NEPA RE-EVALUATION

I-70 SECTION OF INDEPENDENT UTILITY 7

ST. CHARLES COUNTY MISSOURI

and

MODOT STATE JOB NUMBER J6I0624

(I-70 WENTZVILLE PARKWAY TO WEST OF I-64/Route 61)

April 21, 2022

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1 Introduction

The I-70 corridor through Wentzville has experienced ever increasing congestion along the mainline alignment due to the heavy traffic and substandard alignment beneath an existing Norfolk Southern Railroad (NSRR) structure that spans I-70 between Wentzville Parkway and Route Z. Improvements to the area are a priority to the Missouri Department of Transportation (MoDOT), the I-70 corridor, and the area citizens; therefore, a review of the area was needed to develop the best solution for improving I-70 while also ensuring area access needs are met. Three alternatives were assessed to improve safety and decrease congestion by revising the mainline I-70 alignment, widening the I-70 template, and addressing the NSRR structure.

The Federal Highway Administration (FHWA) and MoDOT's Engineering Policy Guide (EPG) require a National Environmental Policy Act (NEPA) re-evaluation when there has been greater than 3 years since the original NEPA approval, or when changes related to the original study have occurred. The original NEPA approval – a Record of Decision (ROD) – was made on April 19, 2006. Due to the amount of time that has passed since the initial evaluation and the difference in recommended design, this NEPA re-evaluation assesses Section of Independent Utility (SIU) 7 with a focus on the I-70 corridor between Wentzville Parkway and Route Z.

2 Background

2.1 The I-70 Corridor

One of the most important limited-access highways across the United States is I-70, which provides an east-west connection across much of the United States. Construction of the I-70 corridor in Missouri began in 1956 and continued for nine years to span more than 250-miles across the state. Short portions of the corridor have been reconstructed, but otherwise, the newest sections of I-70 are more than 50 years old. With maintenance provided by MoDOT, the facility has outlasted its original design life of 20 years and has carried traffic volumes of both cars and heavy trucks that have far exceeded the expectations of the original designers.

2.2 First Tier EIS

MoDOT, in cooperation with FHWA, began a process for improving I-70 in 1999 when MoDOT conducted a feasibility study to document the condition of the highway and to identify alternatives for improving I-70 to better meet the needs of travelers. The feasibility study recommended that more detailed studies be conducted as part of a "tiered" process designed to look at a broad range of concepts for the entire I-70 corridor between the Kansas City and St. Louis metropolitan areas. Subsequently, a First Tier Environmental Impact Statement (EIS) for the I-70 corridor was completed in the fall of 2001. The purpose and need of the I-70 improvements studied in the First Tier EIS was to provide a safe, efficient, environmentally sound, and cost-effective transportation facility that responds to the needs of the study

corridor and to the expectations of drivers traveling on a nationally important interstate. The need for the project is based on transportation deficiencies that had been identified in the First Tier EIS, including:

- Roadway Capacity
- Safety
- System Preservation
- Goods Movement
- National Defense/Homeland Security

MoDOT developed several I-70 strategies in consultation with various resource agencies and the public. The First Tier EIS concluded that the preferred strategy is to widen and reconstruct I-70 between Kansas City and St. Louis, with the option for new I-70 conceptual corridors in the Columbia, Warrenton, Wright City, and Wentzville areas.

2.3 Second Tier EIS

In 2002, a more detailed analysis of the selected strategy began, and Second Tier studies were initiated for improving sections of the corridor. The intent of the Second Tier studies was to build on and extend the work of the First Tier EIS for improving I-70. This effort consisted of a group of seven independent but closely coordinated second tier studies that considered engineering, environmental, and community issues as improvement decisions were made. Each of these seven studies focused on a separate SIU to ensure that the preferred strategy is implemented in a way that is sensitive to the needs of local communities. Each SIU is an independent project, standing on its own merits within the framework of the Improve I-70 studies (Figure 1).

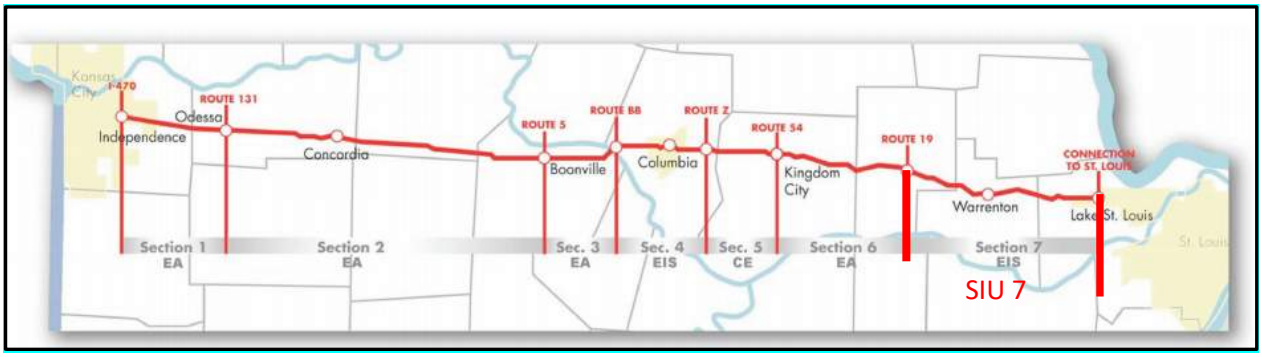


Figure 1: SIU Diagram

2.4 Section of Independent Utility 7

One of the sections evaluated in further detail was SIU 7, which is a 40-mile portion of the I-70 corridor between just west of Route 19 at milepost 174 and Lake St. Louis Boulevard. MoDOT completed a Second Tier EIS of this segment, which was approved on October 24, 2005; and a ROD was made on

April 19, 2006. The Second Tier EIS/ROD identifies 17 sub-sections within SIU 7, the transportation problems within each of them, and how they should be addressed.

2.5 Project J6I0624

Per the Second Tier EIS completed for SIU 7, improvements within the SIU have been prioritized by MoDOT and SIU 7 has been packaged into smaller implementable sections (the aforementioned 17 sub-sections). One of those smaller sections is Project J6I0624. The selected alternative for Project J6I0624 included the following:

- Eight lanes
- Widen to North
- Uses all 2003 interchange reconstruction
- Provides adequate future LOS at least cost
- Improved alignment for RR crossing

Since it has been more than three years since FHWA's approval of the EIS, a NEPA re-evaluation must be completed as required by 23 CFR 771.129. Project J6I0624 would have construction limits east-west along the I-70 corridor from Wentzville Parkway to west of I-64/Route 61 (Figure 2). FHWA requires a detailed environmental review of Project J6I0624 and a desktop review of the entire SIU 7 corridor.

Figure 2: J6I0624 Project Limits

2.6 SEIS Truck Only Lanes

Approximately 25 to 30 percent of the traffic on I-70 is truck traffic, and it was projected to double by 2030. As truck traffic continued to increase, the public asked if cars and trucks could be separated on I-70. At the same time, there were emerging technologies that made that separation more feasible.

Additionally, because of Missouri's prominent role in the United States' transportation system, the national "Corridors of the Future" program funded a study of truck-only lanes in Missouri. In 2008, the addition of dedicated truck lanes was presented as a new option to improve I-70 and address the purpose and need of providing a safe, efficient, environmentally sound, and cost-effective transportation facility. To assess this new alternative, a Supplemental EIS (SEIS) was completed to review existing conditions for significant changes since the completion of the previous I-70 documents; and to evaluate the potential impacts of truck-only lanes to the natural and human environments. After evaluation of impacts, benefits, and Missouri's long-term transportation needs, the SEIS recommended an additional reasonable strategy that I-70 be rebuilt with truck-only lanes. Due to a lack of funding, this alternative has not advanced.

3 Purpose and Need Validation

As noted in the First Tier EIS, the goal of I-70 improvements along the entire Missouri corridor is to provide a safe, efficient, environmentally sound, and cost-effective transportation facility that responds to the needs of the study corridor and to the expectations of a nationally important interstate. Additionally, the Second Tier EIS documented the development of the purpose and need for the SIU 7 improvements. The specific purpose and need addressed by the proposed action in SIU 7 is summarized as follows.

Route Importance and System Linkage

I-70 is a vital part of the interstate system. Across the United States, I-70 is one of the nation's longest interstate routes, running east to west connecting 10 states from Utah to Maryland. Within Missouri, I-70 connects the metropolitan areas of St. Louis, Columbia, and Kansas City. Locally, I-70 connects many commercial, manufacturing, agricultural, and recreational areas via other significant routes. Ensuring the condition and capacity of I-70 and the associated interchanges at Wentzville Parkway and Route Z, as well as traveler safety where the NSRR bridge crosses over I-70 is of utmost importance to MoDOT. Therefore, the route importance and system linkage component of the Purpose and Need remains valid for SIU 7 and Project J6I0624.

Existing and Future Traffic Volumes

As noted in the second tier EIS, the actual traffic volume between Missouri Route Z and U.S 40/61, the section of SIU 7 encompassing Project J6I0624, was 64,000 vehicles in 2003. This was projected to increase to 97,800 by the year 2030, causing a roadway level of service below MoDOT standards. Currently, the average daily traffic for 2020 in this area is 81,914 vehicles, which is consistent with the projections from the 2006 EIS. Therefore, the existing and future traffic volumes element of the purpose and need remains valid for SIU 7 and Project J6I0624.

Level of Service

As of 2020, I-70 traffic volumes have reached their predicted numbers stated in the 2006 EIS. A subsequent freeway analyses in 2018 covered I-70 segments from Wentzville Parkway to Highway A. Both the 2006 EIS and 2018 freeway analysis confirmed that I-70, westbound specifically, poses a significant bottleneck, especially in the PM peak hours. While eastbound currently operates at a Level of Service (LOS) C or higher, several segments on westbound reach a LOS F. Traffic models predict that in 2045 the average LOS across three of the four routes will be at an F rating, confirming the need for improvements. Therefore, the level of service element of the purpose and need remains valid for SIU 7 and the J6I0624 project.

Existing Highway Characteristics

Interstate I-70, between Wentzville Parkway and Route Z, consists of two thru lanes with 4-foot minimum inside shoulders and 10-foot minimum outside shoulders in both the eastbound and westbound directions typically outside the limits of the NSRR Bridge. The property abutting the fully controlled access right of way is generally commercial or undeveloped in nature. The existing railroad right-of-way (R/W) serves as a divider with respect to access and development within the project limits.

Between Wentzville Parkway and the westside of the railroad, West Pearce Boulevard serves as the north frontage road along I-70. Commercial business uses along this roadway include strip malls, fast food restaurants, car dealerships, and other retail functions. West Pearce Boulevard continues east towards downtown Wentzville. Veteran's Memorial Parkway serves as the south frontage road in this area. Commercial businesses include retail, restaurants, car dealership, and equipment sales companies. Veteran's Memorial Parkway does not continue eastbound and provides no local connection to the east of the railroad property.

Between the eastside of the railroad and Route Z, Mar-Le Drive serves as the north frontage road and no frontage road exists along the southside of I-70. Along the southside of I-70, MoDOT currently owns a large, heavily wooded parcel that contains no development. Recent developments along Mar-Le Drive include a hotel, commercial properties, and multi-family residential. Mar-Le Drive provides a connection to Route Z, just north of the interchange with I-70.

The Route Z interchange is a standard diamond configuration. The northern ramp terminal intersection is a multi-lane roundabout, and the southern ramp terminal is an unsignalized intersection with Route Z. Commercial development is present in the southwest quadrant, but heavy commercial activity is not present at this interchange.

While I-70 traffic volumes are currently at acceptable levels, the need to expand I-70 will occur during the life of the existing NSRR bridge and Wentzville Parkway and Route Z interchanges. Therefore, within St. Charles County, MoDOT has been committed to bridge replacements over I-70 accommodating the

future expansion of I-70 to an eight-lane facility. Therefore, considering the existing highway characteristics element of the purpose and need remains valid for SIU 7 and Project J6I0624.

Crashes and Safety

Table 1 on the following page presents the current average annual crashes within the project corridor. This includes crashes along I-70 from west of the Wentzville Parkway interchange to east of the Route Z (Church Street) interchange, as well as along those cross-street arterials between the ramp terminals, and along the southern outer road in the vicinity of the Wentzville Parkway interchange. As would be expected, crashes occurred most frequently in areas with high concentrations of conflicting traffic volumes, such as freeway ramp junctions and major arterial intersections. In the five-year analysis period, 640 crashes were reported, classified in the following manner:

- Property Damage Only: 81.9%
- Minor Injury: 16.9%
- Disabling Injury: 1.1%
- Fatal: 0.2%

	2013	2014	2015	2016	2017	Average
Total Number of Fatal Crashes	0	0	1	0	0	0.2
Total Number of Crashes	65	92	91	93	83	84.8
Fatal Crash Rate (per 100MVM)	0.0000	0.0000	0.0017	0.0000	0.0000	0.0003
Total Crash Rate (per 100MVM)	145.37	200.34	180.68	179.80	156.35	172.49
MO Statewide Avg. Fatal Crash Rate for Interstates (per 100MVM)	0.38	0.32	0.38	0.37	0.41	0.37
MO Statewide Avg. Total Crash Rate for Interstates (per 100MVM)	88.14	68.52	78.72	82.49	80.78	79.73
Difference Fatal Rate	-0.38	-0.32	-0.38	-0.37	-0.41	-0.37
% Diff Fatal Rate	-100.00%	-100.00%	-99.55%	-100.00%	-100.00%	-99.91%
Difference Total Crash Rate	57.23	131.82	101.96	97.31	75.57	92.76
% Difference Total Crash Rate	65%	192%	130%	118%	94%	116%

Table 1 Annual Crash Rates – Interstate

Figure 3 shows the distribution of the crashes by severity and Figure 4 highlights where crash "hot spots" occur.

Figure 3: Crashes by Severity

Figure 4: Crash Densities

Crash rates along the interstate portion of the study area were calculated for each of the 5 years of the data collection period. The calculated crash rates are higher than the Missouri statewide average rate for interstates for each of the study years. However, the fatal crash rates calculated along this portion of I-70 are lower than the statewide average for similar facilities. Therefore, the crashes and safety characteristics element of the purpose and need remains valid for SIU 7 and Project J6I0624.

Modal Relationships

Project J6I0624 would further expand the modal relationships between roadways, airports, navigable waterways, and mass transit services. Furthermore, improvements made to the Wentzville Parkway and Route Z interchanges add vital congestion relief to allow for access to other modes of transportation. A variety of roadways and freight railroad system exist to the south of I-70. I-64/US 40 to the south of I-70 offers access to the Missouri River navigable waterway and Katy Trail. The City of Wentzville's Comprehensive Plan Update includes planned trails or accommodations along the frontage roads of the I-70 corridor, including within the limits of Project J6I0624. Therefore, the modal relationships characteristics element of the purpose and need remains valid for SIU 7 and Project J6I0624.

Access Management

As noted in the Second Tier EIS, the existing Wentzville Parkway and Route Z interchange do not meet access management guidelines related to the spacing between ramp and outer road terminals. The distance from the ramp terminals to the south outer road is 125 feet, while the distance between the ramp terminals to the north outer road is 865 feet. Both distances are substandard to the recommended 1,320-foot spacing between ramp and outer road intersections per access management guidelines.

The proposed design for Project J6I0624 would improve horizontal curvature, increase site distance, and extend/add auxiliary lanes, which would improve the current substandard access management concerns at the interchanges. Therefore, the access management element of the purpose and need remains valid for SIU 7 and Project J6I0624.

National Defense/Homeland Security

I-70 is a key corridor in the Strategic Highway Network and a primary facility for moving personnel and equipment for deployment and emergency response. Improvements to the Wentzville Parkway interchange, Route Z interchange, and to the I-70 corridor ensures expanded connectivity of the highway network to areas north and south of I-70 to support the system needs for disaster response or national security. Therefore, the national security element of the purpose and need remains valid for SIU 7 and Project J6I0624.

In summary, the purpose and need identified in the Second Tier EIS remains valid for the current re-evaluation of SIU 7 and Project J6I0624.

4 Preferred Alternative Changes

Per the Second Tier EIS completed for SIU 7, improvements within the SIU have been prioritized by MoDOT and SIU 7 has been packaged into smaller implementable sections. The following describes the development of the preferred alternative for Project J6I0624.

4.1 Project Location

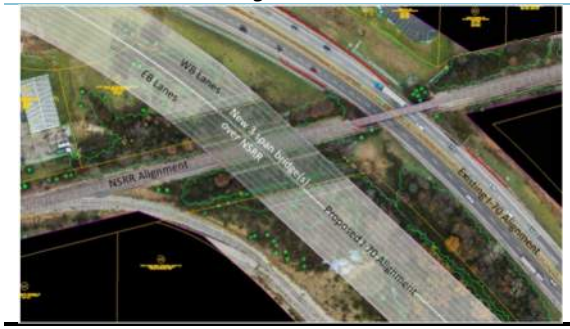
The project corridor for Project J6I0624 is in St. Charles County and runs east-west along the I-70 corridor from Wentzville Parkway to west of I-64/Route 61 (see Figure 2, page 5).

