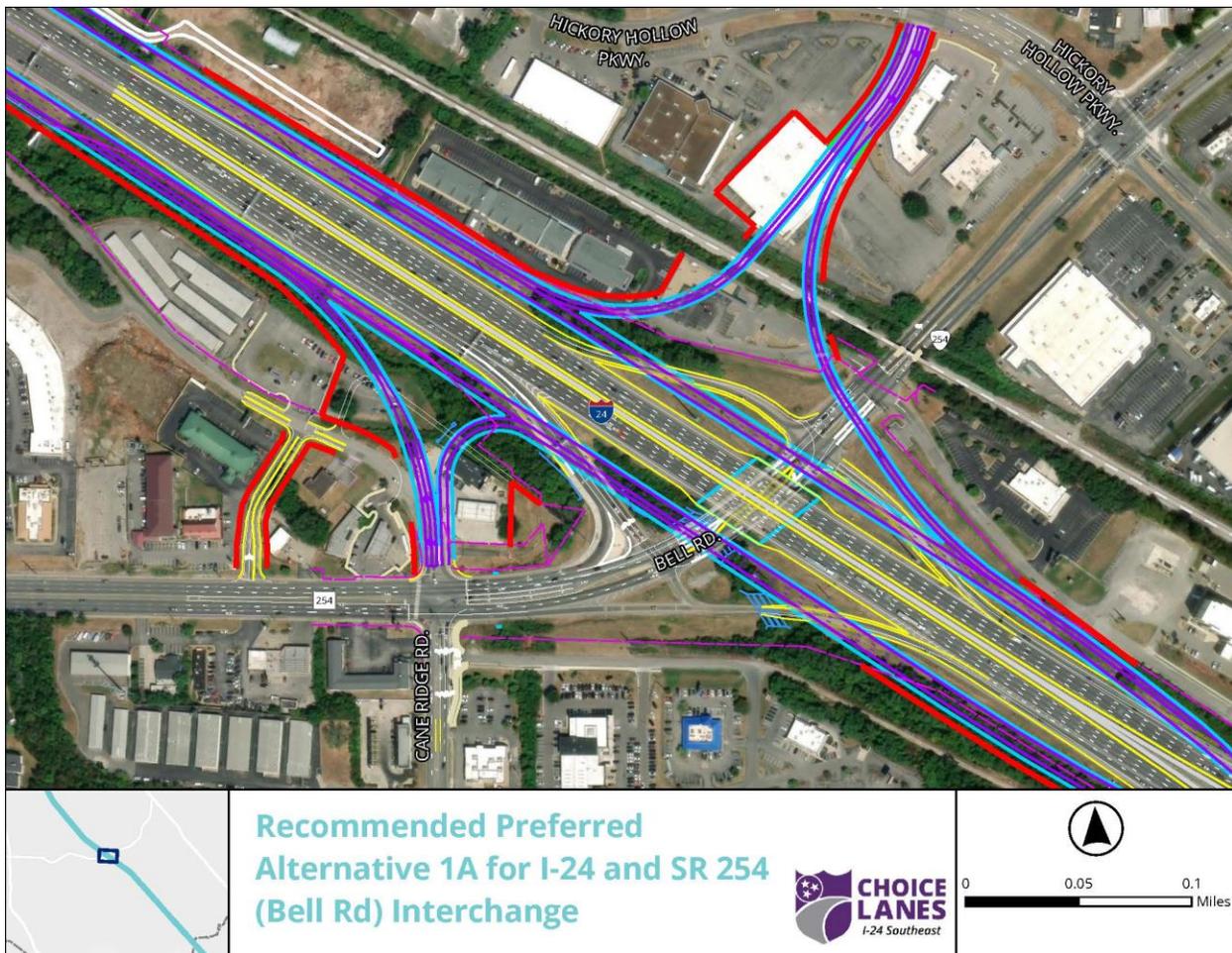
- Bridges:
  - 48A - Blue Hole Road over I-24 (bridge replacement)
  - 49 - I-24 over Mill Creek (bridge replacement)
  - 51 - I-24 elevated EB CL(new bridge)

- 54 – I-24 elevated WB CL (new bridge)
- Retaining Walls: Five new retaining walls would be included in this section (34, 35, 36, 49, and 50)

#### 4.1.16 Recommended Preferred Alternative 1A for I-24 and SR 254 (Bell Road) Interchange (MP 59.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, elevated to the outside of I-24. The improvements also provide a connection between the CL and Bell Road (for eastbound CL) and between CL and Hickory Hollow Parkway (for westbound CL). The design speed for the CL is 70 mph for the main lanes and variable for ramps.

**Figure 4-16: RPA 1A for I-24 and SR 254 (Bell Rd) Interchange (MP 59.0)**



DRAFT - DELIBERATIVE

#### MAINLINE/INTERCHANGE

The proposed alternative proposes the I-24/SR 254 (Bell Road) Interchange remains in its current configuration as a diamond interchange. The CL would bypass the existing

interchange via raised structures. Access to the CL would be provided via two locations, one for access to and from westbound I-24 and one for access to and from eastbound I-24. The westbound I-24 access begins at an existing signalized intersection on Hickory Hollow Boulevard. The new road crosses over the RR on the northern side of the interchange and merges with the westbound CL on the outside of I-24. Access to the CL in this configuration would require ROW acquisition and the removal of three structures within an existing commercial development. One structure is an empty big-box-type commercial building north of the RR track. The other two structures are an existing hotel and bar on the south side of the RR. Access to eastbound I-24 is provided by repurposing existing Cane Ridge Road as the access from SR 254 (Bell Road) to the CL. While Cane Ridge Road does provide access to several businesses, it is mostly secondary access, as most businesses affected have primary access from SR 254 (Bell Road). The access to three businesses would be impacted. A gas station would lose access; access to a storage facility and used car lot would require reconfiguration to prevent a loss of access.

The existing GP interchange would not be reconfigured due to floodway impacts and stream impacts to Collins Creek running along the south side of I-24. This interchange configuration minimizes the impacts to the regulated floodway.

This interchange configuration was included in Reasonable Alternative 1 and provides direct access to the proposed WeGo Transit Center. Reasonable Alternative 1 was selected to increase the benefits to local transit operations. This alternative was modified in the refinements for the Recommended Preferred Alternative to address traffic operational impacts along the crossroad (see discussion in the Crossroad section) add the replacement of the I-24 mainline bridge over SR 254 (Bell Road). This bridge replacement is not required as part of the proposed Project but is being included since it is a substandard bridge that requires replacement within the Project limits and TDOT elected to include it within this Project.

## **CROSSROAD**

As noted above, to allow the connection between eastbound CL and SR 254 (Bell Road), Cane Ridge Road would be cut off. To improve access and mobility in the area, Cane Ridge Road from the north would be realigned and connect to SR 254 (Bell Road) west of the existing interchange. The new intersection would allow right and left turns in and out of the road.

Cane Ridge Road from the south provides a connection between Century Farms Parkway (which does not have CL access) and SR 254 (Bell Road) (which does have CL access). This connection attracts additional motorists in the Build Alternative and negatively impacts operations at the Cane Ridge Road and SR 254 (Bell Road) intersection. To mitigate these

impacts, Cane Ridge Road would be widened to provide an additional turn lane (the approach would provide two left-turn lanes, a thru/right lane, and a right-turn only lane).

## STRUCTURES

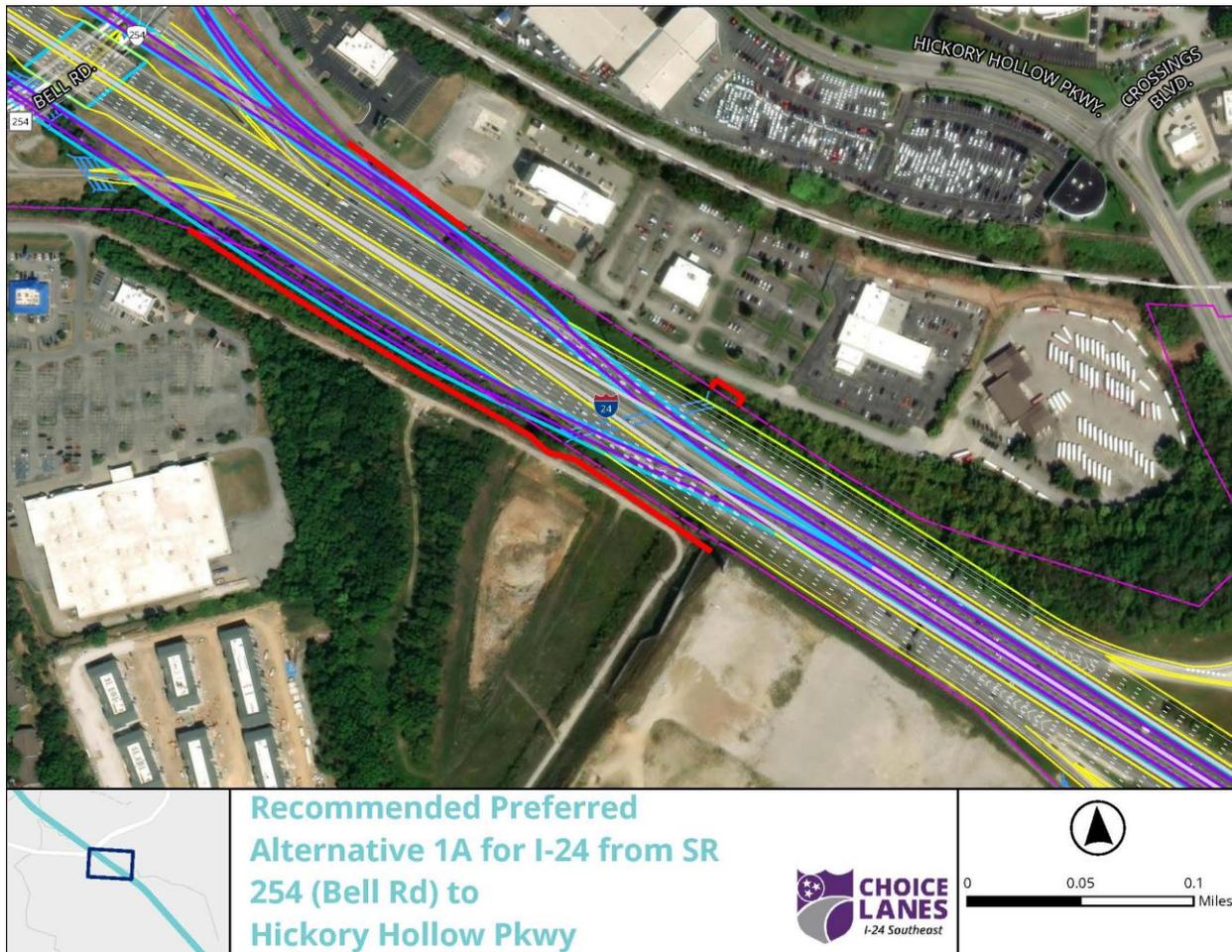
The CL through lanes and ramps would be elevated entirely in this section, which would require new bridges and retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 50 – I-24 over SR 254 (Bell Road) (bridge replacement)
  - 51 – I-24 EB elevated CL (new bridge)
  - 52 – I-24 EB elevated CL – Bell Road exit ramp (new bridge)
  - 53 – I-24 EB elevated CL – Bell Road entrance ramp (new bridge)
  - 54 – I-24 WB elevated CL (new bridge)
  - 55 – I-24 WB elevated CL – Bell Road entrance ramp (new bridge)
  - 56 – I-24 WB elevated CL – Bell Road exit ramp (new bridge)
- Retaining Walls: No new retaining walls would be required in this section.

### **4.1.17 Recommended Preferred Alternative 1A for I-24 from SR 254 (Bell Road) (MP 59.0) to Hickory Hollow Parkway (MP 60.0)**

This section of I-24 runs from the SR 254 (Bell Road) interchange to the Hickory Hollow Parkway interchange. The proposed improvements within this section would provide two 12-foot CL in either direction partially on the outside of the I-24 GP lanes and partially within the median of I-24. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

**Figure 4-17: RPA 1A for I-24 from SR 254 (Bell Rd) (MP 59.0) to Hickory Hollow Pkwy (MP 60.0)**



DRAFT - DELIBERATIVE

**MAINLINE**

The proposed alternative for the section east of the SR 254 (Bell Road) interchange proposes elevated, outside CL that transition to the inside of the GP lanes. This transition ends near MP 59.8 about 0.4 miles east of the SR 254 (Bell Road) interchange. The transition requires retaining walls and structures. The proposed typical section for the at-grade section from this point to the east includes four GP lanes and two CL to the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier.

A retaining wall would be required east of the transition of the CL back to the middle of the GP lanes to accommodate the necessary widening. The retaining wall is required because Collins Creek runs along I-24 on the north here and the floodplain, as shown in **Figure 3-28**, is near the proposed alignment.

This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

## CROSSROAD

No crossroad improvements or changes are included in this section.