4.2 Development of the Tentative Preferred Alternative

The corridor has experienced ever increasing congestion along the mainline alignment due to heavy traffic and substandard alignment beneath the NSRR structure. To improve safety and to allow for an increase in the number of eastbound and westbound traffic lanes, options to address the NSRR Bridge over I-70 were considered. Options also considered ways to tie-in to the Wentzville Parkway and Route Z interchanges necessitated by revising the mainline I-70 alignment, widening the I-70 template, and addressing the NSRR structure. Of note, the Wentzville Parkway interchange is part of a separate upcoming project that will alleviate issues associated with the closely spaced signalized intersection at the southern ramp terminal and Veteran's Memorial Parkway. This separate project was also considered in the options.

Conceptual design alternatives were developed, presented, and discussed by the MoDOT Project Team during multiple Design Concept Workshops. The development of Wentzville Parkway design alternatives focused on replacing the NSRR bridge over I-70, expanding I-70 to four lanes both directions, and improving the I-70 east and westbound bridges over Route Z and associated interchange. The major features of the design alternatives that were further analyzed are described below and included in the Concept Study Report contained in Appendix A.

1

Alternative 1: Relocating I-70 Over NSRR	**Benefits**	**Concerns**
	• Could be constructed without significant traffic impacts. • Improves sight distance. • No additional R/W along I-70. • Simplified NSRR coordination. • Extra lane at Route 61/I-64 on ramp would improve merging. • Would not require new or temporary NSRR alignments/bridges.	• Settlement concerns due to extreme fill heights. • Significant cost for embankment and MSE walls. • Long distance up-grade movements to access I-70 from Route Z interchange. • May require the reconstruction of segments of West Pearce Boulevard and Mar-Le Drive. • R/W impacts to several commercial businesses.
Alternative 2: Relocating I-70 Under NSRR	**Benefits**	**Concerns**
	• Could be constructed without significant traffic impacts. • Improves sight distance. • No additional R/W along I-70. • Additional span length in the eastern most span of the NSRR Bridge would provide space for a future outer road system, increasing local mobility. • Extra lane at Route 61/I-64 on ramp would improve merging.	• Additional costs related to temporary railroad bridge and track. • Significant cost for the new NSRR Bridge. • Additional coordination and approvals from NSRR. • May require the reconstruction of segments of West Pierce Drive and Mar-Le Drive. • R/W impacts several commercial businesses. • Significant bridge construction requires longer construction duration.
Alternate 3: Relocating Eastbound I-70 Over NSRR Hybrid of Alternatives 1 and 2 that would involve relocating eastbound I-70 to the southwest and over the NSRR alignment. The westbound lanes would remain along the existing I-70 alignment and lowered to provide adequate vertical clearance beneath a new NSRR railroad bridge.	**Benefits**	**Concerns**
		• Due to the combined concerns related to the hybrid alternative, it was dismissed from further consideration.
Alternate 4: Southern Relocation of Eastbound I-70	**Benefits**	**Concerns**
	• Would allow fewer impacts to traffic during the replacement of the existing railroad bridge since traffic could be diverted to the new eastbound lanes.	• Extensive additional R/W needs and costs • Three additional bridges increase initial construction and long-term maintenance costs. • Costs for skewed bridge over railroad limits would be significantly higher.

2

4.3 Preferred Alternative

Based on the findings of the Concept Study Report, Alternative 2 is the recommended approach. This alternative includes the following:

Bridges:

Norfolk Southern Bridge over I-70:

- Replace existing railroad bridge over I-70 with a new single track 4 span structure.
- Construct temporary shoofly (approximately 2400' of track).
- Construct temporary 7 span railroad bridge south of the existing structure to maintain train access throughout construction.
- Main bridge spans will accommodate 4-12' traffic lanes with 12' inside and outside shoulders and an additional 12' clearance, in each direction in accordance with the I-70 EIS documents.
- End span will allow for future north outer road connection between West Pearce Boulevard and Mar-Le Drive.
- End span will not preclude the proposed city of Wentzville Bike/Pedestrian Plan.

I-70 Bridges over Route Z:

- The existing 42'-1 ½"-wide eastbound and westbound bridges will be widened to the outside by 20'-1" to facilitate an additional 12' lane and full 12' shoulder in each direction. Resulting width 62'-2 ½" out-to-out.

Roadway:

I-70 Mainline:

- Relocate I-70 approximately 65' southwest of existing location in the vicinity of the NSRR Bridge
- Proposed typical section in each direction includes:
  - 12' inside shoulder
  - 3-12' lanes
  - 12' auxiliary lane between Wentzville Parkway and Route Z
  - 12' outside shoulder
  - 12' additional horizontal clearance
- Improve horizontal curvature, increase sight distance, and provide standard shoulder widths to improve safety.
- Lower mainline profile to provide standard vertical clearance.
- Maintain two lanes of traffic in each direction during peak traffic periods. Temporary short term lane closures may be required during overnight or weekend operations.

Wentzville Parkway Interchange:

- Partially reconstruct westbound off ramp from I-70.
- Extend proposed auxiliary lane to connect with new eastbound on-ramp from Wentzville Parkway that is being constructed within a separate project. The advantages associated with the Preferred alternative include:

- Realign segment of West Pearce Boulevard including a 3-lane template and 6-foot sidewalk.

Route Z Interchange:

- Reconstruct ramps on western side of interchange.
- Restripe I-70 between Route Z and the I-64/ Route 40/61 interchange to accommodate the additional lane work.
- Realign segment of Mar-Le Drive with a 2-lane template.

5 Public/Stakeholder Involvement Process

Public Involvement

NEPA requires that agencies "make diligent efforts to involve the public and resource and regulatory agencies in preparing and implementing their NEPA procedures" (40 CFR 1506.6). Public and agency participation has been an important part of the Improve I-70 project since its inception. MoDOT made a commitment at the beginning of the project to encourage and solicit public and agency participation and feedback. Various forms of public involvement and outreach were coordinated for both the First and Second Tier EIS since the project conception:

- During the I-70 First Tier EIS, there were more than 22,000 direct contacts between the public and the I-70 project team.
- During the I-70 Second Tier EIS, the public involvement planning efforts associated with SIU 7 used techniques such as survey research, toll-free hotline, newsletters, fact sheets, brochures, media kits, media releases and advisories, videos, general mailing lists, databases, and websites.

Below is a summary of the outreach coordination that has occurred specific to Project J6I0624.

As part of the outreach to educate stakeholders about the project and to receive input from them, a series of efforts are planned, including website updates, notifications, a public meeting, and stakeholder meetings. Currently, a project webpage serves as the central communications hub and project information repository for this project. The website, which currently includes general project information, a project timeline, information about alternatives, frequently asked questions, a sign-up for project updates, and project contacts is located at www.modot.org/i-70-improvements-wentzville-parkway-route-z. A virtual public meeting was held on March 23, 2022 to update the public on the proposed project. The community was notified of the meeting through a press release, mailed letters, electronic mail, and social media. The meeting consisted of a presentation by MoDOT staff to provide attendees the opportunity to learn about the proposed project and ask questions during the Question-and-Answer portion of the meeting. Comments received during the meeting were related to access, congestion, interstate closure/detours, right-of-way, and railroad coordination. A copy of the presentation, as well as comment forms, were subsequently posted on-line. Additionally, in-person display boards and comment forms were placed at two locations in the community. A two-week comment period followed the meeting, and one comment was received, which noted the importance of

accommodating bicycle and pedestrian needs, as well as future lanes on I-70 . As the project progresses, additional public and stakeholder meetings will be held. Public input opportunities such as these meetings will be sent to local newspaper, television, and radio stations through a press release, social media, and through email notifications.

Tribal Consultation

FHWA must consult with any Native American Indian tribe that may attach religious and cultural significance to historic properties that could be affected by project undertakings.

FHWA initiated consultation with the following Tribes: Absentee Shawnee Tribe, Eastern Shawnee Tribe of Oklahoma, Iowa Tribe of Kansas and Nebraska, Iowa Tribe of Oklahoma, Kaw Indian Nation of Oklahoma, Kickapoo Tribe in Kansas, Kickapoo Tribe of Oklahoma, Miami Tribe of Oklahoma, Osage Nation, Ponca Tribe of Nebraska, Ponca Tribe of Oklahoma, Quapaw Tribe of Oklahoma, Sac and Fox Tribe of the Missouri in Kansas and Nebraska, Sac and Fox Tribe of the Mississippi in Iowa, Sac and Fox Nation of Oklahoma, and the Shawnee Tribe.

On January 24, 2022, FHWA and MoDOT received the attached response from the Tribal Historic Preservation Officer (THPO) Miami Tribe of Oklahoma (Appendix C). On behalf of the Miami Tribe, the THPO accepted the invitation to serve as a consulting party to the project. The tribe has no objection to the project and are not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the project site. However, the project site is within the aboriginal homelands of the Miami Tribe. As requested, MoDOT will ensure that if any human remains, Native American cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA), or unanticipated archaeological remains are discovered during any phase of the project, construction will cease and FHWA, with MoDOT Historic Preservation staff assistance, will reinitiate consultation with the Miami Tribe of Oklahoma and other interested tribes.

6 Resource Impacts

The I-70 Second Tier EIS evaluated impacts associated with a 40-mile portion of the I-70 corridor between just west of Route 19 (milepost 174) and Lake St. Louis Boulevard. It was approved on October 24, 2005, and a ROD was made on April 19, 2006. This re-evaluation includes a high-level review and screening of environmental resources along the entire SIU 7 corridor. It also includes a detailed re-evaluation of the resources and impacts associated specifically with Project J6I0624. A key component of this re-evaluation is to confirm previous findings and to update any areas of change. This re-evaluation serves to evaluate the significance of impacts of the proposed Project J6I0624, with the focus being on the context and intensity of effects that may significantly affect the quality of the human and natural environments. The Environmental Re-Evaluation/Consultation Form presents impact analysis findings for each resource evaluated. The matrix identifies if there is an impact to the resource with a yes/no check box and whether the impact has changed or remained the same from the Second Tier EIS.

7 Environmental Re-evaluation/Consultation Form

For

I-70 Second Tier EIS Re-Evaluation

Section of Independent Utility 7 and

Project J6I0624: Wentzville Parkway to West of I-64/Route 61

23 CFR 771.129

Federal Highway Administration/Missouri Department of Transportation

FHWA REGION Missouri Division	**STATE PROJECT NO.** J6I0624	**PROJECT TITLE, DOCUMENT TYPE** Second Tier Final Environmental Assessment and Final Section 4(f) Evaluation Section of Independent Utility 7 Wentzville Parkway to West of I-64/Route 61
DATE APPROVED	**FEDERAL AID NO.** 0704230	
REASON FOR CONSULTATION: Per the Second Tier EIS completed for SIU 7, improvements within the SIU have been prioritized by MoDOT and SIU 7 has been packaged into smaller implementable sections. Since it has been more than three years since FHWA's approval of the EIS, a NEPA re-evaluation must be completed as required by 23 CFR 771.129. The smaller SIU 7 segment is Project J6I0624, which would have construction limits east-west along the I-70 corridor from a point approximately 1,000 feet west of the centerline of Wentzville Parkway to a point approximately 1000 feet east of the centerline of the Route Z/Church Street interchange (Figure 2, Page 5). FHWA requires a desktop review of the entire SIU 7 corridor and a detailed environmental review of Project J6I0624.		

IS THERE AN IMPACT AND WILL THE TIME LAPSE CHANGE THE IMPACTS TO THE FOLLOWING:

1) LAND USE	
Is there an impact to this resource?	YES [ ] NO [X]
Change since the 2nd Tier EIS?	More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: Within SIU 7, land use is comprised of residential areas dispersed throughout the study corridor, with concentrations centered in the communities of High Hill, Jonesburg, Warrenton, Wright City, Foristell, and Wentzville. The western portion of SIU 7 is heavily agricultural in nature and transitions to an urban land use in the eastern portion of the corridor. The SIU 7 corridor also contains commercial and industrial land uses, mainly

located in the towns along major roadways. The land uses within SIU 7 have largely remained the same since completion of the Second Tier EIS.

There are several parks located within the SIU 7 corridor. Those identified in the Second Tier EIS remain valid and no new additional parks have been added within ½-mile of the SIU 7 corridor since the completion of the Second Tier EIS. Additionally, no new conservation areas have been added.

The First Tier EIS identified bicycle and pedestrian facilities, including recreational trail improvements or linear parks, as joint development opportunities. Subsequently, Second Tier EIS efforts included addressing cross-corridor needs of pedestrians and bicycles. Many of the municipality bicycle/pedestrian plans noted in the Second Tier EIS have been completed and or updated. For example, Warrenton's Comprehensive Plan, developed since completion of the Second Tier EIS, includes accommodations for bicycles and pedestrians over I-70 at the Highway 47 interchange. Likewise, the City of Wentzville's Comprehensive Plan Update includes planned trails or accommodations along the frontage roads of the I-70 corridor. Ongoing coordination efforts should be carried out as individual projects within SIU 7 are carried forward.

Relative to housing, the Tier Two EIS reported occupancy rates are almost 80 percent in Montgomery and Warren counties, whereas the occupancy rates in St. Charles County increased to 95 percent. Most housing units in the corridor are owner occupied, with rates being the lowest in Montgomery County at 72 percent and highest in St. Charles County at 80 percent. The median value of housing units in the study corridor ranges from $105,300 in Montgomery County to $198,500 in St. Charles County.

J6I0624: Local jurisdictions are responsible for land use planning along the I-70 corridor, including within SIU 7. These entities address existing and future land use in comprehensive plans and other planning documents. Since 2006, land use largely remains the same within limits of Project J6I0624 (see Figure 5, page 18). The study corridor is mostly retail/commercial in nature at the interchanges, flanked by residential development, as well as undeveloped areas.

Figure 5: Comparison of Land Use, 2006 & 2020
Source: Google Earth Imagery

The proposed project is located within a developed urban area with a mix of commercial, office, industrial and residential uses along an interstate roadway. Future Land Uses are comprised of what currently exists and will remain the same.

Figure 6 Future Land Use
Source: St. Charles County Master Plan – Envision 2030, January 28, 2019.

There would be no significant direct land use changes because of the proposed project because the proposed improvements would be constructed predominantly within existing R/W. The proposed project would be consistent with, and supportive of, land use plans.

The No Build Alternative would not support the St. Charles County Master Plan, which calls for completion of the transportation improvements to I-70 (St. Charles County, 2019).

2) PRIME AND UNIQUE FARMLAND

Is there an impact to this resource? YES [ ] NO [X]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: Land use within SIU 7 is comprised of residential areas dispersed throughout the study corridor, with concentrations centered in the communities of High Hill, Jonesburg, Warrenton, Wright City, Foristell, and Wentzville. The western portion of SIU 7 is heavily agricultural in nature and transitions to an urban land use in the eastern portion of the corridor. The SIU 7 corridor also contains commercial and industrial land uses, mainly located in the towns along major roadways. The land uses within SIU 7 have largely remained the same since completion of the Second Tier EIS.

J6I0624: The Farmland Protection Policy Act (FPPA) mandates agencies identify and consider adverse effects of federal projects on farmland. In cooperation with the local Natural Resources Conservation Service (NRCS) office, the act requires assessment for potential conversion of farmland to non-farming purposes for all federally funded projects.

According to the U.S. Census Bureau Urban Area Reference Map, the project corridor is entirely within the designated-urbanized area of St. Charles County. There is no potential for conversion of farmland. Therefore, the project is not subject to the FPPA.

3) RIGHT-OF-WAY ACQUISITION AND DISPLACEMENTS

Is there an impact to this resource? YES [X] NO [ ]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: As discussed in the Second Tier EIS, land use within SIU 7 is comprised of residential areas dispersed throughout the study corridor, with concentrations centered in the SIU's communities. The western portion of SIU 7 is heavily agricultural in nature and transitions to an urban land use in the eastern portion of the corridor. The SIU 7 corridor also contains commercial and industrial land uses, mainly located in the towns along major roadways. The land uses within SIU 7 have largely remained the same since completion of the Second Tier EIS.

Relative to displacements and property acquisition, the most salient factor is the configuration of the project footprint. The Second Tier EIS assumes that a total of 194 structure impacts within SIU 7.

J6I0624: Wentzville Parkway to Route Z is primarily commercial at the interchange locations, with additional commercial properties and undeveloped properties in between. Minimal R/W acquisitions would be necessary

to complete the project as MoDOT owns the property along the south side of I-70. R/W may be required along West Pearce Boulevard and Mar-Le Drive, which would impact several commercial businesses. Properties expected to be impacted by the project are documented in Table 2 below.