## STRUCTURES

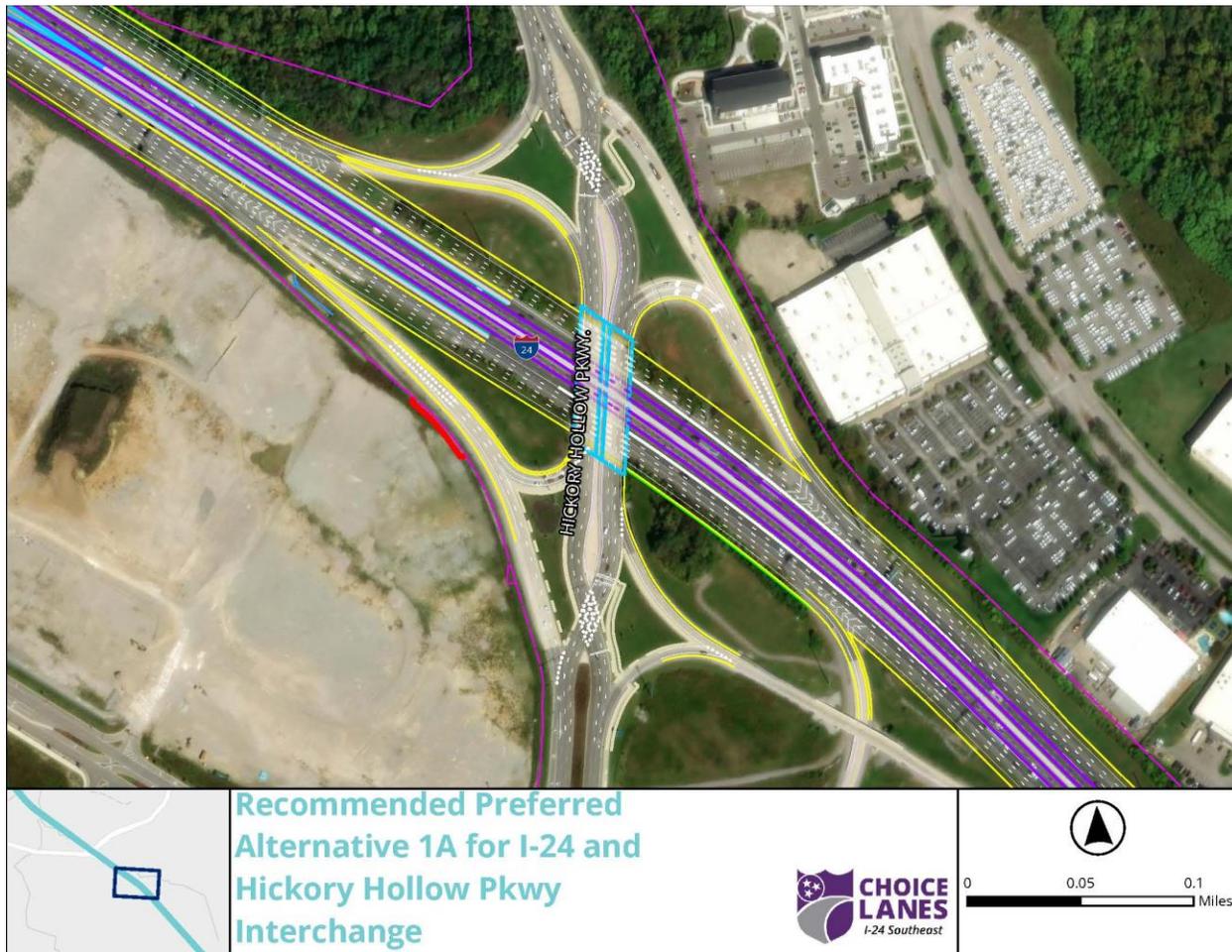
The CL through lanes and ramps would be partially elevated in this section, which would require new bridges and retaining walls. The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 51 – I-24 EB elevated CL (new bridge)
  - 54 – I-24 WB elevated CL (new bridge)
- Retaining Walls: Five new retaining walls would be included in this section (37, 51, and 52)

### 4.1.18 Recommended Preferred Alternative 1A for I-24 and Hickory Hollow Parkway Interchange (MP 60.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, at-grade on the inside of I-24. No connection to Hickory Hollow Parkway would be provided. The design speed for the CL is 70 mph for the main lanes and variable for ramps.

**Figure 4-18: Recommended Preferred Alternative 1A for I-24 and Hickory Hollow Pkwy Interchange (MP 60.0)**



DRAFT - DELIBERATIVE

### MAINLINE/INTERCHANGE

This alternative for the I-24/Hickory Hollow Parkway Interchange proposes the existing DDI remain as existing with no direct access to CL provided. While not shown in available aerial imagery, all four quadrants of the interchange are recently developed in close proximity to the ramps. In the southwest quadrant, there is an existing cemetery that may be avoided by eliminating a reconstruction effort for this interchange. The Hickory Hollow Parkway bridge over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction, the lengthening of the bridge would not affect the DDI configuration or operation, once construction is complete. To minimize impacts as described above, this interchange configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

### CROSSROAD

As noted, no improvements or changes would be made to Hickory Hollow Parkway.

## STRUCTURES

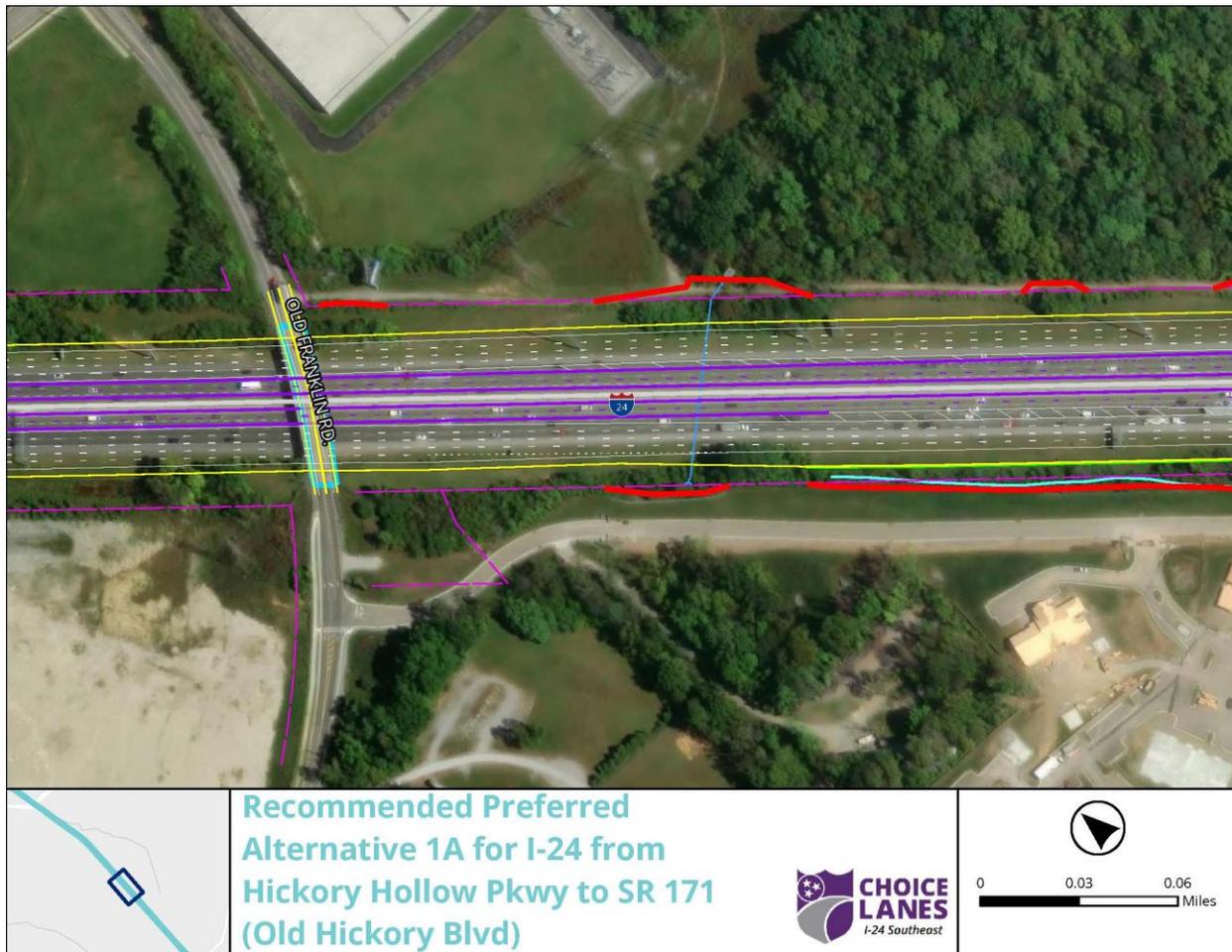
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 57 – Hickory Hollow Parkway over I-24 (bridge replacement)
- Retaining Walls: No new retaining walls would be required in this section.

### **4.1.19 Recommended Preferred Alternative 1A for I-24 from Hickory Hollow Parkway (MP 60.0) to SR 171 (Old Hickory Boulevard) (MP 62.0)**

This section of I-24 runs from the Hickory Hollow Parkway interchange to SR 171 (Old Hickory Boulevard). The proposed improvements within this section would provide two 12-foot CL in either direction within the median of I-24. The design speed for this section is 70 mph.

**Figure 4-19: RPA 1A for I-24 from Hickory Hollow Pkwy (MP 60.0) to SR 171 (Old Hickory Blvd) (MP 62.0)**



DRAFT - DELIBERATIVE

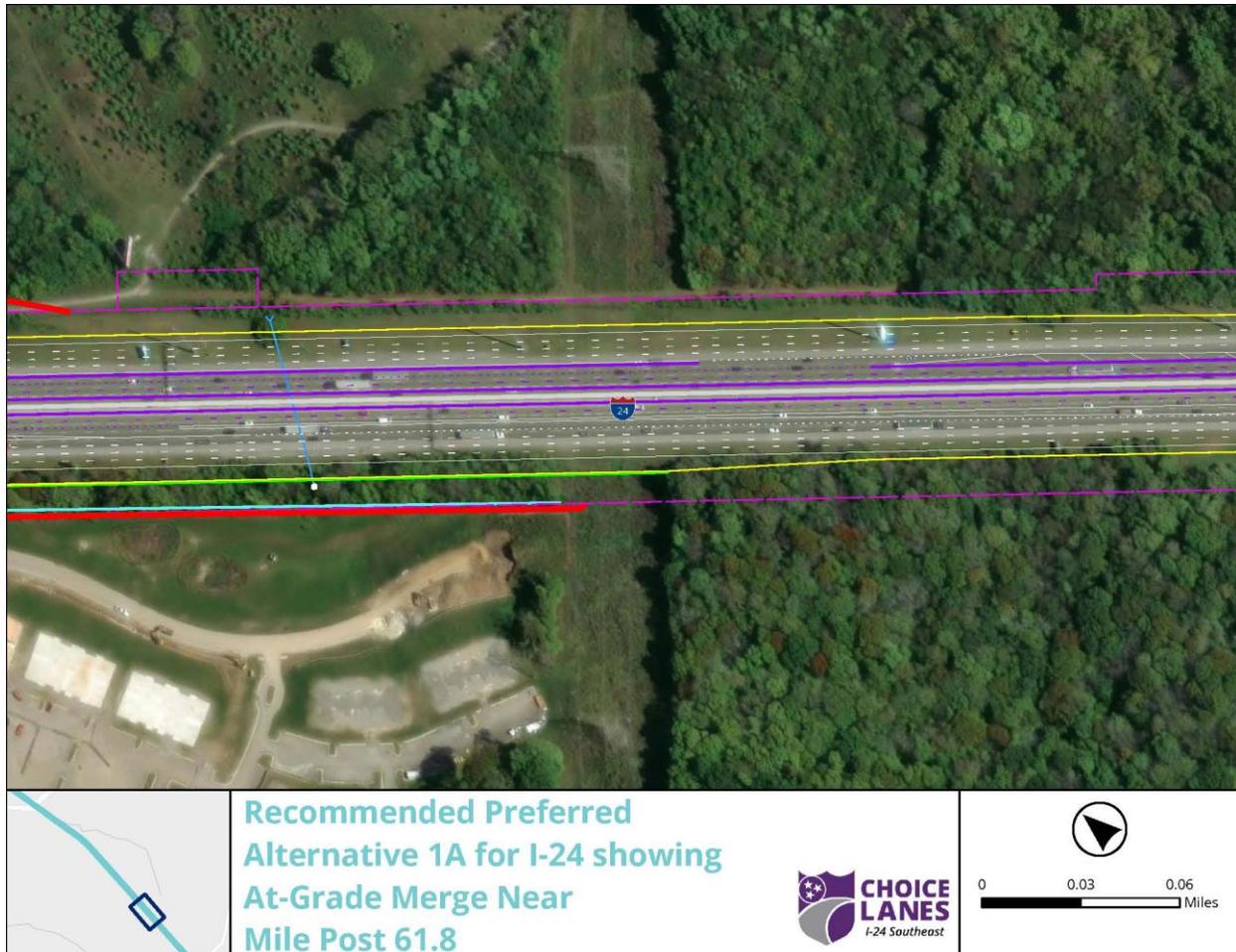
**MAINLINE**

The proposed typical section for I-24 from Hickory Hollow Parkway to SR 171 (Old Hickory Boulevard) includes four GP lanes and two CL to the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier.

About 400 feet east of the Old Franklin Road bridge a retaining wall would be required to the north of I-24 to prevent the relocation of a utility access road. About a mile east of the Hickory Hollow Parkway Interchange near MP 61.8 there would be an at-grade merge into and out of the CL in both directions. Rock cuts, retaining walls and additional ROW would be required to accommodate the widening of I-24 to add two CL and directional merges in either direction. This mainline configuration was the same in both Reasonable Alternatives

1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

**Figure 4-20: RPA 1A for I-24 Showing At-Grade Merge Near MP 61.8**



DRAFT - DELIBERATIVE

**CROSSROAD**

Along this section, Old Franklin Road crosses over I-24. The Old Franklin Road bridge over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction and an acceleration lane for the eastbound on-ramp at the Hickory Hollow Parkway interchange.

**STRUCTURES**

The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

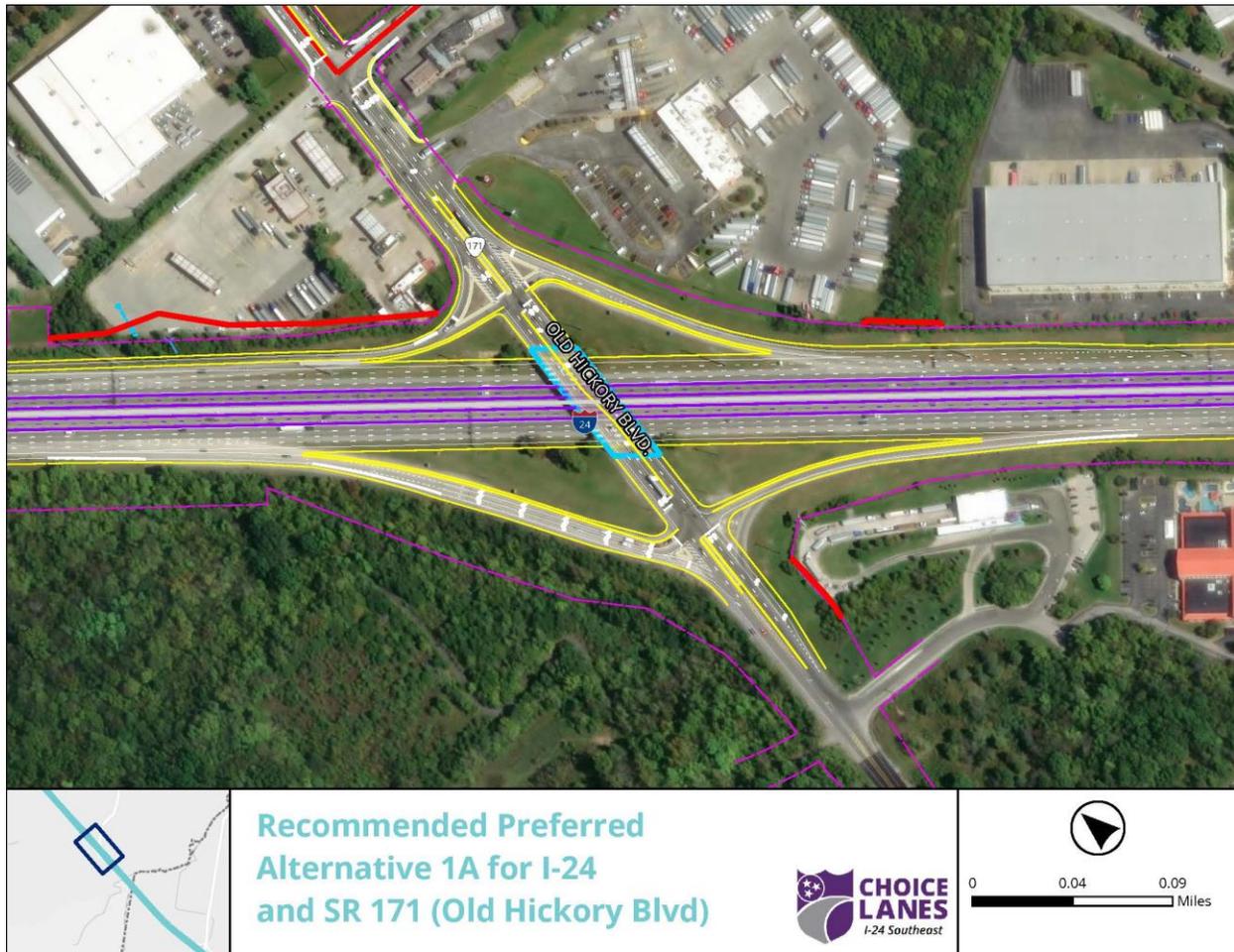
- Bridges:

- 58 – Old Franklin Road over I-24 (bridge replacement)
- Retaining Walls: One new retaining wall would be included in this section (38)

#### 4.1.20 Recommended Preferred Alternative 1A for I-24 and SR 171 (Old Hickory Boulevard) Interchange (MP 62.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, at-grade on the inside of I-24. No connection to Old Hickory Boulevard would be provided. The design speed for the CL is 70 mph for the main lanes and variable for ramps.

Figure 4-21: RPA 1A for I-24 and SR 171 (Old Hickory Blvd) Interchange (MP 62.0)



DRAFT - DELIBERATIVE

#### MAINLINE/INTERCHANGE

The I-24/SR 171 (Old Hickory Boulevard) Interchange is a diamond interchange with no direct access to CL. There would be no access or interchange redesign due to the existing interchange holding a small footprint that would need to be expanded to provide room for a third intersection within the interchange. The northeast quadrant has a cemetery adjacent to ROW and there are businesses with access points to SR 171 (Old Hickory

Boulevard) near the interchange. Due to these constraints, it was determined that direct access could not be provided without significant impacts on the community.

I-24 would be widened to add two CL in either direction in the median. To accommodate this, the SR 171 (Old Hickory Boulevard) bridge over I-24 would be replaced, on- and off-ramps would be realigned to connect to the outside of the widened I-24, and a retaining wall would be required at the westbound on-ramp. The retaining wall is required to minimize the need for ROW acquisition in the area. This interchange configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

## **CROSSROAD**

As noted above, the SR 171 (Old Hickory Boulevard) bridge over I-40 would be replaced and lengthened to allow the widened I-24 lanes to pass underneath.

While no direct access from the CL would be provided, there are improvements along Old Hickory Boulevard to improve traffic operations at the interchange. The main change is that the right-turn from the westbound off-ramp onto northbound Old Hickory Boulevard would create a new third northbound lane along Old Hickory Boulevard. This lane would continue north of Firestone Parkway where it would start to taper from three to two lanes and then from two to one lane.

Another change is at the northbound right-turn lane to the eastbound on-ramp. The existing free right from a shared through/right lane is removed and a traditional right-turn lane with parallel storage is added.

## **STRUCTURES**

The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 59 – Old Hickory Blvd over I-24 (bridge replacement)
- Retaining Walls: One new retaining wall would be included in this section (39)

### **4.1.21 Recommended Preferred Alternative 1A for I-24 from SR 171 (Old Hickory Boulevard) (MP 62.0) to Waldron Road (MP 64.0)**

This section of I-24 runs from the SR 171 (Old Hickory Boulevard) interchange to the Waldron Road interchange. The proposed improvements within this section would provide two 12-foot CL in either direction within the median of I-24. The design speed for this section is 70 mph.

**Figure 4-22: RPA 1A for I-24 from SR 171 (Old Hickory Rd) (MP 62.0) to Waldron Rd (MP 64.0)**



DRAFT - DELIBERATIVE

**MAINLINE**

The proposed typical section of I-24 from SR 171 (Old Hickory Boulevard) to Waldron Road includes four GP lanes and two CL on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. Widening is required to accommodate the addition of the two CL. The widening requires rock cuts and a retaining wall on the south side of I-24 to eliminate impacts on New Paul Road. This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

**CROSSROAD**

No improvements or changes to crossroads are included in this section.

## STRUCTURES

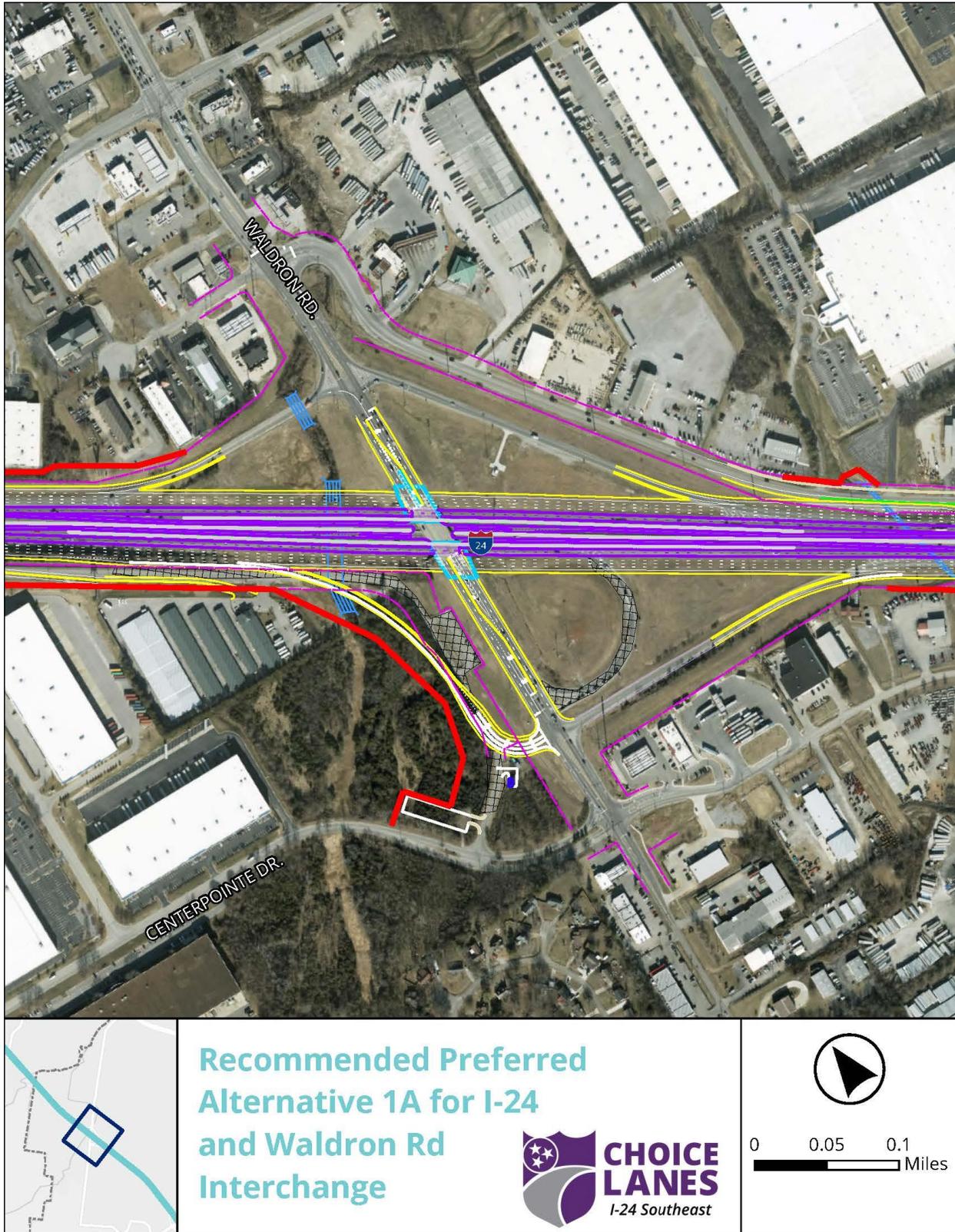
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges: None
- Retaining Walls: One new retaining wall would be included in this section (40)

### 4.1.22 Recommended Preferred Alternative 1A for I-24 and Waldron Road Interchange (MP 64.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, at-grade to the inside of I-24. The improvements also provide a connection between the CL and Waldron Road at a new plaza-style intersection in the center of the interchange. The design speed for the CL is 70 mph for the main lanes and variable for ramps.

Figure 4-23: RPA 1A for I-24 and Waldron Rd Interchange (MP 64.0)



DRAFT - DELIBERATIVE

## MAINLINE/INTERCHANGE

This alternative proposes the reconfiguration of I-24/Waldron Road Interchange to a diamond interchange with full direct access to the CL. The entrance and exit ramps connecting Waldron Road to the CL would be accomplished by ramping up from the interstate grade to the grade of Waldron Road. This connection requires the addition of a third signalized intersection in the interchange. The existing loop ramp would be removed, and an eastbound off-ramp would be added to the northwest quadrant. The new off-ramp impacts Hurricane Creek, an existing park and ride, and New Paul Road. The new ramp would also require additional ROW.

The CL would be elevated to provide access at the Waldron Road bridge and would require retaining walls. The widening of I-24 would also require a retaining wall along part of the westbound off-ramp due to the proximity of businesses. This interchange configuration was included in Reasonable Alternative 1 and was not modified in the refinements for the Recommended Preferred Alternative. This alternative was selected because it provides CL access, and the alternative eliminated required modifications to the interchange without providing any additional access points.

## CROSSROAD

The Waldron Road bridge over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction.

As noted above, the new eastbound off-ramp would cut off New Paul Road. South of Reliance Drive, New Paul Road would be reconfigured to maintain access to the storage facility. New Paul Road would no longer connect directly to Centerpointe Drive or provide access to the park-and-ride lot. Motorists wishing to connect from New Paul Road to Waldron Road would need to use Reliance Drive and Centerpointe Drive to make that connection. The park-and-ride lot would be relocated closer to Centerpointe Drive.