Name	Type of Property	Type of Impact	Size of Impact (square feet)
Waffle House Inc	Business	TCE	651
ACC Properties LLC	Business	TCE	2,249
Wentzville Investors LP	Vacant	R/W	10,497
RFT Mid Rivers LLC	Business	TCE	1,573
Fritzs Frozen Custard Wentzville Inc	Business	TCE	1,298
Pearce Wentzville LLC	Business	TCE	2,092
Wentzville Reorganized School District #4	Educational	PDE, TCE	2,104, 7,226
Marco Property LLC	Vacant	TCE	517
West Main Association Inc	Vacant	TCE	3,271
Wentzville Park Associates LLC	Business	R/W, TCE	1,434, 3,137
Bender Family Limited Partnership Number One	Business	TCE	11,124

Table 2: Property impacts for Project J6I0624
[a] TCE: Temporary Construction Easement
[b] PDE: Permanent Drainage Easement

4a) COMMUNITY IMPACTS—ECONOMIC GROWTH AND DEVELOPMENT

Is there an impact to this resource? YES [] NO [X]
Change since the 2nd Tier EIS? More Impacts [] Same [X] Fewer Impacts [ ]

SIU 7: Potential business displacements would occur within the SIU 7 corridor. Most of these displacements would involve the acquisition of businesses and/or partial acquisition of properties. Some business owners may choose to relocate on available land in the corridor, while some may be able to rebuild on the remaining property provided any new structures are in compliance with land use regulations.

Planning and zoning regulations exist for most of the SIU 7 corridor. Communities in the corridor have planned for continued commercial and industrial uses at the interchanges in the study area either through zoning regulations, future land use planning or both. Vacant land along I-70 and at the interchanges is available throughout the corridor but is more abundant in Montgomery County and western St. Charles County. Sufficient vacant land is available in the SIU 7 corridor to provide for reestablishment of businesses that would be acquired for the new facility.

The acquisition of businesses would also cause impacts to employment levels in the study area. It is not expected that major employers in the corridor would be displaced and job losses would be minimal. Based on the businesses that would be acquired under the Preferred Alternative of the SIU 7 corridor, it is estimated that between 250 and 350 jobs would be directly impacted. These job losses would not occur at one time as land

acquisition and construction would occur over several years depending on funding availability and scheduling. It is likely that job losses would be offset by business redevelopment in the corridor.

The acquisition of land and improvements for R/W associated with the Preferred Alternative would result in the direct loss of property that is subject to property taxes by local taxing districts. Assessed value reductions would be less than five percent in most taxing districts examined along the SIU 7 corridor, except for the R-II School District and the New Florence and Jonesburg-High Hill Fire Districts in Montgomery County.

During construction, loss of business caused by the construction would be mitigated by the temporary nature of the impacts and the fact that directional signage and access would be maintained. However, in the urban areas such as Warrenton, Wright City and Wentzville, these impacts may be more noticeable given the higher amount of local patronage and nearby business competition that would not be impacted by the construction. From a long-term perspective, case studies have suggested that population centers of 2,000 persons or more typically do not experience long-term losses of business due to improvements. Regardless of the degree of impact, the preferred alternative would have the additional benefit of promoting the growth of existing I-70 businesses through higher traffic volumes and improved access, at least for those businesses that would not be displaced by the improvements.

Without exception, each county and each community within SIU 7 regards I-70 as a prime source of its socioeconomic livelihood. This holds true whether the community has a comprehensive plan in place or not. As these communities continue to grow and develop, their desire is to channel this development to existing centers of commercial and residential activity – in this case I-70. Through their comprehensive planning efforts, development at each interchange has been, and continues to be, encouraged to maximize commercial development catering to residents and travelers along the interstate. Ensuring that the I-70 corridor provides the necessary level of service as to not hinder the community's growth, validates the relevancy of the SIU7 project as it pertains to economic growth and development.

J6I0624: The Wentzville and Route Z interchange improvements and the NSRR bridge replacement would result in an improved level of service or maintenance at an acceptable level for future economic growth and development in the area. As noted above in the existing highway conditions, several commercial businesses rely on the traffic corridors in the project area which include strip malls, restaurants, car dealerships, and retail. More recent developments along Mar-Le Drive include a hotel, commercial properties, and multi-family residential.

4b) COMMUNITY IMPACTS—ENVIRONMENTAL JUSTICE

Is there an impact to this resource? YES [ ] NO [X]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: To assess potential changes in population since completion of the Second Tier EIS, demographic data were obtained from the 2000 and 2010 U.S. Census for comparison purposes. Population data are provided for

the counties within the study corridor and for the State of Missouri to better understand the social trends in the corridor.

Relative to total population, between 2000 and 2010, the combined population of Montgomery, Warren, and St. Charles counties grew from 320,544 to 405,234, an increase of 26.4 percent, less than the 31.5 percent increase reported in the Second Tier EIS. Between 2000 and 2010, the population in the State of Missouri increased by 7.0 percent to 5,988,927. The three counties accounted for 5.7 percent of the state's total population in 2000 and 6.8 percent in 2010. See Table 3.

Area	2000 Population	2010 Population	Percent Change 2000-2010
Montgomery County	12,136	12,236	+0.8
Warren County	24,525	32,513	+32.6
St. Charles County	283,883	360,485	+27.0
Total	320,544	405,234	+26.4
State of Missouri	5,595,211	5,988,927	+7.0

Table 3: 2000-2010 County Population
Source: U.S. Census Bureau 2000a, 2010a

The highest rate of growth among the three counties was recorded in Warren County with 32.6 percent. St. Charles County had a growth rate of 27.0 percent while Montgomery County experienced the lowest growth rate – less than 1 percent – substantially lower than that of the state. St. Charles County accounted for 89 percent in both 2000 and 2010. Table 4 below shows the 2000 populations and the corresponding 2010 populations for the communities within the SIU 7 corridor. Warrenton, Wentzville, and Lake St. Louis accounted for nearly 84 percent of the population of the communities in the SIU 7 corridor in 2000 and 89 percent in 2010. Lake St. Louis was the most populated community in the SIU 7 corridor in 2000. However, population in Wentzville experienced an increase of 321 percent in 2010 and was the most populated community that year at 29,070, doubling the population of Lake St. Louis. High Hill experienced a negative growth rate of -15.6 percent. Most of the population growth took place in the eastern portion of the SIU 7 corridor.

Area	Community	Population 2000	Population 2010	Percent Change 2000-2010
Montgomery	New Florence	764	769	+0.7
	High Hill	231	195	-15.6
	Jonesburg	695	768	+10.5
Warren	Warrenton	5,281	7,880	+49.2
	Truesdale	397	732	+84.4
	Wright City	1,532	3,119	+103.6
St. Charles	Foristell	331	505	+52.6
	Wentzville	6,896	29,070	+321.5
	Flint Hill	379	525	+38.5
	Lake St. Louis	10,169	14,545	+43.0
Total		26,675	58,108	+117.8

Table 4: 2000-2010 Community Populations
Source: U.S. Census Bureau 2000a, 2010a

Relative to age, nearly 60 percent of the population in the three counties was between 20 and 64 years of age in 2000 and 2010, which is also true for the State of Missouri. Approximately 30 percent of the population in the SIU 7 corridor was under 20 years of age. St. Charles County had a lower percentage of population over 65 years of age at 8.8 percent in 2000 and 11.2 percent in 2010. Truesdale and Wentzville were the communities with the greatest percentage of their population under 20 years of age at 34 percent. The communities of New Florence, High Hill, and Jonesburg in the western end of the SIU 7 study corridor have the greatest percentage of their population aged 65 and over.

Relative to employment, manufacturing is the industry that provides the highest percentage of the annual payroll in all three counties in the study corridor. It contributes to 31 percent in Montgomery County, 24 percent in Warren County, and 18 percent in St. Charles County. However, construction and other services, except public administration, are the industries with the largest number of establishments in Montgomery County; construction in Warren County; and retail trade and healthcare and social assistance in St. Charles County.

Relative to race, at the county level, most of the population in the SIU 7 corridor is White. St. Charles County had the most minority residents: 15,127 or 5.4 percent of the county's population in 2000 and 33,467 or 9.2 percent in 2010. The largest minority population in the SIU 7 corridor is the Black or African American population. In 2000, Blacks or African Americans represented 2.6 percent of the population, while this population increased to 2.9 percent in 2010. The remaining minority categories represent less than 3 percent in each county between 2000 and 2010. The statewide racial composition is similar to the three counties in the study corridor except for the Black or African American population, which was greater at 11.2 percent in 2000 and 11.6 percent in 2010. Statewide, the White population saw a slight decrease between 2000 and 2010, which translated into an increase of minority populations. The same trend was observed in all three counties, with minorities increasing in 2010.

The minority percentages in these counties are consistent with the percentages in the 10 communities as a whole. However, Wentzville had 12 percent of Black or African American residents in 2000, which is higher than in the other nine communities or in the three counties. This analysis used the block groups that make up the study corridor as of 2017. The 2017 block groups in Montgomery and Warren counties are the same as those in 2000. However, block groups slightly changed in St. Charles County.

Relative to poverty and income, at the county level, incomes are generally lower in Montgomery County and increase in Warren and St. Charles Counties. The median and median household incomes rise substantially from west to east, with St. Charles County outpacing the statewide numbers. These results show no general change from those described in the Second Tier EIS.

As described in the Second Tier EIS, rates of poverty decrease when moving from west to east. The only exception is female-headed households, which is slightly higher in Warren County than in Montgomery County.

At a county level, Montgomery County has the lowest median household income. The wealthiest block group in the study corridor is in St. Charles County with a median household income of $114,509. This block group is located south of I-70 in the eastern terminus, and it encompasses a portion of Lake Saint Louis. The block group

with the lowest median household income of $31,676 is also in St. Charles County, located north of I-70 and bounded to the west by US 61.

J6I0624: Demographic data for the Project J6I0624 project area was derived from the 2010 United States census and the American Community Survey 5-Year Estimates. This data is provided at the county and census tract areas to provide a summary of social and economic trends within the study corridor.

The four block groups that border the project corridor were used as the foundation for the existing conditions analysis. Specifically, the block groups were used in the evaluation of demographics and economics. The median household income for the block groups along the corridor ranges from $40,032 to $96,866; three of the six census tracts along the corridor have higher medians than that of St. Charles County at $78,380.

Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, enacted on February 11, 2014, requires each federal agency take the appropriate and necessary steps to identify and address disproportionately high and adverse human health or environmental effects of Federal projects on minority and low-income populations to the greatest extent practicable and permitted by law. Environmental Justice populations were identified through analysis of U.S. Census Bureau data at the county level and the Block Group level. Minority populations include American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, and Native Hawaiian or Other Pacific Islander. Low-income populations were calculated by adding the below poverty population and the near poor population, which are those populations between 100 percent and 149 percent of poverty level, as prescribed by the U.S. Health and Human Services poverty guidelines.

Concentrations of minority and low-income populations in the combined statistical area (CSA) were identified through analysis of the 2010 U.S. Census Bureau data and the 2009-2013 American Community Survey 5-year data at both the county and the block group level. Individual block group data was compared to the respective countywide data to determine whether any of the block groups will qualify as an “EJ Block Group” along the corridor. An EJ Block Group was defined to include any block group in which the minority or low-income population meets either of the following:

- The minority or low-income population in the block group exceed 50 percent
- The percentage of a minority or low-income populations in the affected area are higher than the average for St. Charles County.

The overall percentage of minorities in St. Charles County is 9.8 percent, and the low-income population in St. Charles County is 5.7 percent. Based on review of the Census Bureau and American Community Survey data in Table 5, there are no concentrated areas of low income and/or minority populations that would be disproportionately impacted by the proposed project.

	Total Populations	Minority Population	Low Income Population
Missouri	5,988,927	19.0%	15.3%
St. Charles	385,115	9.8%	5.7%
Census Tract 3121.92, BG 1	4,754	7.2%	2.7%
Census Tract 3121.93, BG 1	7,532	4.8%	4.3%
Census Tract 3121.94, BG 1	3,346	5.5%	6.2%
Census Tract 3121.95, BG 1	1,997	8.1%	9.5%
Census Tract 3121.95, BG 2	1,322	6.2%	10.5%

Table 5: Socio-Economic Data

Project impacts would be minimal because most property impacts would be partial acquisitions as permanent new right of way and temporary construction easements near the existing roadway edge. This project would affect 11 commercial parcels. Partial acquisition would not result in a significant impact to current operations on these parcels as acquisitions would be minor and primarily along the existing roadway edge. No full residential acquisitions or relocations are anticipated.

MoDOT will conduct easement acquisitions and provide services to all impacted households without discrimination in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (referred to as the Uniform Act) of 1970, as amended. An appraisal of fair market value is the basis for determining just compensation offered to the owner for property acquired. The Uniform Act defines an appraisal as a written statement independently and impartially prepared by a qualified appraiser setting forth an opinion of defined value of an adequately described property as of a specific date, supported by the presentation and analysis of relevant market information.

No minority or low-income populations are identified that would be adversely impacted by the proposed project as determined by the above data. Therefore, in accordance with provisions of E.O. 12898 and FHWA Order 6640.23A, no further EJ analysis is required.

4c) COMMUNITY IMPACTS—COMMUNITY COHESION

Is there an impact to this resource? YES [ ] NO [X]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: Community cohesion is generally defined as the degree to which residents have a sense of belonging to their neighborhood, their level of commitment to the community, or a strong attachment to neighbors, groups, and institutions, usually as a result of continued association over time. The impacts to community cohesion and neighborhoods can therefore be examined as to changes to residents, businesses, and parking availability due to displacements and partial acquisitions. In each community located directly along I-70, the highway itself serves as a barrier to community cohesion and it is expected that further disruption would be minimal.

Community cohesion is also affected by displacement and partial acquisitions of residential and nonresidential property. Non-residential properties might include retail trade, finance, insurance, services, government/non-profit and other types of non-residential property uses. Among the various impacts of the construction of a highway or other major transportation improvement project, the acquisition of real property, including

residences and businesses, is the action that often incurs the most concern among those directly involved. A displacement involves the full acquisition of a property and is defined as an area within which occupants of residential and nonresidential units would be displaced by the project and would be expected to relocate. A partial acquisition is when a small area of a property is acquired, but full use of the property and dwelling structures, including multi-family units, would remain. To make the property acquisition process as equitable as possible, laws including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601) and MoDOT's relocation program and relocation advisory assistance program which satisfies the requirements of Title VI of the Civil Rights Act of 1964, have been developed to ensure adequate consideration and compensation for the persons whose property is required for the project. While preliminary engineering for each alternative has been designed to minimize impacts to existing homes and businesses, some property acquisition is inevitable.

The communities within SIU 7 regard I-70 as a prime source of their economic livelihood. As these communities continue to grow and develop, their desire is to channel this development to existing centers of commercial and residential activity – in this case I-70. Through their comprehensive planning efforts, development at each interchange has been, and continues to be, encouraged to maximize commercial development to serve the needs of area residents and travelers along the interstate, and as such encourages community cohesion at these locations.

J6I0624: The proposed project would improve community cohesion by providing improved traffic movements at the Wentzville Parkway and Route Z interchanges and along the I-70 corridor. Existing travel patterns on I-70 and interchanges within the project area would not have a negative effect on community cohesion.

5) WETLANDS

Is there an impact to this resource? YES [X] NO [ ]
Change since the 2nd Tier EIS? More Impacts [ ] Same [ ] Fewer Impacts [X]

SIU 7: As was done previously, Level III Investigations, as defined by the United States Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual, were performed to validate the data previously gathered for the Second Tier EIS. The Level III investigations included reviewing data from the U.S. Fish and Wildlife Service (USFWS), National Wetland Inventory (NWI) maps, and the United States Geological Survey topography maps. Field investigations were not performed. In general, all previously identified sites within the SIU 7 corridor under Level III investigations were confirmed.

Summary of Wetlands from the 2002 Desktop Delineation

In general, all wetland sites were identified using MoDOT's Protocol for Identifying and Delineating Wetlands and Stream Impacts for the Interstate 70 Corridor Second Tier Environmental Documents and Preliminary Jurisdictional Wetland Determinations dated January 2002. The 2002 wetland features within the re-evaluation study area include 3 palustrine emergent wetlands (PEM) totaling 0.43-acres. Details are included in Table 6 below.

2005 ID	Cowardin Classification	Side of I-70	Area (ac.)
sw-94	PEM	South	0.29
sw-76	PSS	North	0.10
sw-99	PEM	North	0.04
		Total	0.43

Table 6: Wetlands Identified in the 2002 Desktop Delineation

J6I0624: A desktop review and on-site field delineation of the project study area was performed in June and August 2021 to determine and confirm the presence or absence of wetlands. Two wetland features totaling 0.22-acres were identified within the limits of Project J6I0624. These wetlands were both classified as PEM and maintain surface hydrology primarily from roadway runoff. Wetland 1 is an emergent wetland within the I-70 roadway easement that was likely artificially created with the construction of the adjacent road. This wetland does not maintain an apparent direct hydrological connection to a jurisdictional water of the U.S. (WOTUS). Therefore, Wetland 1 is likely considered to be non-jurisdictional by the USACE per the 2008 Rapanos guidance for "adjacent" wetlands.

Wetland 2 is an emergent wetland within a transmission line corridor that, while neighboring Waters 1, is separated by 2-3 feet of elevation with no apparent direct hydrological connection to Waters 1. While there is no 100-year floodplain associated with Waters 1, this elevation difference would likely put Wetland 2 above Waters 1 flood elevation during heavy rain events. Therefore, Wetland 2 is likely considered to be non-jurisdictional by the USACE per the 2008 Rapanos guidance for "adjacent" wetlands; however, a significant nexus analysis would need to be completed given the wetland's locational adjacency to Waters 1.