## STRUCTURES

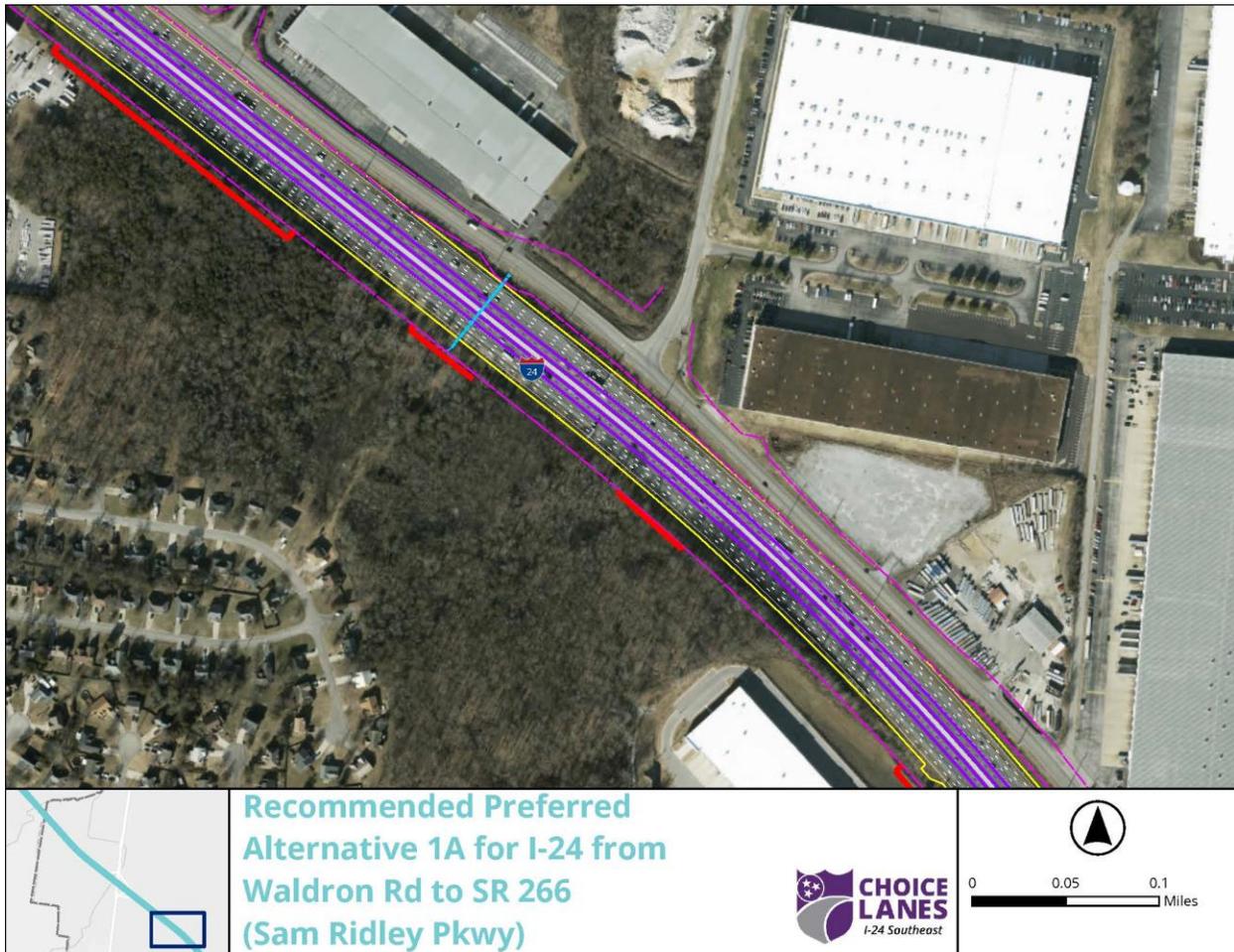
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 60 – Waldron Road over I-24 (bridge replacement)
  - 60A – Waldron Road over I-24 (bridge replacement)
- Retaining Walls: Three new retaining walls would be included in this section (41, 53, and 54)

### 4.1.23 Recommended Preferred Alternative 1A for I-24 from Waldron Road (MP 64.0) to SR 266 (Sam Ridley Parkway) (MP 66.0)

This section of I-24 runs from the Waldron Road interchange to the SR 266 (Sam Ridley Parkway) interchange. The proposed improvements within this section would provide two 12-foot CL in either direction within the median of I-24. The design speed for this section is 70 mph with any ramps designed at either the mainline speed or according to the purpose of the ramp.

**Figure 4-24: RPA 1A for I-24 from Waldron Rd (MP 64.0) to SR 266 (Sam Ridley Pkwy) (MP 66.0)**



DRAFT - DELIBERATIVE

#### MAINLINE

The proposed typical section for the section of I-24 from Waldron Road to SR 266 (Sam Ridley Parkway) includes four GP lanes and two CL on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier. The widening would require rock cuts, retaining

walls, and additional ROW along this section. Retaining walls would be required in several sections to minimize impacts to Industrial Drive on the north side of I-24 through this section. This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

## CROSSROAD

No improvements or changes to crossroads are included in this section.

## STRUCTURES

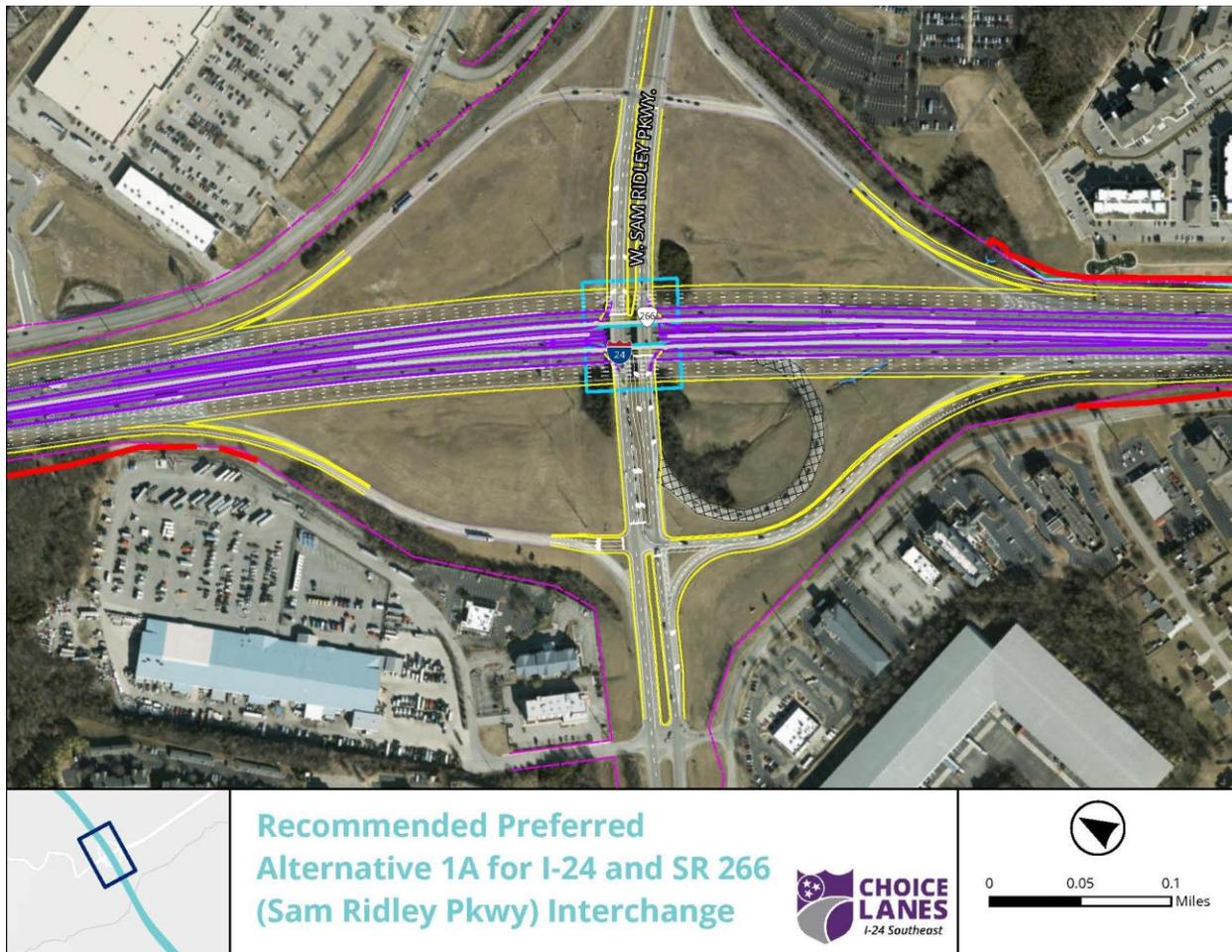
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges: None
- Retaining Walls: Three new retaining walls would be included in this section (41, 42, and 43)

### 4.1.24 Recommended Preferred Alternative 1A for I-24 and SR 266 (Sam Ridley Parkway) Interchange (MP 66.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, at-grade on the inside of I-24. The improvements also provide a connection between the CL and SR 266 (Sam Ridley Parkway) at a new plaza-style intersection in the center of the interchange. The design speed for the CL is 70 mph for the main lanes and variable for ramps.

**Figure 4-25: RPA 1A for I-24 and SR 266 (Sam Ridley Pkwy) (MP 66.0)**



DRAFT - DELIBERATIVE

### MAINLINE/INTERCHANGE

This alternative proposes the I-24/SR 266 (Sam Ridley Parkway) Interchange be reconfigured to a diamond interchange with full direct access to the CL in both directions. The eastbound off-ramp would provide access to SR 266 (Sam Ridley Parkway) in both directions, and it would replace the loop ramp which provided access to SR 266 (Sam Ridley Parkway) eastbound lanes. The on- and off-ramps would be realigned to connect to the widened I-24. The SR 266 (Sam Ridley Parkway) bridges over I-24 would be replaced to accommodate the widening of I-24 to add two CL in either direction. The CL ramps would be elevated to provide access at the bridge and would require retaining walls. The interchange would have three signalized intersections, two at either tie into the GP ramps and one for the CL access. This interchange configuration was the same in both Reasonable Alternatives 1 and 2 and was not modified in the refinements for the Recommended Preferred Alternative.

## CROSSROAD

To accommodate the changes for the eastbound off-ramp, a new signalized intersection would be added along SR 266 (Sam Ridley Parkway) at the eastbound on- and off-ramp. This is in addition to the signalized intersection for the new CL plaza-style intersection.

## STRUCTURES

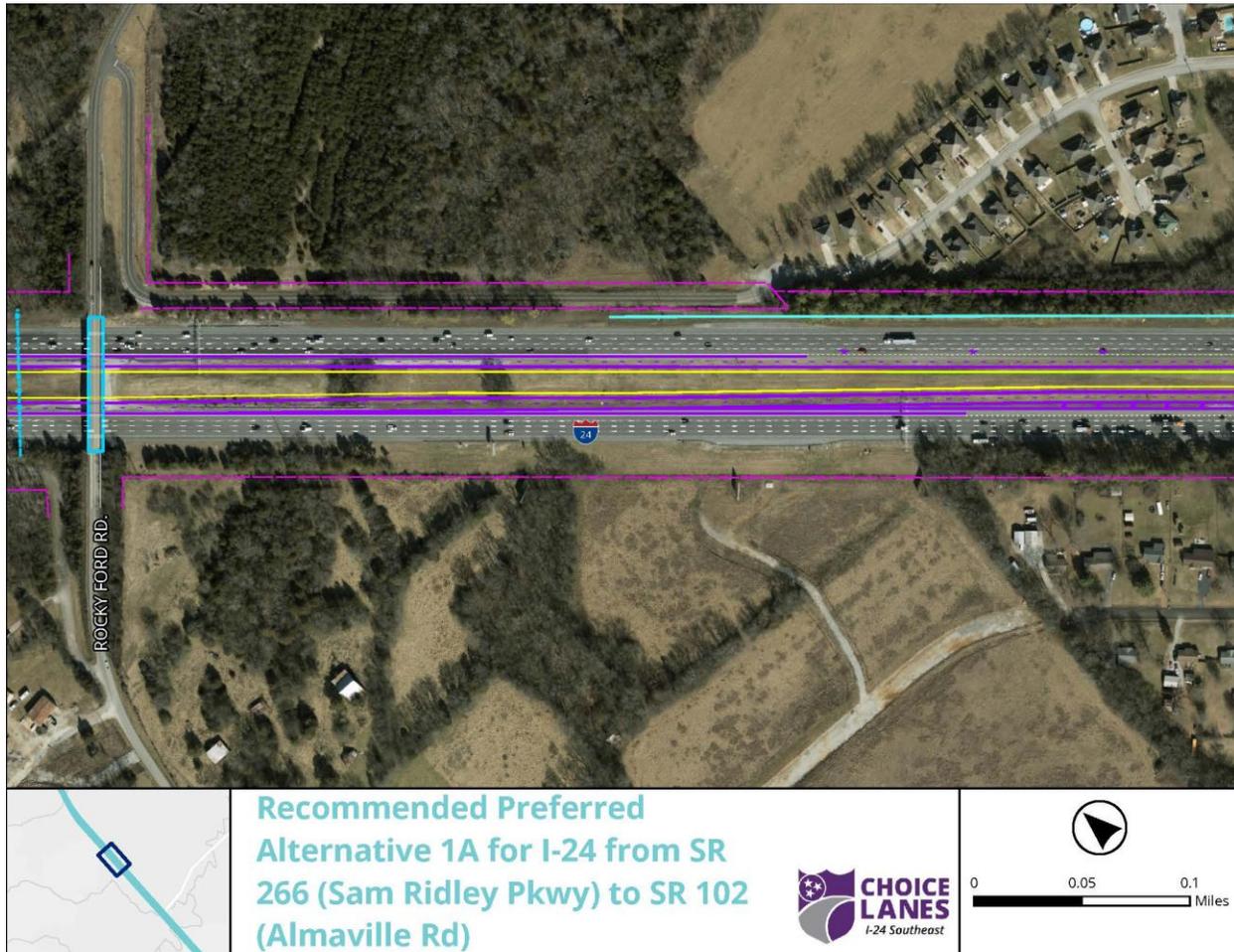
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 61A – Sam Ridley Parkway over I-24 WB (bridge replacement)
  - 61B – Sam Ridley Parkway over I-24 EB (bridge replacement)
- Retaining Walls: Three new retaining walls would be included in this section (44, 55, and 56)

### **4.1.25 Recommended Preferred Alternative 1A for I-24 from SR 266 (Sam Ridley Parkway) (MP 66.0) to SR 102 (Almaville Road) (MP 70.0)**

This section of I-24 runs from the SR 266 (Sam Ridley Parkway) interchange to the SR 102 (Almaville Road) interchange. The proposed improvements within this section would provide two 12-foot CL in either direction within the median of I-24. The design speed for this section is 70 mph.

**Figure 4-26: RPA 1A for I-24 from SR 266 (Sam Ridley Pkwy) (MP 66.0) to SR 102 (Almaville Rd) (MP 70.0)**



DRAFT - DELIBERATIVE

**MAINLINE**

This section was modified after the public information meeting to utilize the existing pavement more efficiently. The refined alternative proposes a typical section for I-24 from SR 266 (Sam Ridley Parkway) to SR 102 (Almaville Road) including four GP lanes and two CL on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes and CL divided by a median barrier with 10-foot shoulders on either side of the barrier.

Immediately east of the I-24/SR 266 (Sam Ridley Parkway) interchange, the widening would require additional ROW. A retaining wall would be required to the south of I-24 due to potential impacts on Highwood Boulevard and the close proximity of businesses and residences.

Along this section, I-24 crosses over Rock Springs Road. The I-24 bridge over Rock Springs Road would be replaced to accommodate the widening of I-24 to add two CL in either

direction and an acceleration lane for the east bound on ramp at the Sam Ridley Parkway interchange. Immediately east of the bridge, a retaining wall is required to the north due to the close proximity of a utility access road running parallel to I-24.

Approximately 0.9 miles east of the I-24/SR 266 (Sam Ridley Parkway) interchange the existing alignment changes from barrier separated to depressed grass median. This section was modified to utilize the existing pavement more efficiently by adding CL to the inside and maintaining the depressed grass median where width was sufficient. In the area of the depressed median, no additional ROW is required as there is sufficient space for widening to the inside. Along this section, Rocky Fork Road crosses over I-24. The Rocky Fork Road bridge over I-24 would be replaced due to impacts on the existing bridge bents. East of Rocky Fork Road, widening for CL in the median includes consideration for avoidance of sinkholes.

Approximately 0.35 miles east of the Rocky Fork Road bridge an at-grade merge requires additional widening to the inside (see **Figure 4-26**). This widening does not allow sufficient median width for a depressed grass median. The section changes to barrier divided for this segment. The elevation difference between the west bound and east bound lanes requires a retaining wall in the median. This mainline configuration was the same in both Reasonable Alternatives 1 and 2 and was refined as outlined above for the Recommended Preferred Alternative.

## CROSSROAD

As described above, the I-24 bridges over Rock Springs Road and the Rocky Fork Road bridges over I-24 would be replaced.

## STRUCTURES

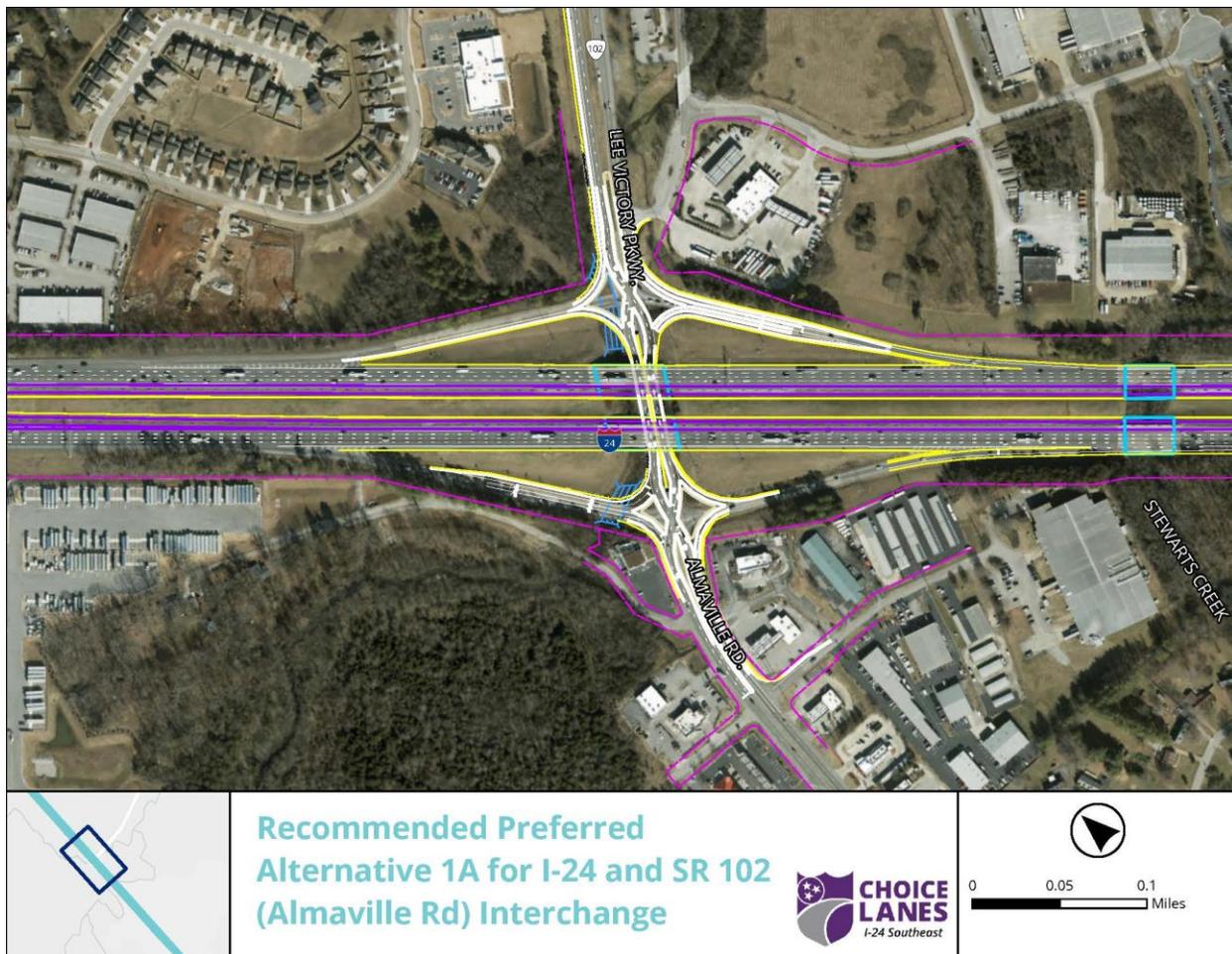
The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 62 – I-24 over Rock Springs Road and Rock Springs Creek (bridge replacement)
  - 63 – Rocky Fork Road over I-24 (bridge replacement)
- Retaining Walls: Three new retaining walls would be included in this section (45, 46, and 57)

### 4.1.26 Recommended Preferred Alternative 1A for I-24 and SR 102 (Almaville Road) Interchange (MP 70.0)

The proposed improvements at this interchange would provide two 12-foot CL in either direction, at-grade on the inside of I-24. No connection to SR 102 (Almaville Road) would be provided. The design speed for the CL is 70 mph for the main lanes.

**Figure 4-27: Recommended Preferred Alternative 1A for I-24 and SR 102 (Almaville Rd) (MP 70.0) Interchange**



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#### MAINLINE/INTERCHANGE

This alternative proposes to convert the existing diamond interchange into a diverging diamond interchange (DDI). Construction of the DDI was previously programmed by TDOT as a separate project but is now fully incorporated into the Recommended Preferred Alternative. The DDI configuration is a modification from Reasonable Alternatives 1 and 2 with improved operational efficiencies. The I-24/SR 102 (Almaville Road) DDI would not have direct access to the CL. To provide access to the CL, about 0.8 miles west of the SR 102 (Almaville Road) interchange, an at-grade merge would be developed allowing access to the

CL from the GP lanes in both directions. The added merge would allow entrance into the westbound CL and exit from the eastbound CL. The two bridges over SR 102 (Almaville Road) would be replaced to accommodate the widening required for two CL in either direction.

## **CROSSROAD**

SR 102 (Almaville Road) would be modified to support the conversion of the interchange from a diamond interchange to a DDI.

## **STRUCTURES**

The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 64 – I-24 EB over Almaville Road/Olive Branch (bridge replacement)
  - 65 – I-24 WB over Almaville Road/Olive Branch (bridge replacement)
  - 66 – I-24 EB over Stewarts Creek (bridge replacement)
  - 67 – I-24 WB over Stewarts Creek (bridge replacement)
- Retaining Walls: One new retaining wall would be included in this section (58)

### **4.1.27 Recommended Preferred Alternative 1A for I-24 from SR 102 (Almaville Road) (MP 70.0) to I-840 (MP 74.0)**

This section of I-24 runs from the SR 102 (Almaville Road) interchange to the end of the CL approximately 3.3 miles east of SR 102 (Almaville Road). The proposed improvements within this section would provide two 12-foot CL in either direction within the median of I-24. The design speed for this section is 70 mph.

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**Figure 4-28: Recommended Preferred Alternative 1A for I-24 from SR 102 (Almaville Rd) to I-840 (MP 74.0)**



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## MAINLINE

The proposed typical section for I-24 from SR 102 (Almaville Road) to I-840 includes four GP lanes and two CL in either direction on the inside separated by a 4-foot buffer and flexible delineators in either direction. This section of I-24 would include 12-foot shoulders outside of the GP lanes, with 10-foot shoulders on the outside of the CL divided with a depressed grassed median. The median narrows within this section just south of Baker Road and a concrete median and paved shoulder are utilized for the last 2 miles of the CL improvements.

Along this section, I-24 crosses Stewart Creek via dual-span bridges. The bridges would be replaced to accommodate the widening of I-24 to add two CL in either direction. Also, along this section, Baker Road crosses over I-24. The Baker Road bridge over I-24 would be replaced due to the impact on the existing bridge bents.

Approximately 2.7 miles east of the I-24/SR 102 (Almaville) interchange, an at-grade merge for the dual CL in either direction would mark the beginning/end of the CL, and the GP lanes would begin to transition out to tie into the existing GP lanes (see **Figure 4-28**). Both Reasonable Alternatives 1 and 2 only carried one CL in either direction east of Almaville Road but the Recommended Preferred Alternative was refined to carry two CL in either direction to the eastern termini. The location of the eastern termini is roughly the same between the Reasonable Alternatives and the Recommended Preferred Alternative, however the start of the merge is earlier in the Recommended Preferred Alternative because there are two CL to drop/add instead of just one CL.

## CROSSROAD

The Baker Road bridge over I-24 would be replaced.

## STRUCTURES

The proposed structural improvements within this section are listed below. Additional details for the proposed bridges and walls can be found in **Table 4-2** and **Table 4-3**, respectively. The alpha-numeric identification corresponds to similar identifiers in the tables.

- Bridges:
  - 68 – Baker Road over I-24 (bridge replacement)
- Retaining Walls: No new retaining walls would be included in this section.

## 4.2 Structures

A detailed description of the types of bridges and walls that would be built as part of this Project are provided in **Section 3.2**. The previous section described the Recommended Preferred Alternative as well as the refinements made when compared to the Reasonable Alternatives 1 and 2. This Structures section provides an updated list of bridges (**Figure 4-2**) and retaining walls (**Figure 4-3**) that would be required for the Recommended Preferred Alternative.

Bridges and walls with reference numbers that include a letter suffix (such as **1A**) are additional bridges and walls from what was originally included in Reasonable Alternative 1. These additional bridges and walls were included for similar reasons as described in the previous section, such as:

- Extended widening limits along I-24/I-40 and I-440 to connect the CL into and out of the GP lanes
- Widening of CL directional ramps and the system interchanges from one to two lanes to better accommodate CMVs
- Minimize impacts to adjacent environmentally sensitive areas, businesses, and residential land uses

The Recommended Preferred Alternative includes widening of three bridges, replacement of 31 bridges, and 55 new bridges. The total length of bridge work is 19.4 miles. The alternative also includes 76 new retaining walls totaling 18.8 miles. See **Figures 4-2** and **4-3** for more details.