2021 ID	2006 ID	Cowardin Classification	Side of I-70	Area (ac.)
Wetlands that stayed the same since 2006				
Wetland 1 (1A)	sw-94	PEM	South	0.21
Wetland 2 (3A)	Sw-94	PEM	South	0.01
			Subtotal of unchanged wetlands	0.22

Table 7: Wetlands Identified in 2021 Delineation

Potential Impacts: Both wetland areas appeared to be non-jurisdictional due to their location in roadway ditches and lack of a direct physical surface connection to a jurisdictional water. Per conversation with the USACE, they concur with the jurisdictional determination; but formal concurrence will be issued following the

USACE's review of the documentation in early 2022. The proposed project would impact both wetlands, totaling 0.22 -acre of impact. Because they are non-jurisdictional, a Section 404 permit is not required.

6) STREAMS

Is there an impact to this resource? YES [X] NO [ ]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: As part of the desktop review of the SIU 7 corridor for Project J6I0624, investigations included reviewing available data from the local, state, and federal agencies. Field investigations were not performed. In a west to east direction, the following streams/creeks, 100-year floodplains, and regulatory floodways are present within the SIU 7 corridor:

- Smith Branch of Clear Fork (floodplain)
- Elkhorn Creek and tributaries (floodplain)
- Little Bear Creek North and tributaries (floodplain)
- Camp Branch of Camp Creek (floodplain)
- Big Creek and tributaries (floodplain and floodway)
- Hickory Lick Creek and tributaries (floodplain and floodway)
- Indian Camp Creek and tributaries (floodplain)
- Peruque Creek and tributaries (floodplain and floodway)

In general, all previously identified sites within the SIU 7 corridor were confirmed.

J6I0624: A desktop review and on-site field delineation of the project study area was performed in June and August 2021 to determine and confirm the presence or absence of open waters. Three erosional ditches, one stormwater ditch, and one stream feature was delineated within a forested portion of the Project footprint situated south of the I-70 roadway easement, west of a railroad spur and north of Interstate Drive.

Ditch-1: Ditch-1 initially conveys stormwater runoff water from a concreate culvert box that provides a subsurface connection to roadside swales located within the northern portion of the I-70 easement. Ditch-1 then becomes a deeply incised roadside stormwater conveyance that converges with erosional Ditch-2, then continues to the southwest to its connection with Waters 1. It was determined that Ditch-1 is an ephemeral stormwater ditch with a flow subject to heavy rain events only and is therefore likely considered to be non-jurisdictional by the USACE per the 2008 Rapanos guidance for excluded waters.

Ditch-2: Erosional ditch. Ditch-2 is a minor erosional ditch that originates from surface sheet flow before channelizing and quickly creating an approximately 2-foot deep gully. There is no apparent regular flow; indicating that, similar to Ditch-1, flow is based on the accumulation of water from a heavy rain event. Due to the ephemeral nature of Ditch-2 (i.e., low volume, infrequent, and short duration flow) the water feature is likely considered to be non-jurisdictional by the USACE per the 2008 Rapanos guidance for excluded waters.

Ditch-3, Ditch-4, and "Concrete Lined Ditch": Erosional and cement-lined ditches. Ditch-3 and Ditch-4 are erosional gullies originating from a roadside stormwater culvert that drain water from local upland swales along the north side of I-70 and connects to Waters 1. The jurisdictional determination of these three ditches

is similar to the Ditch-2 determination – ephemeral ditches, one erosional and two man-made, that convey waters from upland areas to another water. These features are likely to be considered non-jurisdictional by the USACE per the 2008 Rapanos guidance for excluded waters.

Waters 1: Unnamed tributary of Peruque Creek. The stream feature labeled "Waters 1" is indicated on publicly available topographic, National Hydrography Dataset (NHD), and NWI mapping as a relatively permanent water that maintains at least an intermittent flow regime and is a tributary of Peruque Creek. Waters 1 within the project footprint connects to Ditch-1 at its upper reach near Wetland 2 and exits the project footprint through a 96-inch corrugated steel culvert pipe that was placed in the stream in 2006 for the purpose of commercial development. The stream reconnects with its original pathway approximately 1,050 feet to the west along South Church Road. Although Waters 1 has been modified downstream by a culvert pipe, the feature upstream of the pipe continues to maintain characteristics of a likely jurisdictional tributary of Peruque Creek as defined under the 2021 NWPR. The delineated extent of Waters 1 is greater than the extent identified in publicly available mapping, and the delineated extent of Waters 1 should be considered the jurisdictional extent of the stream.

Potential Impacts: The three erosional ditches and the one stormwater ditch appeared to be non-jurisdictional due to their ephemeral nature. Project construction is anticipated to impact one jurisdictional stream feature that exhibits both ephemeral and intermittent flow regimes. The stream is considered a relatively permanent water and maintains a direct connection with (and is therefore a tributary of) the perennial stream, Peroque Creek located to the south. The currently proposed project construction activities and limits would result in approximately 377 LF (0.04 acres) of fill impacts within the stream's westernmost portion with the creation of a new stormwater ditch. Roadway sloping and associated installation of a 46-inch reinforced corrugated pipe would result in approximately 806 LF (0.13 acres) of fill impacts to the stream's central and eastern portions. Clean Water Act Section 404 permitting through the USACE for proposed stream impacts would be required and subsequent coordination for anticipated mitigation would be needed. The USACE has authorized impacts to the jurisdictional stream under a Nationwide Permit (NWP 14) for Linear Transportation Projects with the submittal of a pre-construction notification. Impacts will be mitigated through the purchase of in-lieu fee mitigation credits from the Land Learning Foundation (LLF). MoDOT will continue to coordinate with the USACE to meet the conditions of the permit and the mitigation requirements.

7) GROUNDWATER

Is there an impact to this resource? YES [ ] NO [X]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU7: The Cambrian-Ordovician aquifer is the main source of potable water in the study area. The Cambrian-Ordovician aquifer within the SIU 7 has a local freshwater flow system, which is nearly independent of the regional saline-water flow system normally associated with this formation. Water enters this local flow system by leakage from the overlying Mississippian aquifer and by infiltration.

The Second Tier EIS identified the wells known to exist within the study area. These were identified by Missouri Department of Natural Resources (MDNR) databases cross-referenced with parcel ownership data developed

for this project. Property owners whose name matched the well records were called to determine the location of the well on their property. A total of four private wells and two public wells exists within the construction limits for SIU 7.

The Second Tier EIS reports a single public water supply well affected by the Preferred Alternative (Alternative 1). Construction activities were not expected to have an adverse impact on the recharge zones for the Cambrian-Ordovician aquifer, the Mississippian aquifer, and the alluvial aquifer because the aquifer materials will remain on-site after construction operations. Wells encountered during construction will be closed by a registered well driller in accordance with state regulations.

J6I0624: Relative to well impacts, no impacts are expected because of the proposed project. Relative to groundwater, construction activities would not have an adverse impact on the recharge zones for the Cambrian-Ordovician aquifer, the Mississippian aquifer, and the alluvial aquifer because the aquifer materials would remain on-site after construction operations. Sizeable dewatering or depressurizing activities are not anticipated during construction, therefore temporary impacts on the groundwater system are not expected or would be minimal in isolated locations such as creeks/stream beds and other low-lying areas. No noteworthy changes in chemical characteristics of the surface material are anticipated and no degradation of water quality entering the aquifer is expected.

Using the most recent (2017) groundwater well data from MDNR shows there are 28 wells within 0.5-mile of the project area. Only two wells exist in the project area, but both are abandoned. See Figure 7 below for a map of the wells.

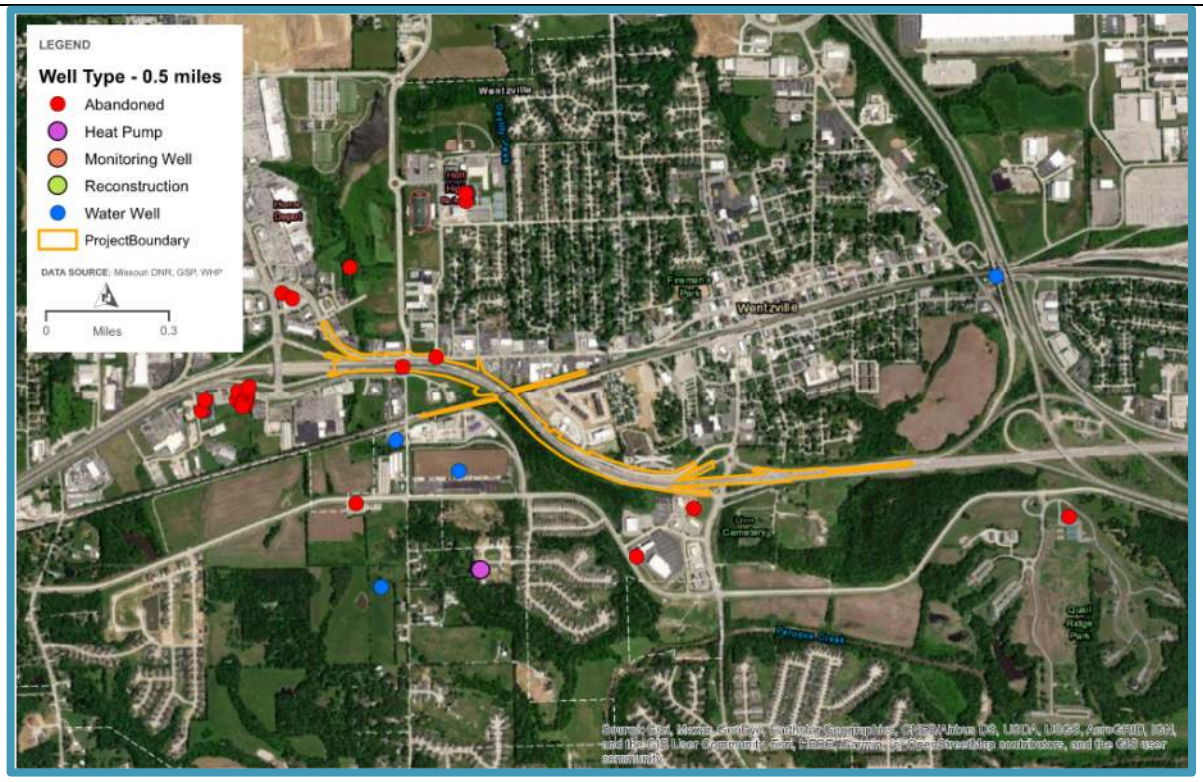


Figure 5: Groundwater wells within 0.5-mile of project area

7) FLOODPLAINS

Is there an impact to this resource? YES [ ] NO [X]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

SIU 7: A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) was performed to review existing floodplains and regulatory floodwalls within the I-70 corridor. In general, all previously identified sites within the SIU 7 corridor were confirmed.

J6I0624: According to current FEMA Nation Flood Hazard, layer mapping, the project limits are not mapped in the 100-year floodplain or the regulatory floodway.

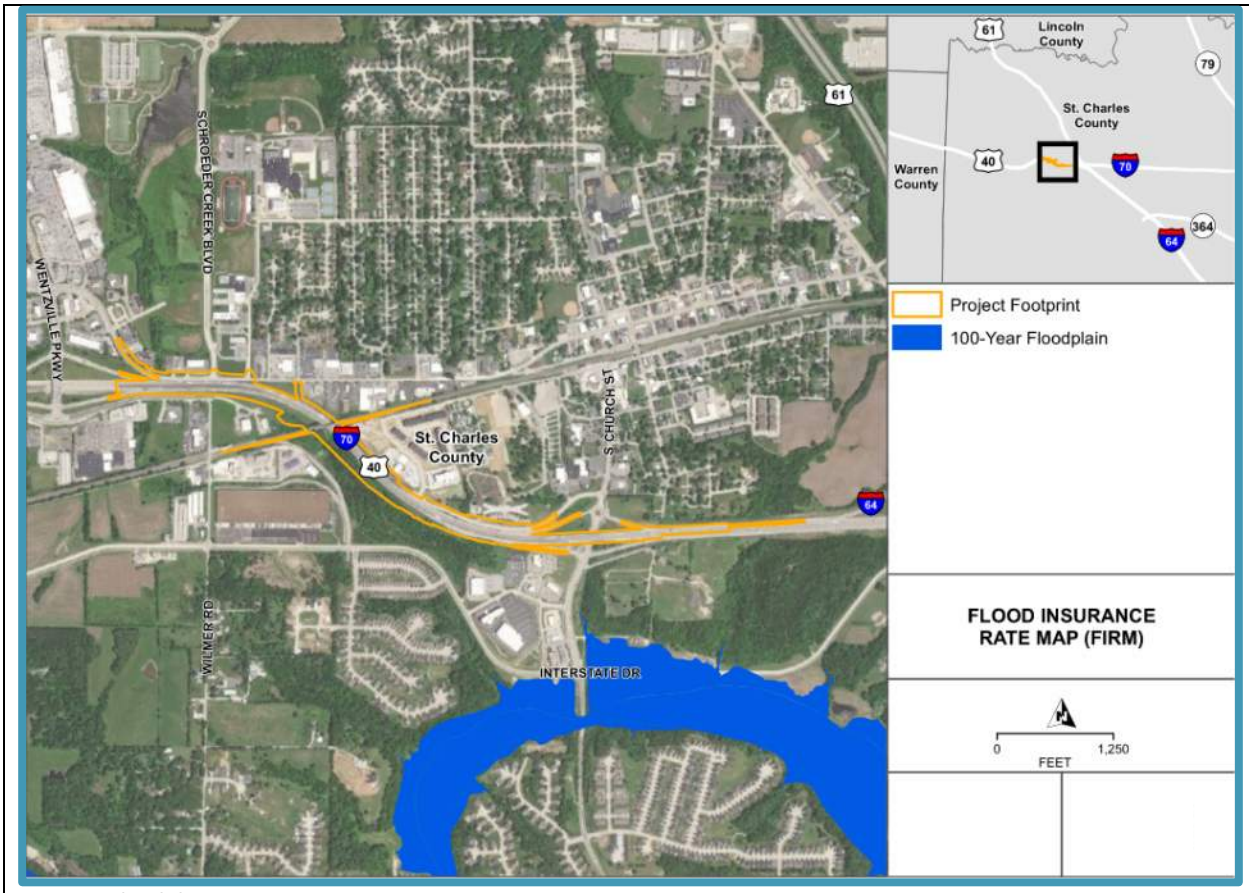


Figure 8: Floodplains

8) AIR QUALITY

Is there an impact to this resource? YES [ ] NO [X]
Change since the 2nd Tier EIS? More Impacts [ ] Same [X] Fewer Impacts [ ]

The Clean Air Act (CAA) requires adoption of air quality standards, quality control regions, and state implementation plans. The federal government established National Ambient Air Quality Standards (NAAQS) to protect public health, safety, and welfare from known or anticipated effects of sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. Missouri established additional criteria for hydrogen sulfide and sulfuric acid. Transportation can contribute to four of six NAAQS pollutants: ozone, carbon monoxide, particulate matter, and nitrogen dioxide. Transportation conformity with the NAAQS ensures federally funded or approved transportation plans, programs, and projects conform to air quality objectives established in State Implementation Plans. MoDOT is responsible for implementing the conformity regulation in nonattainment and maintenance areas.

Section 107 of the CAA requires the United States Environmental Protection Agency (US EPA) to publish a list of all geographic areas in compliance with the NAAQS as well as those not in compliance. This designation is made on a pollutant-by-pollutant basis for a geographic area. The proposed project is in an area where the SIP requires transportation control measures. St. Charles County within the Greater St. Louis area was designated as marginal in attainment on September 20, 2018 for the 2008 8-hour ozone. However, it was designated as marginal non-attainment for the 2015 8-hour ozone (USEPA 2019b).

SIU 7: US EPA's Green Book provides information regarding non-attainment areas for the criteria pollutants. This section only discusses National Ambient Air Quality Standards (NAAQS) attainment status that have changed since December 2004, when the Second Tier EIS was prepared. St. Charles County is in attainment for all criteria pollutants (USEPA 2019a).

J6I0624: Overall, EPA regulations for vehicle engines and fuels will cause emissions to decline over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate from 2010 to 2050, while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, FHWA, October 12, 2016).

The project is included in the East-West Gateway Council of Government's (EWGCOG's) 2022–2025 Transportation Improvement Program as Project 5903-13 – I-70 - Wentzville Parkway to MO Z - corridor improvements and thus meets the requirements of 40 CFR part 93 for transportation conformity. The project is not expected to generate large and permanent quantities of air pollutants. Fugitive dust and emissions from construction vehicles and equipment will occur but will be minor and temporary.

Construction activities may result in short-term impacts on air quality, including direct emissions from construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on local streets.

9) NOISE

Is there an impact to this resource? **YES [X] NO [ ]**
Change since the 2nd Tier EIS? **More Impacts [X] Same [ ] Fewer Impacts [ ]**

SIU 7: For the entirety of SIU 7, the land uses in the I-70 corridor are largely the same as they were when the Second Tier EIS was prepared. Further, current traffic volumes were also within the range used during the Second Tier EIS. Therefore, noise environs and anticipated impacts within the SIU 7 corridor are expected to be the same as previously reported.