PRELIMINARY GEOMETRIC ALTERNATIVES SCREENING  
**CHAPTER 4: RECOMMENDED PREFERRED ALTERNATIVE**

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**Table 4-2: Alternative 1A Bridge Location and Geometry Table**

Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
<b>1</b>	19I00400103	Elm Hill Pike over I-24/I-40	Five 12-foot travel lanes, two 2-foot to 8-foot shoulders	Bridge Replacement	484	77	37,268
<b>1A</b>	19I00400101	Fessler's Lane over I-24/40	Five 12-foot travel lanes, two 2-foot to 8-foot shoulders	Bridge Replacement	274	76.07	20,861
<b>1B</b>	19I00400099	I-24/I-40 over Brown's Creek	Thirteen 12-foot travel lanes, variable width gore, 12-foot inside shoulders and 12-foot outside shoulders.	Bridge Replacement	178	234	41,652
<b>1C</b>	19I00400097	I-24/I-40 over NERR	Thirteen 12-foot travel lanes, variable width gore, 12-foot inside shoulders and 12-foot outside shoulders.	Bridge Replacement	125	225	28,125
<b>1D</b>	19I00400096	I-24/I-40 WB over Fairfield Ave	Five 12-foot travel lanes, two 12-foot shoulders	Bridge Widening	149.6	76	11,370
<b>5</b>		I-24/I-40 WB CL over CSX & Arlington Ave.	Three 12-foot travel lanes, 12-foot and 14-foot outside shoulders, 6-foot to 12-foot inside shoulders	New Bridge	2,082.83	43.25	98,081
<b>5A</b>		I-24/I-40 WB CL over Fessler's Lane and I-40 WB Inside Choice Lanes	One 16-foot travel lane, 8 foot outside shoulder and 6 foot inside shoulder.	New Bridge	1337.17	31.25	41,787
<b>5B</b>		I-24/I-40 WB CL from Fessler's Ln	One 16-foot travel lane, 8 foot outside shoulder and 6 foot inside shoulder.	New Bridge	538.69	31.25	16,834
<b>5C</b>		I-24/I-40 WB CL	Two 12 to 16' travel lanes, 8 to 12 foot outside shoulders and 8 to 12 foot inside shoulders.	New Bridge	372.42	66	24,580
<b>6</b>		I-24/I-40 EB CL over CSX & Arlington Ave.	Four 12-foot travel lanes taper to three 12-foot travel lanes, 12-foot and 14-foot outside shoulders, 6-foot to 12-foot inside shoulders	New Bridge	2,102.92	61.26	128,825

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
<b>7</b>		I-40 WB CL continuing to I-40 WB CL	Two 12-foot travel lanes, 12-foot outside shoulder, 6-foot inside shoulder	New Bridge	1,147.67	43.25	49,637
<b>7A</b>	191100400111	Arlington Avenue over I-24/I-40	Two 12-foot travel lanes, two 2-foot to 8-foot shoulders	Bridge Replacement	136	42.33	5,757
<b>7B</b>	19100400112	Arlington Avenue over I-24/I40	Two 12-foot travel lanes, two 2-foot to 8-foot shoulders	Bridge Replacement	149.25	42.33	6,318
<b>7C</b>	19100240067	I-40 bridge over I-24	Two 12-foot travel lanes, 10-foot outside shoulder, 6-foot inside shoulder	Bridge Replacement	152.9	46.3	7,079
<b>8A</b>	19100400117	I-40 WB over Mill Creek	Five 12-foot travel lanes, 12-foot inside shoulders and 12-foot outside shoulders.	Bridge Replacement	300	91	27,300
<b>8B</b>	19100400117	I-40 EB over Mill Creek	Six 12' travel lanes, 12-foot inside shoulders and 12-foot outside shoulders.	Bridge Replacement	300	109	32,700
<b>9</b>	1910040119	Massman Drive over I-40	Two 12-foot travel lanes, curb & gutter, sidewalk	Bridge Replacement	307	46	14,122
<b>10</b>		I-40 WB CL over Spence Lane & Spence Lane Off Ramp	8-foot inside shoulder, transition from one 16-foot travel lane to two 16-foot travel lanes, 6-foot outside shoulder	New Bridge	2,302.50	46.75	107,641.88
<b>10A</b>		I-40 WB CL and Ramp B6	One 12 to 16-foot travel lane, 6-foot inside shoulder and 8-foot outside shoulder	New Bridge	1,422	31.25	44,438
<b>10B</b>		I-40 WB CL	One 12 to 16-foot travel lane, 6-foot inside shoulder and 8-foot outside shoulder	New Bridge	1,958	31.25	61,188
<b>11</b>		I-40 EB CL over Spence Lane	Four 12-foot travel lanes taper down to three, 12-foot outside shoulder and 12-foot inside shoulder	New Bridge	2,122	70.42	149,434
<b>12</b>		I-40 EB CL continuing to I-40 EB CL	6-foot inside shoulder, two 12-foot travel lane, 8-foot outside shoulder	New Bridge	1,305.52	43.25	56,464

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
13		I-40 WB CL ramp over I-40 WB, I-40 EB and I-24	Varying 6-foot to 14-foot inside shoulder, two 12-foot travel lane, 6-foot outside shoulder	New Bridge	1,507.67	45.25	68,222
14		I-40 EB CL ramp B2 over I-24	6-foot inside shoulder, two 12-foot travel lane, 14-foot outside shoulder	New Bridge	843.68	45.25	38,176
15		I-40 WB CL Ramp B1 over Murfreesboro Pike, I-24 EB, & I-40 WB	Varying 6-foot to 14-foot inside shoulder, two 12-foot travel lanes, 6-foot outside shoulder	New Bridge	1,731	45.25	78,328
16		I-40 EB CL Ramp B4 over Murfreesboro Pike, I-24 EB, & I-24 WB	6-foot inside shoulder, two 12-foot travel lanes, 14-foot outside shoulder	New Bridge	1,197.5	45.25	54,187
17		I-40 EB CL Ramp B2 & B3 over Murfreesboro Pike	12-foot inside shoulder, four 12-foot travel lanes, 12-foot outside shoulder	New Bridge	647.10	73.25	47,400
18		I-24 WB CL & I-40 EB CL Ramp B4	14-foot inside shoulder transition to 12-foot inside shoulder, four 12-foot travel lanes, 12-foot outside shoulder	New Bridge	295.42	73.25	21,640
19		I-24 CL EB	12-foot outside shoulder, four 12-foot travel lanes, 12-foot inside shoulder	New Bridge	1,516.21	73.25	110,062
19A		I-24 CL WB	12-foot outside shoulder, four 12-foot travel lanes, 12-foot inside shoulder	New Bridge	1,494.29	73.25	109,457
20		I-24 WB CL to I-40 CL Ramps	12-foot outside shoulder, four 12-foot travel lanes, 12-foot inside shoulder	New Bridge	1,200	73.25	87,900

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
<b>21</b>		I-24 EB CL to I-24 EB and WB CL Ramps	12-foot outside shoulder, four 12-foot travel lanes, 12-foot inside shoulder	New Bridge	1,487.83	73.25	108,984
<b>22</b>		I-440 EB CL Ramp to I-24 WB CL Ramp C3	6-foot outside shoulder, two 12-foot travel lanes, 14-foot inside shoulder	New Bridge	2,157	45.25	97,604.25
<b>23</b>		I-440 WB Ramp C2 over Ramp 22 & Ramp 23	6-foot inside shoulder, two 12-foot travel lanes, 14-foot outside shoulder	New Bridge	920	45.25	41,630
<b>24</b>		I-24 CL ramps to I-440 WB CL	6-foot to 13-foot inside shoulder, two varying choice lanes 13.68-foot max and 16-foot max transition to two 12-foot travel lanes, 8-foot to 14-foot outside shoulder	New Bridge	576.48	55	31,706.40
<b>24A</b>		I-440 Ramps C1 & C2	Four 12-foot travel lanes, two 12-foot shoulders	New Bridge	256.7	76	19,509
<b>24B</b>		I-440 Ramps C3 & C4	Four 12-foot travel lanes, two 12-foot shoulders	New Bridge	254.6	85	21,641
<b>26</b>	19I004400055	S Lyle Lane over I-440	Two 12-foot lanes, two 5.50-foot sidewalks, two 2-foot curb and gutters	Bridge Replacement	535	41	21,935
<b>26A</b>	19I04400053	I-440 WB over Glenrose Ave & CSX	Three 12-foot lanes, one varying choice lane 8.58-foot to 12-foot, one 12-foot shoulder, one 8.90-foot shoulder	Bridge Widening	349.51	68.29	23,868.65
<b>26B</b>	19I04400054	I-440 EB over Glenrose Ave & CSX	Three 12-foot lanes, one varying choice lane 2.75-foot to 11.42-foot, one 12-foot shoulder, one varying shoulder 13.08-foot to 17.33-foot	Bridge Widening	349.51	69.50	24,290.97
<b>26C</b>	19I04400051	Foster Avenue over I-440	Two 12-foot travel lanes, curb and gutter and sidewalk	Bridge Replacement	213	64	13,632

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
<b>26D</b>	19I04400049	Pedestrian Bridge over I-440	Single, 10-foot-wide pedestrian path	Bridge Replacement	202	10	2,020
<b>27</b>		I-24 WB CL over I-24 WB Ramp	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	1,585.88	43.25	68,589.31
<b>27A</b>	19I00240093	I-440 EB GP Ramp to I-24 WB GP	Two 12-foot travel lanes, one 6-foot shoulder, one 14-foot shoulder	Bridge Replacement	776	45.3	35,153
<b>28</b>		I-24 WB CL Ramp to I-440 WB CL (Ramp C1)	6-foot outside shoulder, two 12-foot travel lanes, 14-foot inside shoulder	New Bridge	1,233.06	45.25	55,796
<b>29</b>		I-24 EB CL Ramp over I-24 WB CL Ramp	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	1,482	43.25	64,096.50
<b>30</b>		I-440 EB CL Ramp to I-24 EB CL (Ramp C4)	6-foot inside shoulder, two 12-foot travel lanes, 14-foot outside shoulder	New Bridge	1,404.92	45.25	63,573
<b>31</b>		I-24 WB CL from I-440 to SR 155 (Briley Parkway)	6-foot to 12-foot inside shoulder, two to four 12-foot travel lanes, one exit ramp varying from 14.75-foot to 12-foot, varying outside shoulder	New Bridge	4,375.25	61.35	209,634
<b>31A</b>		I-24 WB CL Over E. Thompson Lane and Mill Creek	6-foot inside shoulder, two 12-foot travel lanes, one exit ramp varying from 14.75-foot to 12-foot, 12-foot outside shoulder	New Bridge	606	64.69	39,202.14
<b>32</b>		I-24 EB CL from I-440 to SR 155 (Briley Parkway)	6-foot inside shoulder, two to three 12-foot travel lanes, 6-foot to 12-foot outside shoulder	New Bridge	4,364.75	55.25	209,885

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
<b>32A</b>		I-24 EB CL Over E. Thompson Lane and Mill Creek	6-foot inside shoulder, three 12-foot travel lanes, 12-foot outside shoulder	New Bridge	603.82	55.25	33,361.06
<b>33</b>		I-24 EB CL Ramp to Briley Pkwy	6-foot inside shoulder, one 16-foot travel lane, 8-foot outside shoulder	New Bridge	536.08	31.25	16,752.50
<b>34</b>		Briley Pkwy to I-24 WB CL Ramp	8-foot inside shoulder, one 16-foot travel lane, 6-foot outside shoulder	New Bridge	570.50	31.25	17,828.13
<b>35</b>		I-24 EB/WB CL Ramps to Briley Pkwy	8-foot outside shoulder, four 12-foot travel lanes, 6-foot outside shoulder	New Bridge	163.50	63.25	10,341.38
<b>36</b>		Briley Pkwy Ramp to I-24 EB	6-foot inside shoulder, one 16-foot travel lane, 8-foot outside shoulder	New Bridge	2,450.50	31.25	76,578.13
<b>36A</b>	19100240013	I-24 over New Glenrose Avenue	Eight 12 ft travel lanes, median barrier, two inside 10 ft shoulders, two outside 10 ft shoulders	Bridge Replacement	193.9	157	30,442
<b>37</b>	19100240015	East Thompson Lane over I-24	Four 12-foot travel lanes, one 12-foot raised median, two 2-foot curb and gutter, two 8-foot shoulders	Bridge Replacement	293.50	81.25	23,846.88
<b>38</b>		I-24 WB CL over Briley Pkwy	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	1,472.33	43.25	63,678.27
<b>39</b>		I-24 EB CL over Briley Pkwy	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	1,168.95	43.25	50,557.09
<b>40</b>		I-24 WB elevated CL from Briley Pkwy to median CL Ramp	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	2,463	43.25	106,524.75
<b>41</b>		I-24 EB elevated CL from Briley	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	2,855.08	43.25	123,482.21

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
		Pkwy to median CL Ramp					
<b>42</b>		I-24 WB CL Ramp over I-24 WB	6-foot inside shoulder, one 16-foot travel lane, 8-foot outside shoulder	New Bridge	692.56	31.25	21,642.50
<b>43</b>		I-24 EB CL Ramp over I-24 EB	6-foot inside shoulder, one 16-foot travel lane, 8-foot outside shoulder	New Bridge	648.92	31.25	20,278.75
<b>43A</b>		I-24 EB & WB CL over I-24 EB & WB	8-foot outside shoulders, two 12-foot travel lanes, two 10-foot median shoulders	New Bridge	327.25	61.25	20,044.06
<b>43B</b>	19100240023	Antioch Pike over I-24	Two 12-foot travel lane, two 4-foot shoulders	Bridge Replacement	339.9	34.5	11,554
<b>44A</b>		I-24 WB elevated CL over Sevenmile Creek, Antioch Pike & CSX RR	12-foot inside shoulder, two 12-foot travel lanes, varying width median shoulders, one ramp with max 16-foot travel lane and 6-foot outside shoulder	New Bridge	3,266.81	58.98	192,676.45
<b>44B</b>		I-24 EB elevated CL over Sevenmile Creek, Antioch Pike & CSX RR	12-foot inside shoulder, two 12-foot travel lanes, varying width median shoulders, one ramp with max 16-foot travel lane and 6-foot outside shoulder	New Bridge	3,054.82	58.98	180,173.28
<b>44C</b>	19100240027	S.R. 255 (Harding Place) over I-24	Four 12-ft travel lanes, two 12-ft turn lanes, two 2.50-ft curb & gutter, two 5-ft sidewalks, two 16-ft shoulders	Bridge Replacement	360	106	38,160
<b>44D</b>		I-24 WB elevated CL near Harding Place	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	1,490.50	43.25	64,464.13