J6I0624: At the initial concept level of design, potential noise-sensitive land uses were identified (see Figure 9 below), and then assessed for potential noise barrier placement if NAC is exceeded. Noise barriers do not typically work for isolated receptors. However, they are typically more successful for areas where receptors are clustered together. MoDOT Noise Policy requires at least a 5 dBA insertion loss for a minimum of two first-row, impacted receivers for noise abatement to be considered feasible. First-row receptors are noise-sensitive land uses that face the project roadways without substantial visual occlusion from traffic noise. Additionally, receptor parcels are required to abut the roadway R/W to be considered first-row. Receptors with developable intervening parcel(s) separating the receptor parcel from the abutting roadway R/W are considered second row or greater receptors. As shown on Figure 9, two first-row receivers are not located next to one another in the preliminary noise study zone. Therefore, even if noise impacts would occur, a noise barrier would not be feasible.

Figure 9 Noise Sensitive Receivers

A more detailed noise analysis was subsequently completed as design progressed. This analysis was conducted to evaluate the potential noise impacts associated with the proposed improvements along the I-70 Corridor from Wentzville Parkway to MO Route Z (Church Street). The noise analysis utilized computer models created with the FHWA TNM v.2.5 to predict existing and future noise levels and define impacted receptors within the project area.

The results of the noise analysis predict 30 traffic-related noise impacts (30 receivers representing 30 receptors) would occur under the Build Alternative; therefore, noise abatement was analyzed for the project. Barriers for all impacted receptors in the identified noise study areas were considered. However, no barriers qualified for feasibility or reasonableness evaluation because either the impacted receptor(s) are isolated, or the number of first-row receptors is insufficient per MoDOT policy. Final decision on the installation of an abatement measure shall be made upon completion of the project design, the public involvement process, concurrence with the MoDOT Traffic Noise Policy, and FHWA approval.

Temporary and localized noise level increases would occur due to the proximity of noise-sensitive receptors to project construction activities. MoDOT has special provisions for construction which require that all contractors

comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment is required to have mufflers installed in accordance with the equipment manufacturers' specifications.

10) VISUAL ENVIRONMENT

Is there an impact to this resource? **YES [ ] NO [X]**
Change since the 2nd Tier EIS? **More Impacts [ ] Same [X] Fewer Impacts [ ]**

SIU 7: As discussed in the Second Tier EIS, the current highway path through the landscape has already been established and has irrevocably impacted the surrounding landscape. The project area does not contain any notable viewsheds. The different alternatives are all along the current alignment, with only slight variation among them. Variation of visual impacts among the different alternatives will be minimal from both a driver's (view from the road) and occupants' (viewers of the road) point-of-view, based on the current aesthetic value of the surrounding environment.

J6I0624: The visual environment has remained unchanged since the Second Tier EIS. The proposed project J6I0624 primarily consists of widening and lengthening existing road segments. There may be minimal visual impact caused by the vertical alignment increase of NSRR over I-70; however, since the railway bridge already obstructs the visual quality, the change would be negligible.

11) THREATED AND ENDANGERED SPECIES

Is there an impact to this resource? **YES [X] NO []**
Change since the 2nd Tier EIS? **More Impacts [ ] Same [X] Fewer Impacts [ ]**

SIU 7: Because much of the land near and adjacent to the I-70 Corridor already exhibits appreciable amounts of disturbance and/or development, the Second Tier EIS reported that," there is minimal habitat to support wildlife and aquatic fauna, and there is no evidence of the presence of threatened or endangered species." The potential for secondary and cumulative impacts to listed threatened and endangered species in SIU 7 was considered to be low.

J6I0624: An official USFWS Information for Planning and Consulting (IPaC) online review was conducted for federally listed threatened and endangered species occurring in the project study area. A Missouri Department of Conservation (MDC) online Natural Heritage Review was also conducted. The IPaC auto-generated report is attached to this report in Appendix A. Federally listed species in the IPaC review included Gray Bat, Indiana Bat, Northern Long-eared Bat, and Decurrent False Aster. No critical habitats for these species were indicated in the IPaC report.

Indiana bats, Northern long-eared bats, and Gray bats may occur near the project area. These three species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas. HDR Engineering, Inc. conducted a habit survey in July 2021 and found numerous suitable roosting trees within forested areas east of the railroad bridge, south of I-70. Based on

the proposed construction limits of the project, the proposed project would infringe upon the identified roosting habitat; and tree clearing in this area would result in suitable bat roosting habitat loss.

Summary of Current Data to 2005 SIU 7 EA

Both the USFWS IPaC and the MDC Natural Heritage Program (MNHP) were used to determine changes in status conditions for the 2005 SIU 7 EA analysis and the 2021 Re-evaluation. In October 2019 a regulatory review of the study area was completed using IPaC (Consultation Code: 03E14000-2020-SLI-0215), with a follow up completed in April 2022 (Project Code 2022-0031987). The most recent review indicated that 4 federally listed threatened or endangered species potentially occur in the general vicinity of the study area. The review indicated that there is no federally designated critical habitat for any of the species known to occur in the area. Table 8 on the next page summarizes the data from the IPaC regulatory review. The IPaC official species list is included in Appendix C.

Species/Critical Habitat	Scientific Name	Federal Status[a]	2005 SIU 7 ROD Status[a]	2021 Re-Evaluation
MAMMALS				
Gray bat	*Myotis grisescens*	E	E	No Change from the 2005 SIU 7 ROD
Indian bat	*Myotis sodalis*	E	E	No Change from the 2005 SIU 7 ROD
Northern long-eared bat	*Myotis septentrionalis*	T		The species was listed as threatened in 2015; and proposed as endangered on March 23, 2022
FLORA				
Running Buffalo Clover	*Trifolium stoloniferum*	E	E	Delisted in 2021 due to recovery
Decurrent False Aster	*Boltonia decurrens*	T	T	No Change from the 2005 SIU 7 ROD
INSECTS				
Monarch Butterfly	*Danaus plexippus*	C		Species listed as warranted but precluded from listing in 2021.

Table 8: Federal IPaC Candidate, Threatened, and Endangered Species Summary Accessed November 2021
[a] T = threatened; E = endangered; C = Candidate

MDC's MNHP database indicates no species of concern are listed for St. Charles County.

Findings

Since the 2005 SIU 7 EA the Northern long-eared bat (*Myotis septentrionalis*) was listed as threatened. As of March 23, 2022, USFWS has proposed up-listing the species to endangered. The 2022 re-evaluation IPaC and MNHP data reviews now include the bat. In July 2021 a study was conducted by Baylee McLaughlin and Eric Mueller of HDR Engineering, Inc. within the project area for potential habitat and the presence of the Northern long-eared bat, Indiana bat, and Gray bat. On the southwest side of I-70, there were 517 trees or snags that were suitable bat summer roosting habitat. No evidence of bat activity was identified on either the railroad bridge or the I-70 overpass undersides. Neither the railroad bridge nor I-70 overpass are suitable winter or

summer bat habitat based on the structure type and lack of bat roosting evidence (staining, guano, etc.). No suitable habitat was observed during the walking survey on the northwest side of I-70. The area is primarily composed of invasive species and sporadic stands of Cedar trees (*Juniperus* spp.). The area lacks mature stands of trees, has less species diversity, and has a lower density of trees compared to the southwest side of I-70. No rock outcroppings, caves or crevices were identified within the project boundary.

Based on the proposed design construction limits, it is anticipated that the project would infringe upon this identified roosting habitat. Tree clearing in this area would result in suitable bat roosting habitat loss, and thus result in a "Likely to Adversely Affect (LAA)" designation by the USFWS per the current Programmatic Biological Opinion dated February 5, 2018. It is anticipated that approximately two acres of tree clearing would occur within 0 to 100 feet of the road edge and approximately 5 acres within 100 to 300 feet of the road edge for project construction purposes.

MoDOT consulted with the USFWS on March 14, 2022 to verify that the proposed project could rely on the aforementioned USFWS Programmatic Biological Opinion. USFWS reviewed the anticipated impacts, along with MoDOT's and FHWA's commitment to implement mitigation measures and confirmed in correspondence dated March 22, 2022 that the impacts are consistent with those analyzed in the Programmatic Biological Opinion. The attached letter from USFWS includes details of the required mitigation (The Conservation Fund in-lieu fee payment per the requirements of the Programmatic Biological Opinion) and concludes the USFWS consultation for the proposed project (Appendix C). MoDOT and FHWA will implement the required mitigation and reinitiate consultation in the event of changes to impacts, project modifications, and/or new listings of additional species that may be impacted by the proposed project.

Decurrent False Aster (*Boltania decurrens*) is found on moist, sandy, floodplains and prairie wetlands along the Illinois River. It relies on periodic flooding to scour away other plants that compete for the same habitat. A major cause for the decline in this plant is the excessive silting, which the 2021 wetland delineation report shows silt loam soils present. The project area is also outside the 100-year floodplain, so it is unlikely for this plant occur within the project area. MoDOT has made a no effect determination for Decurrent False Aster.

Monarch butterflies are found in a wide variety of habitats: fields and grasslands, roadsides, and urban and suburban plantings. Monarch butterfly is a "warranted but precluded" species, which means that while monarch butterflies would benefit from protection under the Endangered Species Act, other listings with higher priority take precedence. Therefore, the monarch butterfly is categorized as a candidate species. Neither Section 7 of the Endangered Species Act nor the implementing regulations for Section 7 contain requirements for federal agencies with respect to candidate species.

Migratory Birds

Migratory birds have been documented using bridges and other artificial roadway drainage structures, such as culverts, as nesting sites. As described in the IPaC review, the Migratory Bird Treaty Act of 1918 (MBTA) makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase or barter any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit

issued pursuant to Federal regulations, regardless of whether the bird is protected under the Endangered Species Act. "Take" refers to killing adults, eggs, or young of the bird species protected by the act. Though there no federally listed migratory birds occur in the project corridor, MoDOT understands the importance of the MBTA and conducts field checks involving impacts to the underside of bridge decks and the substructures for the presence of nesting birds. If birds are found nesting on a structure, MoDOT assesses and applies a job special provision, if necessary, to protect against disturbance or harm to any nests or birds during the active breeding season. In a worst-case scenario, MoDOT can apply any structures with active nesting to the Department of the Interior USFWS migratory bird depredation permit.

12) HISTORIC AND ARCHAEOLOGICAL SITES

Is there an impact to this resource? **YES [ ] NO [X]**
Change since the 2nd Tier EIS? **More Impacts [ ] Same [X] Fewer Impacts [ ]**

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to consider the effects on historic properties that their projects may cause. Historic properties are generally divided into architectural resources and archaeological resources. The National Register of Historic Places (NRHP) is the official list of the Nation's historic places worthy of preservation. Authorized by the NHPA, the National Park Service's National Register of Historic Places is part of the national program to protect America's historic resources.

SIU 7: Archaeological sites are protected by federal regulations. The Second Tier EIS states the existence of 94 cemeteries within a 10-mile-wide corridor centered on I-70. It also indicates the existence of 158 previously recorded archaeological sites within the I-70 corridor. Relative to architectural resources, sites listed in the NRHP for each of the counties within the SIU 7 corridor were identified. Sites marked with an asterisk have been added to the NRHP listing since preparation of the Second Tier EIS.

In Montgomery County:

- Farmers Mercantile Building – 872 Booneslick Road, High Hill – 04000604 – Certification June 16, 2004*
- High Hill School – Off U.S. 40, High Hill – 80002381 – November 14, 1980

In Warren County:

- Southwestern Bell Repeater Station – North Service Road and Bell Road - 07000039 – February 13, 2007*
- House of Ernest Schowengerdt – 308 E Booneslick Road – 80002397 – October 3, 1980
- Warren County Courthouse – Main St, Warrenton – 72000733 - March 17, 1972 - DEMOLISHED

In St. Charles County:

- Wentzville Tobacco Company Factory – 406 Elm St, Wentzville – 90001024 – July 5, 1990

J6I0624: A three-phase cultural resource study (archival review, architectural survey, and archaeological survey) was completed in August 2021 by Robin Jorcke of Archaeological Research Center of St. Louis Inc. to evaluate any significant previously recorded and identify new cultural resources that the proposed improvements could

impact. These resources include Precontact and historic archaeological sites, cemeteries, NRHP properties, and potentially significant architectural properties, structures, objects, cultural landscapes, and bridges.

The architectural survey found no NRHP eligible architecture in the Area of Potential Effects (APE). Four bridges within the APE were constructed before 1982. Three bridges (A4320, A4323, and A5800) within the APEs were exempted from the Section 106 process per the Interstate Highway System exemption. The fourth bridge, the railroad bridge, is recommended not eligible for listing in the NRHP as it is a common bridge type that does not exhibit "distinctive characteristics" of patterns of common features, the individuality of style or form, the evolution of style or form, or show a transition between "classes of resources" as required by the NRHP. One property had architectural resources within the APE. However, the property is recommended not eligible for listing in the NRHP under Criteria A, B, or C.

The archaeological survey did not identify any new Precontact or historic remains within the APE. Re-examination of one site revealed no additional cultural remains at the site, and it is recommended that the site is not eligible for listing in the NRHP under Criterion D.

No significant archaeological or architectural resources were located during the current work, and it is recommended that the I-70 improvement plans proceed in the APE. However, if changes are made from the current plans, a new determination should be made regarding the need for additional fieldwork.

The cultural resource study was submitted to the Missouri State Historic Preservation Office (SHPO) in November 2021. They concurred on December 13, 2021, with the determination of no historic properties affected, and that archeological site 23SC2150 and the assessed bridges are not eligible for inclusion in the NRHP (see Appendix C for the concurrence letter).

13) PUBLIC LANDS AND SECTION 4(f) AND 6(f)

Is there an impact to this resource? **YES [ ] NO [X]**
Change since the 2nd Tier EIS? **More Impacts [ ] Same [X] Fewer Impacts [ ]**

Section 4(f) of the Department of Transportation Act of 1966 protects publicly owned land of a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance. As noted in 23 CFR 774.3, a transportation project approved by FHWA may not cause anything beyond a minor (de minimis) impact to a Section 4(f) property unless there is no feasible and prudent avoidance alternative and all possible planning to minimize harm is conducted.

SIU 7: There are several parks located within the SIU 7 corridor. Those identified in the Second Tier EIS remain valid and no new additional parks have been added within a ½-mile of the SIU 7 corridor since the completion of the Second Tier EIS. Additionally, no new conservation areas have been added.

J6I0624: There are no parks located adjacent to the project corridor. The closest park is Memorial Park located approximately 0.75-mile east of the eastern limits of Project J6I0624. No impacts to parks or open spaces would occur because of the proposed project.

Section 6(f) is intended to protect parks and other recreational resources from conversion to other uses. The Section 6(f) park conversion process applies to those state, county, or local recreational resources that have received funding through the Land and Water Conservation Fund (LWCF) Act. The National Park Service makes the ultimate decision on whether to approve a conversion of land that has received funding under the LWCF Act.

SIU 7: LWCF grants are provided for recreational land acquisition and facility development; and some of the parks within the SIU 7 corridor have received these funds. Since the Second Tier EIS, Memorial Park in Wentzville has received funds for park renovation.

J6I0624: There are no Section 6(f) properties within the project limits and thus does not apply to this project.

14) HAZARDOUS MATERIALS SITES

Is there an impact to this resource? **YES [ ] NO [X]**
Change since the 2nd Tier EIS? **More Impacts [ ] Same [X] Fewer Impacts [ ]**

Hazardous materials are defined in a number of ways, depending on the applicable regulatory programs. In general, they are dangerous or potentially harmful to human health or the environment when not managed properly.

SIU 7: A public records review was conducted to locate properties known to contain or possess the potential for contamination along the I-70 SIU 7 study area. A reconnaissance survey was also conducted during the EIS to identify items or conditions that might indicate the presence of potential hazardous materials contamination. The record review focused on reasonably obtainable and publicly available records, including federal and state records. No sites with a high potential to impact the location of the highway were found within the I-70 SIU 7 study corridor.

Based on the results of a 2020 evaluation of the MDNR E-START database and a review of Google Earth imagery, no additional sites of concern within or directly adjacent to the project corridor are expected.

J6I0624: MoDOT's goals for addressing hazardous materials are to avoid unacceptable cleanup costs and legal liability and to comply with federal and state laws and regulations regarding cleanup.

Figure 10 displays the MDNR online E-START mapping data for the Project J6I0624 study area. The applicable reference guides are available at: https://dnr.mo.gov/ESTART/referenceguide.html

Figure 10: Missouri DNR E-Start Hazardous Substance Storage Tank Facilities.

There are two closed facilities on the northside of the Wentzville Parkway interchange which fall in the study area. There are several active commercial businesses which should not store any hazardous materials, however MoDOT will remain conscious of these locations.

MITIGATION AND COMMITMENTS

This section presents all the Environmental Commitments associated with the SIU 7 EIS. Commitments associated with SIU 7 as a whole and/or areas outside of the J6I0624 projects limits are not addressed as part of this re-evaluation document. How the commitments apply to Project J6I0624 are presented in **bold/italics** in the following.

1. Prior to any further project development in the vicinity of the Lake St. Louis Boulevard interchange, MoDOT will conduct a reevaluation of current and projected future land uses and future traffic projections.
   This commitment is not applicable to Project J6I0624 because Lake St. Louis Boulevard is not located in the project limits.

2. The mobile home park located near milepost 195 will not be impacted by the Preferred Alternative.
   This commitment is not applicable to Project J6I0624 because milepost 195 is not located in the project limits.

3. No buildings will be removed from the High Hill Historic District.
   This commitment is not applicable to Project J6I0624 because the High Hill Historic District is not located in the project limits.

4. Native American Tribes or Bands with an interest in the study area will be notified upon inadvertent discoveries of human remains, historic objects or funerary objects.
   This is a Standard Construction Commitment and is applicable to Project J6I0624 to be carried forward.

5. Prior to project development, the possible cemetery noted in the archaeological inventory (but outside of the Preferred Alternative) should be surveyed.
   This commitment is not applicable to Project J6I0624 because the cemetery is not located in the project limits.

6. A survey to identify trees suitable for Indiana bat roosting habitat will be performed in the area of the Preferred Alternative. To avoid potential impact to the bat during the period when the bat will most likely use these habitats, MoDOT will not cut suitable maternity roost trees during the period April 1 to September 30. If cutting of suitable trees during that period is unavoidable, biologists will perform a complete assessment of the habitat in advance to certify that the habitat is not currently in use by the bat.

   New Commitment: A tree survey has been completed and confirmed the presence of suitable roosting habitat within the corridor for the Indiana bat and the Northern long-eared bat, which has been listed since completion of the Second Tier EIS. MoDOT will ensure a Winter Tree Clearing Job Special Provision (JSP), requiring removal of all suitable roost trees between November 1 and March 31, will be included in the contract. Additionally, MoDOT will implement the required additional mitigation (The Conservation Fund in-lieu fee payment per the requirements of the Programmatic Biological Opinion) and will reinitiate consultation with the USFWS in the event of changes to impacts, project modifications, and/or new listings of additional species that may be impacted by the proposed project. The agreement with The Conservation Fund is currently in review, and mitigation payment will follow.

7. Stream flows will not be interrupted and all temporary in-channel fills that have the potential to impound water will be contained within culverts.
   This is a Standard Construction Commitment and is applicable to Project J6I0624 to be carried forward.

8. Wildlife crossings will be investigated in final design, if applicable.
   Wildlife crossing would not be appropriate in this application. Therefore, this commitment is not applicable to Project J6I0624.

9. MoDOT will consider the appropriate currently adopted design criteria and design standards.
   This is a Standard Construction Commitment and is applicable to Project J6I0624 to be carried forward.

10. MoDOT will incorporate suitable and reasonable Intelligent Transportation Systems (ITS) elements into the Improve I-70 program.
    MoDOT currently operates traffic cameras within the limits of Project J6I0624. Traffic cameras are located either side of the project at Wentzville Parkway and Route Z interchanges. No other ITS elements are currently warranted within the project limits.

11. MoDOT will consult with emergency responder agencies involved in traffic incident management on I-70 in future design and maintenance of traffic plan development as the Improve I-70 program progresses.
    This is a Standard Construction Commitment and is applicable to Project J6I0624 to be carried forward.

12. MoDOT will construct frontage roads for the purposes of maintaining existing local service connections and maintaining existing access to adjacent properties, where warranted. The frontage roads as proposed in the Frontage Road Master Plan may be constructed in the future as needs arise and as funding becomes available. Where reasonably possible, any eight-foot (2.4 meters) paved shoulder along new frontage road construction could serve as a one-way bicycle facility.
    Frontage roads are already in existence within the Project J6I0624 project area. The existing frontage roads will be maintained with the project; therefore, this commitment is not applicable to Project J6I0624.

13. MoDOT will develop a maintenance of traffic plan for the construction phases. Through traffic will be maintained along I-70 and at access points to the interstate from cross-roads. It is likely that some interchange ramps and cross-roads will be closed and temporary detours required. Construction schedules, road closures and detours will be coordinated with police forces and emergency services to reduce impact to response times of these agencies.
MoDOT will ensure compliance.

14. MoDOT will coordinate with project area businesses regarding access issues, via direct communication throughout the construction period.
MoDOT will ensure compliance.

15. MoDOT will coordinate with local public service and utility service providers during the final design phase of the project and during the construction period to minimize infrastructure relocation, modifications and connectivity requirements.
MoDOT will ensure compliance.

16. During right of way acquisition and relocations, MoDOT will assure that this will be accomplished in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. MoDOT is committed to examining ways to further minimize property impacts throughout the corridor, without compromising the safety of the proposed facility, during subsequent design phases.
MoDOT will ensure compliance.

17. During construction, MoDOT's specifications, Missouri Department of Natural Resources (MDNR) Solid Waste Management Program, and MoDOT's Sediment and Erosion Control Program will all be followed.
MoDOT will ensure compliance. If an unknown site is encountered during construction, the Contractor will cease work at the site and will take measures as necessary to eliminate or minimize any adverse environmental consequences. The MDNR and U.S. Environmental Protection Agency will be contacted for coordination and approval of required activities.

18. Through MoDOT's approved Pollution Prevention Plan for the National Pollutant Discharge Elimination System (NPDES), the control of water pollution will be accomplished. The plan specifies berms, slope drains, ditch checks, sediment basins, silt fences, rapid seeding and mulching and other erosion control devices or methods as needed. In addition, all construction and project activities will comply with all conditions of appropriate U.S. Army Corps of Engineers and Missouri Department of Natural Resources permits and certifications.
MoDOT will ensure compliance.

19. MoDOT has special provisions for construction which require that all contractors comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment is required to have mufflers installed in accordance with the equipment manufacturers' specifications.
MoDOT will ensure compliance.

20. MoDOT is committed to minimize lighting impacts. Efficient lighting and equipment will be installed, where appropriate, to optimize the use of light on the road surface while minimizing stray light intruding on adjacent properties.
MoDOT will ensure compliance.

21. To minimize impacts associated with construction, pollution control measures outlined in the MoDOT Standard Specifications for Highway Construction will be used. These measures pertain to air, noise and water pollution as well as traffic control and safety measures.
MoDOT will ensure compliance.

22. MoDOT will review the Natural Heritage Database and coordinate with the U.S. Fish and Wildlife Service periodically during the project development process to identify any new locations of threatened and endangered species.
MoDOT will ensure compliance. Coordination between MoDOT and USFWS will continue. No federal money or Federal authorization for construction will not be granted until regulatory obligations have been satisfactorily completed.

New Commitments:
Pursuant to the Migratory Bird Treaty Act, MoDOT will inspect structures for nests prior to construction. If active nests (those with eggs or young) are observed, measures will be taken, including seasonal demolition restrictions, to prevent killing birds and destruction of their eggs and to avoid conflict with the Migratory Bird Treaty Act. In a worst-case scenario, MoDOT can apply any structures with active nesting to the Department of the Interior USFWS migratory bird depredation permit.

23. Landscaping in the right of way will include native plant species and other enhancements in accordance with the statewide I-70 Corridor Enhancement Plan to the maximum extent possible. In accordance with MoDOT standards, new seed mixes, mulch and plant materials will be free of invasive weedy species to the extent possible. Where appropriate, MoDOT will partner with the Missouri Department of Conservation (MDC) Grow Native program and implement the establishment of native vegetation along highway rights of way.
MoDOT will ensure compliance. In undeveloped project areas, MoDOT will follow standard policy of planting cool season grasses adjacent to the right of way and plant warm season natives outside of the clear zone.

24. MoDOT has developed a Conceptual Wetland Mitigation Plan to compensate for wetland impacts, and appropriate mitigation will be adhered to in accord with the plan and any Section 404 permit(s) acquired.
This commitment is not applicable because there are no jurisdictional wetlands within the Project J6I0624 project corridor.

New commitment: MoDOT has obtained a Section 404 permit for impacts to a jurisdictional stream channel located within the Project J6I0624 and will coordinate with the USACE to meet the conditions of the permit and the mitigation requirements, which includes the purchase of stream credits from the Land Learning Foundation's Missouri In-Lieu Fee Program.

25. MoDOT will continue to coordinate with the SHPO and comply with the existing executed Programmatic Agreement that complies with the National Historic Preservation Act.
MoDOT will ensure compliance. MoDOT will coordinate with SHPO related to the Section 106 process should design modifications and/or construction activities result in impacts to historic properties.

26. When trees are removed, MoDOT will implement the tree replacement policy and plant two trees for every tree removed that has a diameter greater than six inches at breast height.
MoDOT no longer has a tree replacement policy in place. Trees will only be removed from the area required for the bridge and interchange configuration. No open space for planting will be created. As a result, MoDOT will not implement replacement of removed trees.

27. Where feasible, MoDOT's design process will minimize impacts to floodplains.
This commitment is not applicable because there are no floodplains within the Project J6I0624 project corridor.

28. Mitigation efforts to prevent the rise in flood elevation of each of the water bodies affected will be employed in an effort to obtain a No-Rise Certification permit from the State Emergency Management Agency (SEMA).
This commitment is not applicable because there are no floodplains within the Project J6I0624 project corridor.

29. MoDOT will continue to coordinate with the Natural Resources Conservation Service (NRCS) to determine appropriate mitigation measures for the loss of Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP) lands.
This commitment is not applicable because there are no CRP or WRP lands within the Project J6I0624 project corridor.

30. Plans for suitable pedestrian, bicycle and wheelchair access across I-70 will be developed during the design of the interchanges.
The City of Wentzville's Comprehensive Plan Update includes planned trails or accommodations along the frontage roads of the I-70 corridor, including within the limits of the J6I0624 project. Ongoing coordination efforts will be carried out by MoDOT as the project progresses into more detailed engineering.

31. The MoDOT Noise Policy will be used to address noise impacts. Where appropriate, possible noise abatement types and locations will be presented and discussed with the benefited residents during the preliminary design phase. Noise abatement measures will be considered that are deemed reasonable, feasible and cost effective.
Barriers for all impacted receptors within the Project J6I0624 corridor were considered. However, no barriers qualified for feasibility or reasonableness evaluation because either the impacted receptor(s) are isolated, or the number of first-row receptors is insufficient per MoDOT policy. Final decision on the installation of an abatement measure shall be made upon completion of the project design, the public involvement process, concurrence with the MoDOT Traffic Noise Policy, and FHWA approval.

32. If there are changes in the project scope, project limits, existing conditions, pertinent regulations or environmental commitments, MoDOT must re-evaluate potential impacts prior to implementation. Environmental commitments are not subject to change without prior written approval from FHWA.
MoDOT will ensure compliance.

33. New Commitment: As the project progresses, public meeting and stakeholder meetings will be held to educate stakeholders about the project and to receive input from them. Public input opportunities such as these meetings will be sent to local newspaper, television, and radio stations through a press release, social media, and through email notifications.

8 Re-Evaluation Conclusion

Resource	2021 Expected Impact	Change Since 2006 EIS
Land Use	No	Same
Prime and Unique Farmland	No	Same
R/W Acquisition and Displacements	Yes	More
Economic Growth and Development	No	Same
Environmental Justice	No	Same
Community Cohesion	No	Same
Wetlands	Yes	Fewer
Streams	Yes	Same
Groundwater	No	Same
Floodplains	No	Same
Air Quality	No	Same
Noise	Yes	More
Visual Environment	No	Same
Threatened and Endangered Species	No	Same
Historic and Archaeological Sites	No	Same
Public Lands and Section 4(f) and 6(f)	No	Same
Hazardous Materials Sites	No	Same

Table 9: Summary of Expected Impacts to Resources from Project J6I0624.

Most of the impacts identified in the I-70 Second Tier EA SIU 7 would remain the same, including those associated with ***Project J6I0624***. The social and environmental setting along I-70 in the vicinity of Wentzville has remained relatively unchanged and the adjustments to the preferred alternative would not result in significantly greater impacts than those identified in the original NEPA documents. While the proposed project may result in human or natural resource impacts, these impacts would be permitted and/or mitigated as required.

This re-evaluation document demonstrates that the Second Tier EIS/ROD remains valid. The Selected Alternative for Project J6I0624 continues to meet the purpose and need identified in the Second Tier EIS. Therefore, a supplemental study of the EIS is not necessary for the current project.

I-70 Second Tier EIS Re-Evaluation
Section of Independent Utility 7 and Project J6I0624: I-70 WENTZVILLE PARKWAY TO WEST OF I-64/ROUTE 61
ST. CHARLES COUNTY MISSOURI

Submitted Pursuant to 42 U.S.C. 4332(2)(c), 49 U.S.C. 303
by the U.S. Department of Transportation
Federal Highway Administration and the
Missouri Department of Transportation

RAEGAN M BALL

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Date: 2022.05.06 15:55:16 -05'00'

Date of Approval	For FHWA	Title

Appendix A

Concept Study Report

MEMORANDUM

Missouri Department of Transportation

DATE: May 8, 2020

TO: Thomas Blair, P.E.
District Engineer

FROM: Stacey Smith, P.E.
Project Manager

SUBJECT: District St. Louis - Design
Route I-70, St. Charles County
I-70 Improvements
Job No. J6I0624
Conceptual Study Report (Draft)

Purpose of Study

The purpose of this conceptual study was to investigate improvements of I-70 corridor in St. Charles County, from west of Wentzville Parkway to east of the Route Z interchange. These improvements include options to address the Norfolk Southern Railroad Bridge (NSRR) over I-70 in Wentzville. The corridor has experienced ever increasing congestion along the mainline alignment due to the heavy traffic and substandard alignment beneath the NSRR structure. The study investigated three alternatives to improve safety and decrease congestion by revising the mainline I-70 alignment, widening the I-70 template, and addressing the NSRR structure.

Following a Record of Decision of the Second Tier I-70 Environmental Impact Study (EIS) completed in April of 2006, the Conceptual Study Report is the next step for this segment of I-70. As part of this study, HDR revisited and updated the original EIS document for Section of Independent Utility (SIU) No. 7, which encompasses the project limits, for any changes since creation of the original document or impacts from the proposed project.

Roadway, traffic and railroad impacts associated with each option were studied, along with the development of estimated construction costs. Segments of West Pearce Boulevard and Mar-Le Drive adjacent to north side of I-70 were also investigated.

The Conceptual Study Recommendations can be found on Page 70 of this report.

REMARKS:

☒ Major Route ☐ Minor Route

DESIGN TRAFFIC
I-70 Eastbound

ADT (Const.)	= 43,330
ADT (Design)	= 54,162
DHV	= 3,899
D	= 0.6
% Trucks	= 15%
Operational (Posted) Speed	= 65 mph

CONCEPTUAL COST ($1,000's)

Utilities:	460
Right of Way:	1,208
Construction:	34,213

DESIGN TRAFFIC
I-70 Westbound

ADT (Const.)	= 43,786
ADT (Design)	= 54,732
DHV	= 3,940
D	= 0.6
% Trucks	= 15%
Operational (Posted) Speed	= 65 mph

EXISTING FACILITIES

Roadway	Location	Pavement		Year Built	Roadbed Width	Min. R/W Width	Access Control
		Width	Type				
I-70		12'	Asphalt Resurfacing over 9" Concrete Pavement	1959 (Original) 2003 (Overlay)	Varies 85' to 124'	300'	Full
Ramp 3	WB I-70 to Wentzville Parkway	18'-36'	13" Concrete	2000	30'- 48'	N/A	Full
Ramp 4	Wentzville Parkway to EB I-70	1-18'	13" Concrete	2000	30'	N/A	Full
Ramp 1	Route Z to WB I-70	1-18'	10" Concrete	2006	30'	N/A	Full
Ramp 2	EB I-70 to Route Z	1-18'	10" Concrete	2006	30'	N/A	Full

EXISTING BRIDGES

No.	Location	Type	Length	Width	Year Built	Condition Ratings		
						Deck	Super	Sub
A5800	Wentzville Parkway	Cont. PL Girder	269'-0"	89'-4"	2001	7	8	7
S45.25 (L-154)	NSRR	Cont. Comp. PL Girder	168'-0 ½"	15'-0"	Plans Dated 1949	Unk	Unk	Unk
A4320	EB I-70 at Route Z	P/S Conc. I-Gdr Spans	151'-0"	42'-1"	1985	7	7	8
A4323	WB I-70 at Route Z	P/S Conc. I-Gdr Spans	141'-0"	42'-1"	1985	7	7	8

EXISTING CONDITIONS

I-70 MAINLINE, WENTZVILLE PARKWAY INTERCHANGE, NORFOLK SOUTHERN RAILROAD BRIDGE, ROUTE Z INTERCHANGE

Interstate I-70, between Wentzville Parkway and Route Z, consists of two thru lanes with 4' (min.) inside shoulders and 10' (min.) outside shoulders in both the eastbound and westbound directions (typical outside the limits of the NSRR Bridge). The horizontal geometry of I-70 within the project limits consists of two horizontal curves (1926' radius and 2491' radius) in order to pass beneath the existing NSRR Bridge (S45.25), see **Figure 1**.