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
<b>44E</b>		I-24 EB elevated CL near Harding Place	6-foot inside shoulder, two 12-foot travel lanes, 12-foot outside shoulder	New Bridge	1,527.25	43.25	66,053.56
<b>47</b>	19I00240033	I-24 EB over Haywood Lane	Six 12 ft travel lanes, one 12 ft inside shoulder, one 12 ft outside shoulder, one 4 ft lane separation buffer w/ flexible delineators	Bridge Replacement	200	101.25	20,250
<b>48</b>	19I00240033	I-24 WB over Haywood Lane	Six 12 ft travel lanes, one 12 ft inside shoulder, one 12 ft outside shoulder, one 4 ft lane separation buffer w/ flexible delineators	Bridge Replacement	200	101.25	20,250
<b>48A</b>	19I00240037	Blue Hole Road over I-24	Two 12-foot travel lanes, one in each direction with 8-foot shoulders	Bridge Replacement	260	43.25	11,245
<b>49</b>	19I00240039	I-24 over Mill Creek	Eight 12 ft travel lanes, two inside 12 ft shoulders, two outside 23 ft shoulders	Bridge Replacement	660	168	110,880
<b>50</b>	19I00240041	I-24 Over Bell Road	Eight 12 ft travel lanes, two inside 12 ft shoulders, two outside 12 ft shoulders	Bridge Replacement	174	145.92	25,389.38
<b>51</b>		I-24 EB elevated CL	Two 12 ft travel lanes, one 6 ft inside shoulder, one 12 ft outside shoulder	New Bridge	10,276.67	43.25	444,465.85
<b>52</b>		I-24 EB elevated CL - Bell Rd exit ramp	One 16 ft travel lane, one 6 ft inside shoulder, one 8 ft outside shoulder	New Bridge	660	31.25	20,625
<b>53</b>		I-24 EB elevated CL - Bell Rd entrance ramp	One 16-foot travel lane, One 8-foot outside shoulder, One 6-foot inside shoulder	New Bridge	264.60	31.25	8,268.75
<b>54</b>		I-24 WB elevated CL	Two 12 ft travel lanes, one 6 ft inside shoulder, one 12 ft outside shoulder	New Bridge	10,222.17	43.25	442,108.72
<b>55</b>		I-24 WB elevated CL - Bell Rd entrance ramp	One 12 ft travel lane, one 6 ft inside shoulder, one 10 ft outside shoulder	New Bridge	777.25	33.02	25,664.80

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
56		I-24 WB elevated CL - Bell Rd exit ramp	One 12 ft travel lane, one 6 ft inside shoulder, one 8 ft outside shoulder	New Bridge	985	27.25	26,841.25
57	19I00240085	Hickory Hollow Parkway over I-24	Six 14 ft travel lanes, one 20 ft interior walkway, and two 2 ft outside shoulders	Bridge Replacement	315.35	112.50	35,477.33
58	19I00240045	Old Franklin Road over I-24	Two 12 ft travel lanes, two 6 ft outside shoulders	Bridge Replacement	262.25	37.25	9768.81
59	19I00240047	Old Hickory Blvd over I-24	Five 12 ft travel lanes, two 12 ft outside shoulders	Bridge Replacement	305.5	85.25	26,043.88
60	75I00240003	Waldron Road over I-24	Five 12 ft travel lanes, one 12 ft median, two 8 ft outside shoulders	Bridge Replacement	149	89.25	13,298.25
60A		Waldron Road over I-24	Five 12 ft travel lanes, one 12 ft median, two 8 ft outside shoulders	Bridge Replacement	149	90.92	13,546.48
61A	75I00240055	Sam Ridley Pkwy over I-24 EB	Six 12 ft travel lanes, one 12 ft median, two 12 ft outside shoulders	Bridge Replacement	130.167	109.25	14,220.74
61B	75I00240056	Sam Ridley Pkwy over I-24 WB	Five 12 ft travel lanes, one 12 ft turn lane, one 24 ft median, two 12 ft outside shoulders	Bridge Replacement	130.167	173.75	22,616.52
62	75I00240005	I-24 over Rock Springs Rd & Rock Springs Creek	Thirteen 12 ft travel lanes, two 12 ft inside shoulders, two 12 ft outside shoulders, two 4 ft lane separation buffer w/ flexible delineators	Bridge Replacement	240	213.25	51,180
63	75I00240007	Rocky Fork Road over I-24	Two 12 ft travel lanes, two 2 ft outside shoulders	Bridge Replacement	305.5	29.25	8,935.88
64	75I00240009	I-24 EB over Almadale Rd/ Olive Branch	Six 12 ft travel lanes, one 12 ft inside shoulder, one 4 ft lane separation buffer w/ flexible delineators, one 12 ft outside shoulder	Bridge Replacement	214	100	21,500

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Structure No.	Existing Bridge ID Number	Bridge Location	Description	Scope of Work	Length (FT)	Width (FT)	SF
65		I-24 WB over Almadale Rd/ Olive Branch	Six 12 ft travel lanes, one 12 ft inside shoulder, one 4 ft lane separation buffer w/ flexible delineators, one 12 ft outside shoulder	Bridge Replacement	214	100	21,500
66	75I00240011	I-24 EB over Stewarts Creek	Seven 12 ft travel lanes, one 12 ft inside shoulder, one 12 ft outside shoulder, one 4 ft lane separation buffer.	Bridge Replacement	147.25	116.25	17,117.81
67	75I00240012	I-24 WB over Stewarts Creek	Six 12 ft travel lanes, one 12 ft inside shoulder, one 12 ft outside shoulder, one 4 ft lane separation buffer.	Bridge Replacement	147.25	100.00	14,725
68	75I00240013	Baker Road over I-24	Two 12 ft travel lanes, two 4 ft outside shoulders	Bridge Replacement	385	33.25	12,801.25

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**Table 4-3: Alternative 1A Wall Location and Geometry Table**

RW #	LENGTH (FT)	LOCATION
1	2,610	I-40 WB CL outside approaching Elm Hill Pike
1A	261	I-40 WB CL inside approaching Elm Hill Pike
1B	442	I-40 WB CL inside east of Fesslers
1C	963	I-40 WB CL inside east of Fesslers
1D	134	Fesslers Off Ramp outside
1E	1,540	Ramp from Fesslers to outside I-40 GP
1F	635	Ramp from Fesslers to inside I-40 GP
1G	614	I-40 WB GP Inside east of Browns Creek
1H	631	I-40 WB GP Inside east of Browns Creek
1J	432	I-40 EB GP outside east of Browns Creek
1K	412	I-40 WB GP outside between NERR & Browns Creek
1L	407	I-40 EB GP outside between NERR & Browns Creek
1M	787	I-40 WB GP Outside near NERR
1N	925	I-40 EB GP Outside near NERR
1P	192	Inside Off Ramp to Hermitage Ave
1R	1,110	I-40 WB GP outside
1S	85	I-40 EB Ramp from Green Street
1T	550	I-40 WB west of Fairfield Ave
2	1,025	I-40 EB CL Ramp inside from Elm Hill Pike
2A	2,280	I-40 EB CL Ramp outside from Elm Hill Pike
3	132	I-40 WB CL Ramp to Elm Hill Pike
4	1,026	I-40 EB CL inside at Elm Hill Pike
5	4,012	I-40 WB CL outside Ramp Wall
5A	340	I-40 WB CL inside west of Massman Drive
5B	390	I-40 WB CL inside west of Massman Drive
6	2,082	I-40 WB CL outside west of Mill Creek Bridge
7	349	I-40 WB CL inside west of Mill Creek Bridge
9	1,095	I-40 EB CL outside approaching Mill Creek Bridge
9A	856	I-40 EB CL outside, east of Mill Creek Bridge
10	813	I-40 EB CL inside approaching Mill Creek Bridge
11	1,096	I-440 WB GP Ramp Wall approaching Lyle Lane
12	671	I-440 WB GP ROW Wall approaching Lyle Lane
12A	2,750	I-440 WB GP outside
13	434	I-440 WB CL east of Lyle Lane
13A	445	I-440 EB CL east of Lyle Lane
14	2,485	I-440 EB to I-24 EB GP Wall
14A	2,759	I-440 EB GP Outside

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RW #	LENGTH (FT)	LOCATION
15	118	I-24 WB GP On-Ramp at Briley Pkwy
16	634	I-24 WB GP On-Ramp at Briley Pkwy
17	369	I-24 EB CL On-Ramp at Briley Pkwy
18	346	I-24 WB CL Off-Ramp at Briley Pkwy
20	276	I-24 EB GP Off-Ramp at Briley Pkwy
21	582	I-24 WB GP Lane near Briley Pkwy
22	588	I-24 EB GP Lane near Briley Pkwy
26	450	I-24 WB CL approach near Harding Place
27	501	I-24 EB CL approach near Harding Place
28	1,083	I-24 WB ROW Wall near Harding Place
29	1,518	I-24 EB ROW Wall near Harding Place
30	3,373	I-24 WB GP Lane southeast of Harding Place
31	3,868	I-24 EB GP lane southeast of Harding Place
32	620	North of I-24
33	450	South of I-24
34	2,980	North of I-24/along WB off-ramp at Haywood
35	390	North of I-24
36	1,685	South of I-24
37	765	North of I-24
38	475	North of I-24/east of Old Franklin Road
39	300	North of I-24/along WB on-ramp at SR 171 Interchange
40	400	South of I-24
41	3,580	North of I-24/along WB off-ramp at Waldron Interchange
42	160	South of I-24
43	620	North of I-24
44	560	North of I-24/along WB off-ramp at SR 266 Interchange
45	1,420	South of I-24
46	650	North of I-24
47	2,080	Haywood Interchange Ramps
48	2,080	Haywood Interchange Ramps
49	410	CL east of Haywood
50	410	CL east of Haywood
51	1,580	CL east of SR 254
52	1,580	CL east of SR 254
53	2,660	Waldron Interchange Ramps
54	2,660	Waldron Interchange Ramps
55	2,040	SR 266 Interchange Ramps
56	2,040	SR 266 Interchange Ramps
57	4,200	West of Almadillo Interchange

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RW #	LENGTH (FT)	LOCATION
58	245	Along EB off-ramp at Almadale Interchange

Table Abbreviations:

EB – Eastbound

RR – Railroad

WB – Westbound

### 4.3 Drainage Considerations

A detailed description of the drainage considerations and assessments conducted for the Reasonable Alternatives is presented in **Section 3.3**. As part of the refinements for the Recommended Preferred Alternative 1A, similar analysis was conducted. The section below provides details for the new drainage crossings that the previous analysis did not consider. These are in areas where the Recommended Preferred Alternative 1A was expanded due to design refinements previously discussed.

#### 4.3.1 Drainage Evaluations

##### I-40 OVER BROWNS CREEK ALTERNATIVES DISCUSSION

One additional waterway crossing was added in the expanded project study area as outline in Table 3-6 below. The preliminary hydraulic analysis was updated for this additional crossing utilizing the HEC-RAS 6.5.0 computer program developed by the USACE. Results of the modeling indicated that the recommended preferred alternative appears to meet design criteria and regulatory floodplain requirements.

**Table 4-4: Major Crossings Data**

Crossing	Existing Structure	Hydrology	Corrected Model	Hydraulic Notes
I-40 over Browns Creek	178.1-foot, 3-span, Prestressed Concrete Girder with Concrete Cast-in-Place Deck Bridge  Bridge 19I00400099	FIS methodology: HEC-HMS 3.5 (USACE 2010b)  FIS 100-year Q = 9,600 CFS	Updated with current USGS DEM	FIS methodology: HEC-RAS 4.1.0 (USACE 2010a)  Sufficient clearance to low chord

Table Abbreviations:

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CFS – Cubic Feet per Second

Other abbreviations as previously defined.

## 4.4 Utilities

A detailed description of the utility considerations and assessments conducted for the Reasonable Alternatives is presented in **Section 3.4**. As part of the refinements for the Recommended Preferred Alternative 1A, similar analysis was conducted. The section below provides details for the new utilities that the previous analysis did not consider. These are in areas where the Recommended Preferred Alternative 1A was expanded due to design refinements previously discussed.

### 4.4.1 Identified Utilities

**Table 4-5** below summarizes the new major utility crossings identified within the I-24 areas where the improvements for the Recommended Preferred Alternative 1A are expanded from what was identified for the Reasonable Alternatives. The table organizes crossings by section, utility type, risk category, MP and potential owner. The new utilities are primarily located along I-24/I-40 west of Fesslers Lane and along I-440 west of I-24. In addition, new utilities identified through continuing coordination and investigations with utility companies along I-24 are also included. The risk category is separated into high-, moderate- or low-risk situations depending on the potential cost that disturbing each crossing would incur. The higher the cost of disturbing the crossing, the higher the risk associated with the crossing. Potential owners of the utilities present within these limits are presumed and will be verified as the proposed Project progresses.