Figure 1 - Existing I-70 Mainline Alignment

The median transitions from a 40’ grass median entering from the west to a concrete median barrier which starts approximately 2400’ east of Wentzville Parkway interchange. From this location, the concrete barrier extends to the east along the centerline of I-70 through the I-64 interchange. The posted speed limit along the corridor is 65 mph. The roadway profile provides substandard 15’-8” and 15’-10” vertical clearance, in the eastbound and westbound directions respectively. The limited span lengths of the existing railroad structure only allow for 2 lanes of traffic in each direction with minimal shoulders, see **Figure 2**.

Figure 2 - Existing NSRR Grade Separated Crossing

The combination of the narrow template, horizontal curvature and substandard vertical clearance create significant congestion as well as limit the possibility of even minor improvements. The profile grade is a gentle down grade (approximately 0.6%) from west to east. Side slopes vary along the corridor due to the numerous appurtenances that have been added, but generally the drainage pattern of this section of the corridor flows from northwest to southeast.

The property abutting the fully controlled access right of way is generally commercial in nature. The existing railroad right of way serves as a divider with respect to access and development within the project limits.

The Wentzville Parkway interchange is a standard diamond configuration with signalized ramp terminal intersections. Commercial development is present in all four quadrants of the interchange. West Pearce Boulevard serves as the north frontage road and is located approximately 1,000 feet north of I-70. Wentzville Parkway currently ends at Veteran’s Memorial Parkway. Veteran’s Memorial Parkway serves as the south frontage road and is located approximately 350’ south of I-70. An upcoming project for improvements on Wentzville Parkway will attempt to alleviate issues with the closely spaced signalized intersections at the southern ramp terminal and Veteran’s Memorial Parkway. This project will reconstruct the southern half of the interchange, install a roundabout in the southwest quadrant, and extend Wentzville Parkway south of Veteran’s Memorial Parkway, see **Figure 3**.

Figure 3 - Preliminary Wentzville Parkway Interchange Improvements (by others)
(Interchange layout likely to be modified as separate design progresses)

Between Wentzville Parkway and the west side of the railroad, West Pearce Boulevard serves as the north frontage road along I-70. Commercial business uses along this roadway include strip malls, fast food restaurants, car dealerships, and other retail functions. West Pearce Boulevard continues east towards downtown Wentzville. Veteran's Memorial Parkway serves as the south frontage road in this area. Commercial business include big box farm store, restaurants, car dealership, and equipment sales companies. Veteran's Memorial Parkway does not continue eastbound and provides no local connection to the east of the railroad property.

Between the east side of the railroad and Route Z, Mar-Le Drive serves as the north frontage road and no frontage road exists along the south side of I-70. Along the south side of I-70, MoDOT currently owns a large, heavily wooded parcel that contains no development. Recent developments along Mar-Le Drive include a hotel, commercial properties, and multi-family residential. Mar-Le Drive provides a connection to Route Z, just north of the interchange with I-70.

The Route Z interchange is a standard diamond configuration. The northern ramp terminal intersection is a multi-lane roundabout and the southern ramp terminal is an unsignalized intersection with Route Z. Commercial development is present in the southwest quadrant, but heavy commercial activity is not present at this interchange.

The Wentzville Parkway interchange contains existing high mast lighting. Continuous lighting exists along the eastbound lanes of I-70 between Wentzville Parkway and the Norfolk Southern Railroad Bridge. Route Z has lighting at the entrance and exit gores only. The corridor in this area only contains ground mounted signage.

As-built plans for the roadway and affected structures are included in Appendix A.

PROPOSED DESIGN

Roadway	Design Speed	No. & Width Of Lanes	Roadbed Width	Right of Way	
				Width	Control
I-70	65	8-12’ lanes 12’ shoulders	150’	N/A	Full
West Pearce Boulevard	35	3-12’ lanes 2’ C&G	40’	N/A	N/A
Wentzville Parkway Ramp 3	50	2-12’ lanes 4’-8’ shoulders	36’	N/A	Full
Route Z Ramp 1	50	1-18’ lane 4’-8’ shoulders	30’	N/A	Full
Route Z Ramp 2	50	1-18’ lane 4’-8’ shoulders	30’	N/A	Full

BRIDGE REPLACEMENT: NORFOLK SOUTHERN RR BRIDGE OVER I-70					
Number and Length of Spans	Total Length	No. & Width of Lanes	Deck Width	Girder	
				Type	Depth
(50.5’)(117.3’)(117.3)(99.5’) Permanent	385’-0 ½”	1 Track	22’-0”	Simple PL Girder	5’-8 ½”
7@(48’) Temporary	337’-7”	1 Track	10’-0”	Simple PL Girder	3’-3 3/8”

NOTE: Initial coordination with Norfolk Southern RR has occurred during preparation of this Conceptual Study. It is anticipated that this coordination will continue throughout the design process and may result in some changes to the proposed replacement of the NSRR structure. Though it has not been agreed upon at this phase, the Conceptual Cost Estimate, included in Appendix D, accounts for construction of additional substructure to support the future widening of the bridge superstructure by others.

BRIDGE REHABILITATION AND WIDENING: I-70 OVER ROUTE Z					
Number and Length of Spans	Total Length	No. & Width of Lanes	Deck Width	Girder	
				Type	Depth
A4320: 3 spans (49’-59’-42’)	151’-2 3/4”	3-12’	62’-2 ½”	Type 3 Precast Conc.	3’-3”
A4323: 3 spans (44’-59’-37’)	141’-2 3/4”	3-12’	62’-2 ½”	Type 3 Precast Conc.	3’-3”

ALTERNATIVE 1: RELOCATING I-70 OVER NORFOLK SOUTHERN RAILROAD

Proposed Improvements:

I-70 Mainline:
In order to improve safety and to allow for an increase in the number of eastbound and westbound traffic lanes, HDR investigated the relocation of I-70 approximately 250 feet to the southwest, see **Figure 4**. Relocated I-70 will span over the existing NSRR alignment, providing a minimum 23'-0" of vertical clearance. This alternative requires an extensive amount of MSE walls, or similar earth retention systems, to accommodate the substantial grade raise (50 feet plus) over the existing I-70 alignment. The overall improvements will extend from just east of the Wentzville Parkway interchange to the termini of the eastbound I-64/ Route 40/61 on ramp to eastbound I-70. The westbound off ramp to Wentzville Parkway will be partially reconstructed and the two western ramps of the Route Z interchange will be completely reconstructed. An auxiliary lane will be constructed connecting the Wentzville Parkway and Route Z on and off ramps. The I-70 Bridges (A4320 and A4323) over Route Z will also be widened with an additional lane and new shoulders in each direction to accommodate the new I-70 template. I-70 will be restriped between Route Z and the eastbound I-64/ Route 40/61 on ramp to accommodate the additional lane work. There is existing pavement in place to accommodate the restriping work.

Figure 4 - I-70 Mainline Realignment (Over)

The proposed typical roadway section of I-70 consists of a 12' inside shoulder, 3-12' through lanes, a 12' auxiliary lane between Wentzville Parkway and Route Z, and a 12' outside shoulder. This template is applicable for both the eastbound and westbound directions, see **Figure 5**.

The MSE walls and I-70 bridges over the NSRR will be located to accommodate an additional 12' of horizontal clearance in each direction beyond the roadway template described above. This additional clearance is noted in the I-70 EIS document to account for a possible lane addition in the future. With the expected life span of the new railroad crossing and the close proximity to the I-70/I-64 Interchange, it was prudent to look beyond the typical 30 year design time frame when setting the structure limits. This will allow for construction of a future lane without having to reconstruct MSE walls and allow widening of the proposed bridges over the NSRR and still meet the current minimum vertical clearance requirements.

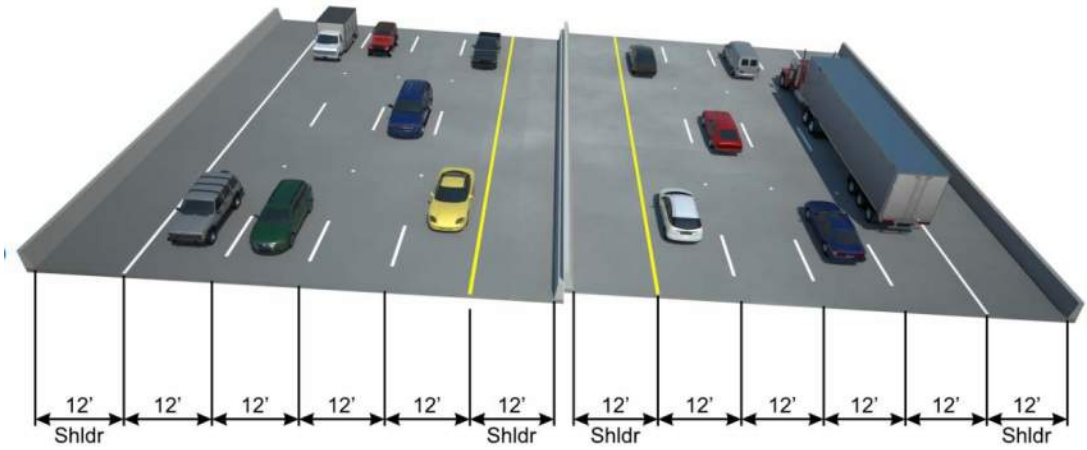


Figure 5 - I-70 Mainline Template

I-70 Mainline Bridges over NSRR:

The center bridge span is set to provide adequate room for a second mainline track at 14 feet spacing, along with 22 and 26 feet clearance (maintenance road) per NSRR guidelines, see **Figures 6 and 7**. This results in a 3 span bridge with a span arrangement of roughly (73'-80'-72'), with the end spans providing for 2:1 spill slopes.

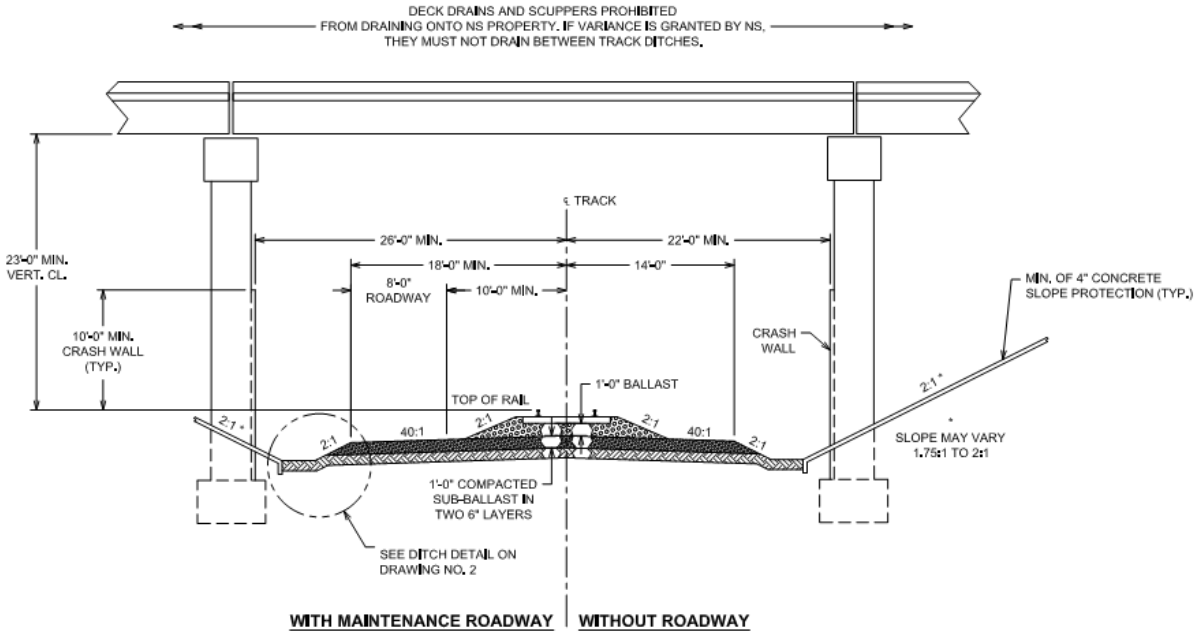


Figure 6 - NSRR Overpass Requirements

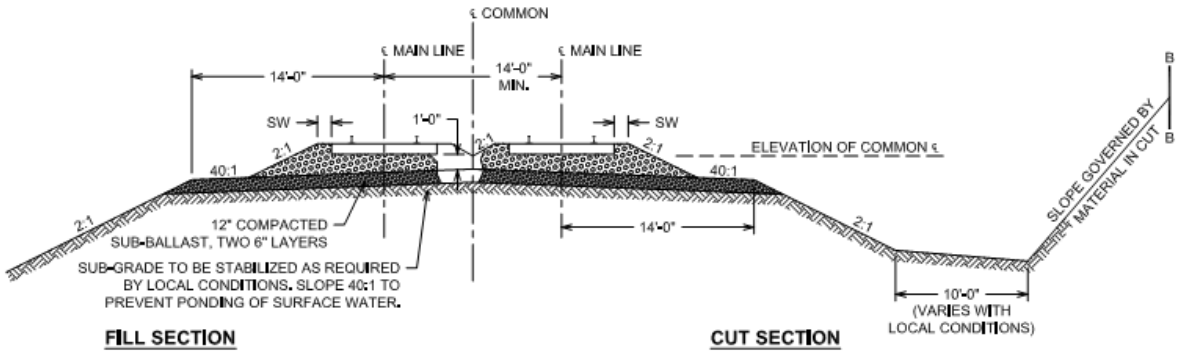


Figure 7 - NSRR Standard Double Track Cross Section

The bridge widths were set to match the roadway and accommodate the following template in each direction, see **Figure 8**:

- 12’ inside shoulder
- 3-12’ through lanes
- 12’ auxiliary lane (required due to steep profile grade)
- 12’ outside shoulder

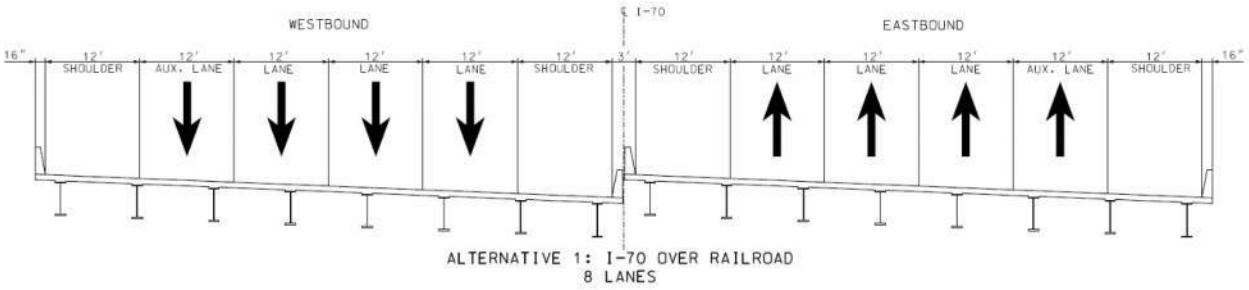


Figure 8 - I-70 Mainline Bridges Typical Section

As previously mentioned, the bridge layout will also accommodate a future widening to accommodate the possible addition of a fourth through lane to the outside and still provide the required 23’-0” minimum vertical clearance over the NSRR alignment at the low side of the superelevated deck. In order to limit the amount of approach fill, the eastbound and westbound lanes will follow offset vertical alignments. As a result of this, along with the wide (84’ clear) nature of both the eastbound and westbound lanes, two independent superstructures will be required.

Due to the combination of the span lengths, skew (approx. 33 degrees LA) and the curved horizontal alignment, curved steel plate girders were the clear choice for superstructure type. The girders will support a full depth 8 ½” thick cast-in-place concrete deck. The superstructure will be supported on cast-in-place open multicolumn intermediate bents founded on drilled shaft foundations with rock sockets and integral end bents founded on steel H-piling driven to rock. For areas where the horizontal clearance is less than 25 feet, the intermediate bents will be protected by crash walls meeting AREMA design requirements.

Per NSRR direction, the new I-70 overhead structure(s) are located a minimum of 60 feet away from west abutment of the existing NSRR bridge to facilitate future craning operations, see **Figure 9**.