**Table 4-4-5: Identified Utilities**

Section	Utility Type	Risk Category	MP	Potential Owner
I-40	Natural Gas	Moderate	211.2	Piedmont Gas Company
I-40	Water Line	Moderate	211.2	Metro Water and Sewer
I-40	Natural Gas	Moderate	211.25	Piedmont Gas Company
I-40	Natural Gas	Moderate	211.3	Piedmont Gas Company
I-40	Natural Gas	Moderate	211.3	Piedmont Gas Company
I-40	Fiber Optic Cable	Low	211.4	Century Link (Lumen)
I-40	Fiber Optic Cable	Low	211.4	Century Link (Lumen)
I-40	Overhead Electric	Moderate	211.4	NES
I-40	Overhead Electric	Moderate	211.6	NES/TVA



Section	Utility Type	Risk Category	MP	Potential Owner
I-40	Overhead Electric	Moderate	211.6	NES
I-40	Fiber Optic Cable	Low	211.8	Century Link (Lumen)
I-40	Overhead Electric	Moderate	211.8	NES
I-40	Sanitary Sewer	Low	211.8	Metro
I-40	Fiber Optic Cable	Low	212.2	Century Link (Lumen)
I-40	Fiber Optic Cable	Low	212.2	Century Link (Lumen)
I-40	Fiber Optic Cable	Low	212.2	Century Link (Lumen)
I-40	Overhead Electric	Moderate	212.2	NES
I-40	Overhead Electric	Moderate	212.2	NES
I-40	Water Line	Low	212.2	Metro Water and Sewer
I-40	Fiber Optic Cable	Low	212.4	Century Link (Lumen)
I-40	Water Line	Low	212.5	Metro Water and Sewer
I-40	Fiber Optic Cable	Moderate	212.8	Century Link (Lumen)
I-40	Fiber Optic Cable	High	213.0	Century Link (Lumen)
I-40	Water Line	Moderate	213.0	Metro Water and Sewer
I-40	Natural Gas	Low	213.5	Piedmont Gas Company
I-40	Sanitary Sewer	Low	213.8	Metro Water and Sewer
I-40	Overhead Electric	Moderate	214.0	NES
I-40	Sanitary Sewer	Moderate	214.0	Metro Water and Sewer
I-40	Water Line	Low	214.1	Metro Water and Sewer
I-40	Natural Gas	Low	214.2	Piedmont Gas Company
I-40	Sanitary Sewer	Moderate	214.2	Metro Water and Sewer
I-40	Overhead Electric	Moderate	214.6	NES
I-40	Sanitary Sewer	Moderate	214.6	Metro Water and Sewer
I-440	Natural Gas	Low	6.2	
I-440	Fiber Optic Cable	Low	6.4	Zayo
I-440	Overhead Electric	Moderate	6.4	NES
I-440	Sanitary Sewer	Moderate	6.4	Metro

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Section	Utility Type	Risk Category	MP	Potential Owner
I-440	Natural Gas	Low	6.7	Piedmont Gas Company
I-440	Fiber Optic Cable	Moderate	6.8	Century Link (Lumen)
I-440	Natural Gas	Low	6.8	Piedmont Gas Company
I-440	Sanitary Sewer	Moderate	6.8	
I-440	Sanitary Sewer	Moderate	7.0	Metro Water and Sewer
I-440	Sanitary Sewer	Moderate	7.0	Metro Water and Sewer
I-440	Sanitary Sewer	Moderate	7.0	Metro Water and Sewer
I-440	Water Line	Low	7.0	Metro Water and Sewer
I-440	Overhead Electric	Moderate	7.0	NES
I-440	Sanitary Sewer	Moderate	7.0	Metro
I-440	Water Line	Moderate	7.3	Metro Water and Sewer
I-24	Fiber Optic Cable	Moderate	51.8	AT&T
I-24	Fiber Optic Cable	Moderate	51.8	AT&T
I-24	Sanitary Sewer	Moderate	52.5	Metro Water and Sewer
I-24	Fiber Optic Cable	Moderate	52.6	AT&T
I-24	Fiber Optic Cable	Moderate	53.0	Century Link (Lumen)
I-24	Sanitary Sewer	Moderate	54.6	Metro Water and Sewer
I-24	Fiber Optic Cable	High	55.4	Century Link (Lumen)
I-24	Fiber Optic Cable	Low	55.5-55.6	Century Link (Lumen)
I-24	Fiber Optic Cable	Moderate	55.6	AT&T
I-24	Water Line	Low	55.8	Metro Water and Sewer
I-24	Fiber Optic Cable	Low	56.6-56.8	Century Link (Lumen)
I-24	Fiber Optic Cable	Moderate	57.0	Century Link (Lumen)
I-24	Fiber Optic Cable	Low	57.0	AT&T
I-24	Sanitary Sewer	Low	57.0	Metro Water and Sewer
I-24	Water Line	Moderate	58.5	Metro Water and Sewer
I-24	Sanitary Sewer	Moderate	EB from 58.6 to 59.8	Metro Water and Sewer

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Section	Utility Type	Risk Category	MP	Potential Owner
I-24	Fiber Optic Cable	Moderate	59.4	AT&T
I-24	Sanitary Sewer	Low	59.4	Metro Water and Sewer
I-24	Sanitary Sewer	Low	59.4	Metro Water and Sewer
I-24	Water Line	Low	59.5	Metro Water and Sewer
I-24	Water Line	Low	59.5	Metro Water and Sewer
I-24	Water Line	Low	59.5	Metro Water and Sewer
I-24	Fiber Optic Cable	Low	60.8	United Communications
I-24	Fiber Optic Cable	Moderate	62.6	TDS
I-24	Fiber Optic Cable	Low	Parallel from 63.2 - 64.2	United Communications
I-24	Fiber Optic Cable	Low	64.0	TDS
I-24	Fiber Optic Cable	Moderate	64.2	United Communications
I-24	Fiber Optic Cable	Moderate	64.2	TDS
I-24	Fiber Optic Cable	Moderate	Parallel from 64.2 - 65.6	United Communications
I-24	Natural Gas	Low	64.4	Unknown
I-24	Sanitary Sewer	Low	64.4	City of Lavergne Water and Sewer
I-24	Water Line	Low	64.4	La Vergne Utilities Map
I-24	Water Line	Low	64.4	La Vergne Utilities Map
I-24	Sanitary Sewer	Low	64.4	City of Lavergne Water and Sewer
I-24	Sanitary Sewer	Low	64.6	City of Lavergne Water and Sewer
I-24	Natural Gas	Low	65.2	Smyrna Utilities
I-24	Water Line	Low	65.2	La Vergne Utilities Map
I-24	Overhead Electric	Low	65.6	Middle TN Electric
I-24	Fiber Optic Cable	Low	66.4	United Communications

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Section	Utility Type	Risk Category	MP	Potential Owner
I-24	Natural Gas	Low	66.8	Smyrna Utilities
I-24	Fiber Optic Cable	Low	67.0	Zayo
I-24	Fiber Optic Cable	Low	67.0	United Communications
I-24	Natural Gas	Low	67.0	Smyrna Utilities
I-24	Natural Gas	Low	67.0	Smyrna Utilities
I-24	Sanitary Sewer	Low	67.0	Smyrna Utilities
I-24	Water Line	Low	67.0	Smyrna Utilities
I-24	Fiber Optic Cable	Low	68.2	Zayo
I-24	Natural Gas	Low	68.6	Smyrna Utilities
I-24	Water Line	Low	68.6	Smyrna Utilities
I-24	Water Line	Low	68.8	Smyrna Utilities
I-24	Fiber Optic Cable	Low	70.0	AT&T
I-24	Fiber Optic Cable	Low	70.0	United Communications
I-24	Fiber Optic Cable	Low	70.8	AT&T
I-24	Fiber Optic Cable	Low	74.2	AT&T
I-24	Water Line	Low	74.2	Consolidated Utility District
I-24	Overhead Electric	Low	Parallel from 74.2-75.8	TVA

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## 4.5 Railroad

A detailed description of the railroad considerations and assessments conducted for the Reasonable Alternatives is presented in **Section 3.5**. As part of the refinements for the Recommended Preferred Alternative 1A, similar analysis was conducted. The section below provides details for the new railroads that the previous analysis did not consider. These are in areas where the Recommended Preferred Alternative 1A was expanded due to design refinements previously discussed.

### 4.5.1 Identified Railroad Crossings

**Table 4-5** below summarizes the new railroad crossings identified within the I-24 areas where the improvements for the Recommended Preferred Alternative 1A are expanded



from what was identified for the Reasonable Alternatives. The table organizes crossings by owner, TDOT crossing number, RR MP, interstate MP and ROW type. ROW type is broken into easement, fee simple, mixed and unverified land ownership types. Fee simple ownership of a property denotes that the land is owned in full by the rail company operating on it. Easement ownership of a property indicates that the land is not owned by the rail operating on it, but rather that the RR has been granted an easement from the property owner to operate on the property. Mixed ownership indicates that the property is owned through a combination of easements and/or fee simple documents. Crossings with ROW type denoted as “unverified” do not have a documented legal determination from TDOT.

**Table 4-4-6: Crossings of Major Interstates with Substantial Data**

Owner & DOT Crossing #	RR MP	Location	ROW Type
NERR – DOT # 348623Y	0002.23	I-40 Between MP211.0 and 212.0	Easement Corridor
CSXT – DOT # 937924V	000 0189.69	I-440 at MP7.1 (Sevenmile Creek and Glenrose Ave)	Unverified
CSXT – DOT # 918612L	0BA 0188.39	I-440 at MP6.45 (US41)	Easement Corridor

*Table Abbreviations:*

*NERR – Nashville & Eastern Railroad*  
*CSXT – CSX Transportation (Railroad)*

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## 5 CONCLUSIONS

Following the recommendations of TDOT's I-24 Multimodal Corridor Study and the CAP for Middle Tennessee, the development of the alternatives described in this report was initiated. These alternatives were developed to meet the purpose and need of the proposed Project and were screened to identify a range of Reasonable Alternatives to carry forward for evaluation in the Project's Environmental Assessment. Alternatives were evaluated and refined based on three levels of screening.

Level 1 was a qualitative screening of preliminary alternatives based on their ability to meet the purpose and need. If an alternative did not meet the purpose and need, it was considered fatally flawed and an unreasonable alternative. Based on the results of the Level 1 screening, the two Choice Lanes in either direction alternative was carried forward for further refinement and analysis because it was the only preliminary alternative that fully achieved the purpose and need. All other preliminary build alternatives were eliminated from further consideration because they did not meet the purpose and need of the Project.

The Level 2 screening was performed in two steps—the first (Level 2A) identified and assessed the mainline road widening templates and the second (Level 2B) identified and assessed corridor access points. The two refined mainline widening preliminary alternatives considered in the Level 2A screening included: two Choice Lanes on the outside and two Choice Lanes on the inside. These alternatives were assessed comparatively based on their ability to meet the purpose and need. A qualitative and quantitative assessment of each alternative's environmental impacts was also performed, with a focus on key resources that could drive decisions. ROW impacts and likelihood of interchange modifications, which may be more disruptive to the public because of additional ROW acquisition and construction complexity, were used as an indicator of likelihood of impacts to residential communities.

These assessments ultimately concluded that neither alternative would be carried forward in its entirety. Rather, based on the constraints along the corridor, it was determined that design refinement to develop Reasonable Alternatives must include a combination of Choice Lanes on the inside and the outside. This provided the most flexibility for design to accommodate the varied constraints along the corridor, allowing for a reduction of interchange modification needs, Section 4(f) impacts, and incorporation of bridges to reduce direct stream impacts. As part of future refinements, it was also concluded that flexible delineators with a 4-foot buffer would be incorporated to reduce the Project footprint, minimize ROW acquisition and reduce construction costs. The delineator separation also allowed operational flexibility and increased safety in the Choice Lanes.

Following assessment of mainline alignment alternatives, a refined mainline template was developed using a combination of Choice Lanes on the inside and outside, a flexible delineator with a 4-foot buffer and elevated structures for Choice Lanes depending on ROW needs and other constraints. Using the refined template, access point locations were identified, developed, and evaluated at 26 locations (Level 2B screening). The feasibility was evaluated based on travel demand (AADT), adjacent land uses, potential future growth in land uses and physical and environmental constraints. The cost and complexity of construction was also considered as a secondary factor in the initial evaluations. During this process, a traffic analysis was conducted for each interchange concept to screen the operational viability of interchange modifications. Following the Level 2B screening, 17 access locations were carried forward for further consideration as summarized below.

- Two locations were proposed as exclusive Choice Lanes system-to-system interchange access.
- Six locations were proposed as ingress/egress points for Choice Lanes access from the interstate to an arterial street that currently has general-purpose-lane access.
- Two locations were proposed as exclusive Choice Lanes ingress/egress access points from the interstate to an arterial street where there is no existing general-purpose-lane access.
- Seven locations were proposed as at-grade access points from general purpose lanes to Choice Lanes.

Following the identification of the mainline widening alignment and access points, two Reasonable Alternatives (Alternative 1 and Alternative 2) were identified for detailed analysis as part of Level 3 screening. During this screening, Alternatives 1 and 2 were evaluated based on environmental and social impacts, planning-level cost estimates and stakeholder and public input. The alternatives were presented to the public and stakeholders during public involvement meetings in August 2024. Overall, Alternative 2 had much higher impacts—specifically to streams, wetlands, floodplains and ROW acquisition—and cost over \$0.5 billion more than Alternative 1. Combined with public and stakeholder input, which expressed a general concern for environmental and social impacts, Alternative 1 was retained for further analysis and refinement, while Alternative 2 was eliminated from further consideration. However, the Alternative 2 design option at the I-24 interchange at SR 155 (Briley Parkway), which is an option preferred by the public and stakeholders, and the mainline widening option between Fesslers Lane and the I-24/I-40 interchange were retained for further consideration and incorporation into a refined Alternative 1.

Following the Level 3 screening, Alternative 1 was refined to address public and stakeholder comments and further minimize impacts as described as follows.

- The limits of improvements along I-24/I-40 were extended west of Fesslers Lane and farther east to SR 155 (Briley Parkway) to better accommodate the merging of Choice Lanes traffic into the general-purpose lanes.

- The Choice Lanes were moved to the outside of the general-purpose lanes approaching the I-40/I-24 termination direct merge, and near the Elm Hill Pike, rather than the inside as originally proposed, to address operational concerns.
- Rather than Choice Lanes access at East Thompson Lane, as originally proposed, the concept from Alternative 2 was incorporated that provides Choice Lanes access at Briley Parkway. This addressed stakeholder concerns with potential conflicts with planned pedestrian/bicycle improvements on East Thompson Lane.
- Substandard bridges on I-24 are proposed to be replaced, such as at Mill Creek and Bell Road, which is driven not by the Choice Lanes but the existing bridge conditions and flooding issues at select locations.
- The Almadillo Road Diverging Diamond Interchange (DDI) was added to the Project.
- I-24 mainline road widening was optimized to better utilize existing pavement, thereby decreasing impacts where feasible.
- The design was optimized to avoid direct impacts to eligible historic properties.
- The design was updated to allow commercial motor vehicles (CMVs) to use the Choice Lanes.
- The two Choice Lanes section was extended to the southern end of the project.

As a result of the alternatives development and screening documented in this report, two Reasonable Alternatives will be carried forward for detailed assessment in the Environmental Assessment: No-Build and Alternative 1A (Build). A No-Build alternative has been retained for analysis to provide baseline conditions for comparison with the Build Alternative. The proposed Build Alternative is the result of refinements to Alternative 1, which is considered Alternative 1A and is described in **Section 4** of this report.



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# APPENDIX A. SCREENING MATRIX

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