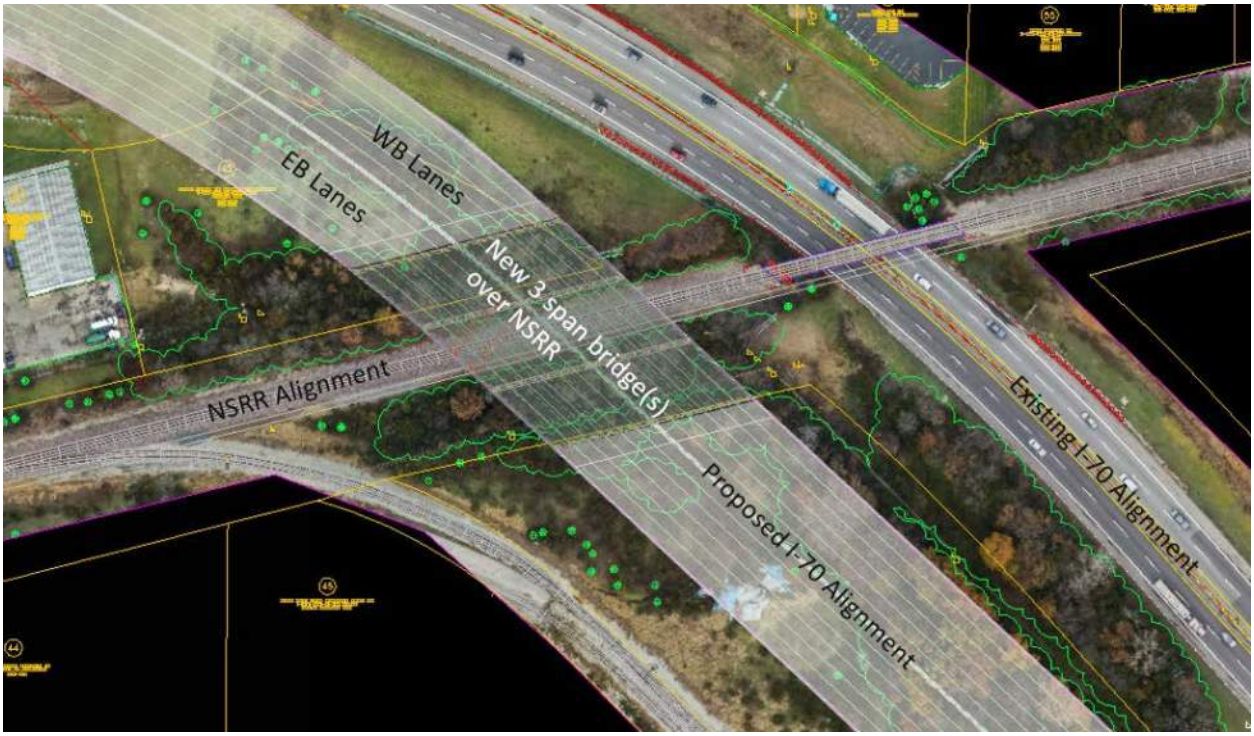


Figure 9 - I-70 Mainline (Realigned) Bridges over NSRR

West Pearce Boulevard:
This option will require the realignment of approximately 2200' of West Pearce Boulevard. The road will be located approximately 24' to the north. Approximately 6 parcels will be affected by this relocation. West Pearce Boulevard will be separated from I-70 by retaining wall or concrete traffic barrier. West Pearce Boulevard will have 2-12' lanes, a 12' center turn lane, and a 2'-6" curb and gutter. There will be 6' sidewalk located on north side of the relocated roadway and West Pearce Boulevard will be signed for 35 mph.

North Outer Road (Future):
The existing NSRR Bridge will be maintained to accommodate a future outer road which can be constructed along the existing I-70 westbound alignment. This north outer road is noted in the original I-70 EA document. This outer road will connect to the south side of existing West Pearce Boulevard, near Patricia Court, and traverse under the existing railroad bridge to the available quadrant near Mar-Le Drive. The exact location as yet to be determined. It is assumed that the outer road will be posted for 35 mph and consist of 2-12' lanes and 2-4' shoulders. Since construction of the north outer road is considered a future project, costs are not included in the project cost estimates.

Staged Construction:
Since the proposed bridges are constructed along a new alignment, staged construction is not required. Traffic will be maintained on the existing I-70 alignment until the new structures and

approaches are ready for traffic. The majority of impacts will be for the tie-ins of relocated I-70 to existing mainline.

Concerns/Benefits:
The following are some concerns and benefits of this option.

Concerns:

- Settlement issues due to extreme fill heights which may increase construction time.
- Significant cost for embankment and MSE walls.
- Site distance concerns on the crest vertical curve for I-70 mainline.
- Long up-grade movements to access I-70 from Route Z interchange.
- Superelevation requires that bridge layout be set up now for future template as widening of the eastbound lanes will result in reduced vertical clearance over NSRR.
- May require the reconstruction of segments of West Pearce Boulevard and Mar-Le Drive to accommodate the full I-70 template.
- Right of way may be required along West Pearce Boulevard and Mar-Le Drive, impacting several commercial businesses

Benefits:

- The new I-70 alignment can be constructed without significant traffic impacts.
- Provides an increase in the horizontal radii of I-70 which improves sight distance.
- Relocated I-70 can be constructed without additional right of way as MoDOT already owns the property along the south side of I-70.
- Interstate bridge over NSRR right of way simplifies RR review and approval process
- An extra lane has been added in the area of the Route 61/I-64 on ramp which will help driver merging.
- Standard construction methods
- Does not require new or temporary NSRR alignments/bridges. Eliminates need to invest limited funds in transportation systems that are owned and maintained by others.

Conceptual Strip Maps and Profiles Sheets for this alternative can be found in Appendix B.

For Typical Sections of Alternate 1 and the Route Z Bridge widening, see Appendix C.

The estimated cost of Alternate 1 is **$58,170,000**. For a detailed breakdown of the anticipated costs see Appendix D.

ALTERNATIVE 2: RELOCATING I-70 UNDER NORFOLK SOUTHERN RAILROAD

Proposed Improvements:

I-70 Mainline:
This option involves relocating the existing I-70 alignment approximately 65’ to the southwest in the vicinity of the NSRR Bridge, see **Figure 10**. This realignment calls for the proposed westbound lanes to occupy the entirety of the existing eastbound and westbound lanes, while the proposed eastbound lanes will be constructed immediately to the southwest. Proper phasing of this construction will allow for the maintenance of two lanes of traffic in each direction throughout construction. This approach is discussed later in more detail. The existing horizontal curves in this corridor of 1926’ and 2491’ will be upgraded to 2090’ and 2580’ respectively. This new geometry allows for additional site distance and requires lower superelevation rates which is beneficial due to the reverse curvature within this corridor. There will be a need to lower the I-70 profile grade through the NSRR crossing approximately four feet to accommodate the wider pavement, required superelevation, and additional structural depth needed for longer bridge spans on the proposed NSRR structure.

Figure 10 - I-70 Mainline Realignment (Under)

Similar to Alternative 1, the proposed typical section of I-70 will consist of a 12’ inside shoulder, 3-12’ through lanes, a 12’ auxiliary lane between Wentzville Parkway and Route Z, and a 12’ outside shoulder. This template is applicable for both the eastbound and westbound directions, see **Figure 11**.

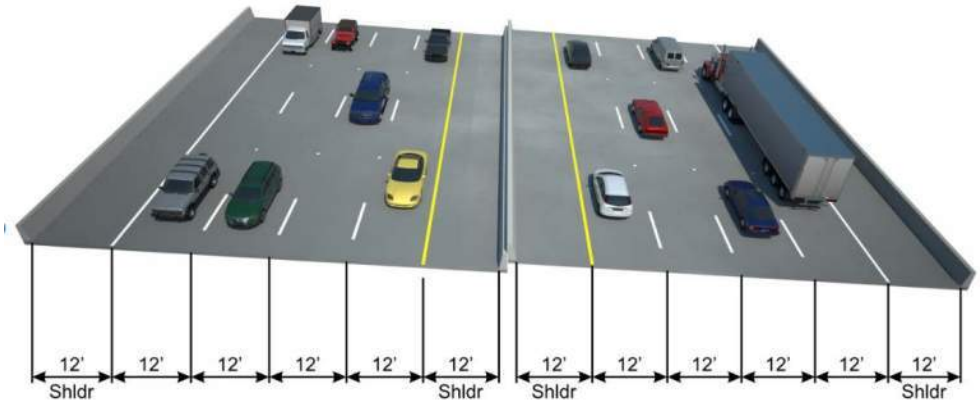


Figure 11 - I-70 Mainline Template

The overall improvements will extend from just east of the Wentzville Parkway interchange to the termini of the eastbound I-64/ Route 40/61 on ramp to eastbound I-70. The westbound off ramp to Wentzville Parkway will be partially reconstructed and the two western ramps of the Route Z interchange will be completely reconstructed. The auxiliary lane will be extended to connect to the new EB on-ramp from Wentzville Parkway that is being constructed within a separate project. The existing I-70 bridges over Route Z will be widened with an additional lane and new full 12' shoulders added in both directions. I-70 will be restriped between Route Z and the southbound Route 61 on ramp to accommodate the additional lane work.

The reconstructed NSRR Bridge will accommodate a future north outer road extension, as well as the main spans have an additional 12' of horizontal clearance in each direction beyond the roadway template described above. This additional clearance will account for a possible lane addition in the future. With the expected life span of the new NSRR Bridge and the close proximity to the I-70/I-64 Interchange, it was prudent to look well beyond the typical 30 year design time frame when setting the bridge opening. This will allow for construction of a future lane beneath the NSRR Bridge and will require limited interaction with NSRR.

<u>Norfolk Southern Bridge over I-70 Mainline:</u>
The project will involve the replacement of the existing 4 span NSRR Bridge with a new 4 span structure (see **Figure 12**) to accommodate the widening of I-70. The proposed bridge layout will be developed to span the roadway urban template depicted in the I-70 EIS as set for Section of Independent Utility (SIU) No. 7. This template accommodates 4-12' traffic lanes with 12' inside and outside shoulders and an additional 12' clearance, in each direction.

Replacement of the existing NSRR Bridge will require construction of a temporary shoofly and railroad bridge (see **Figures 13 and 14**) south of the existing railroad alignment. This portion of the NSRR track serves as the mainline connection to downtown St. Louis and more locally services the GM auto plant in Wentzville and must remain operational at all times. NSRR has noted that this location has up to 15 trains per day that operate on a 24 hours schedule, 7 days a week. Limited 4 hour closure windows will be allowed for the tie-ins of the temporary shoofly to the existing track. NSRR is requiring that this temporary shoofly be designed for train operating speeds of 60 mph. Approximately 2400' of track, centered about the existing NSRR Bridge, will be required to maintain a 60 mph operating speed. One track switch will be required along the temporary track, approximately 700' south of the existing NSRR Bridge.

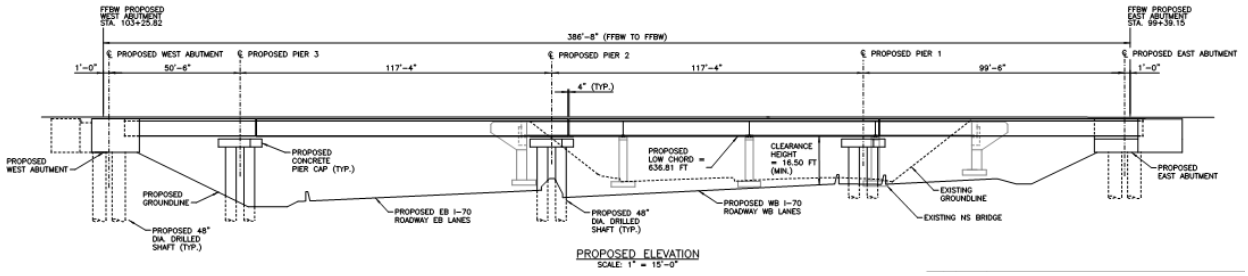


Figure 12 - Proposed 4 Span NSRR Bridge

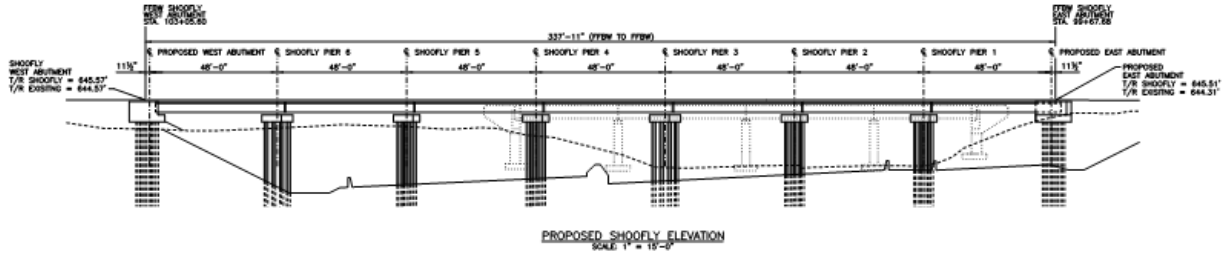


Figure 13 - Proposed 7 Span Temporary Shoofly Bridge

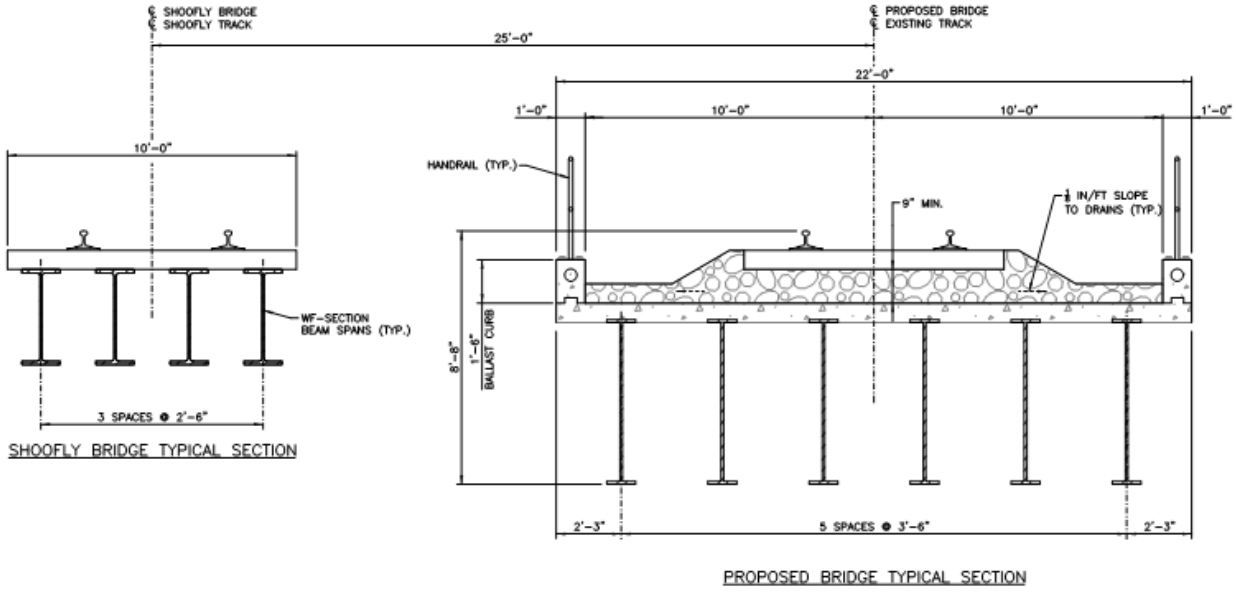
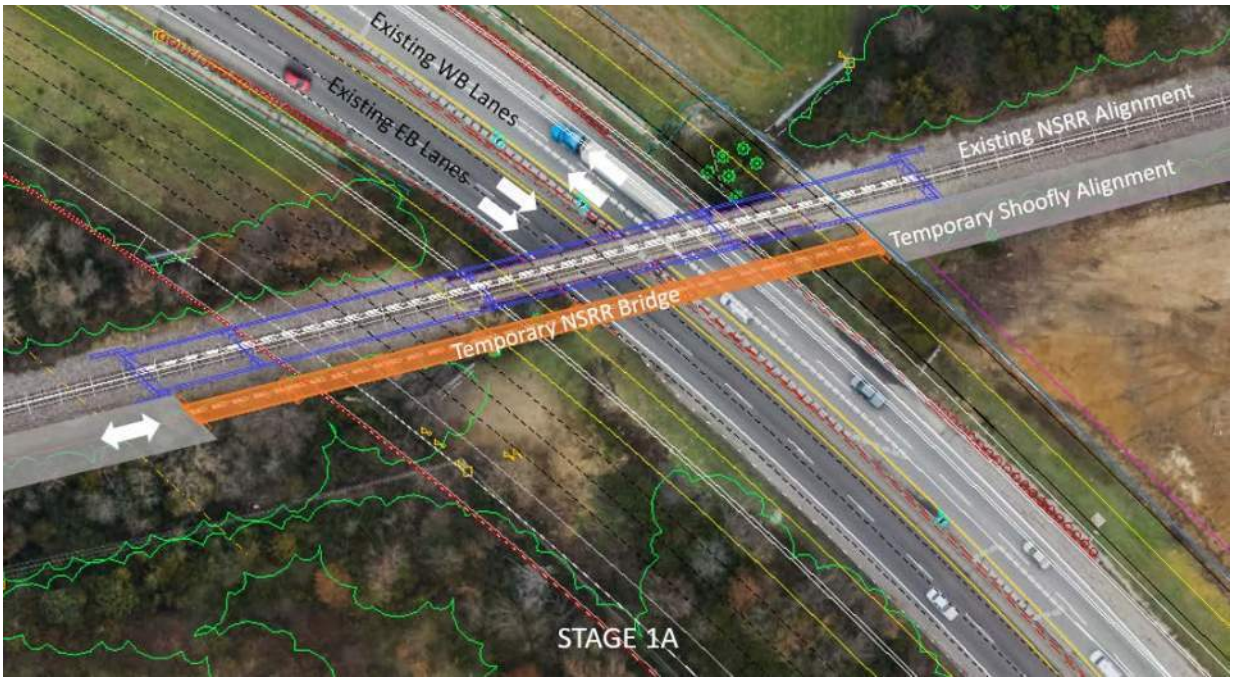


Figure 14 – Typical Section thru RR Bridge and Shoofly

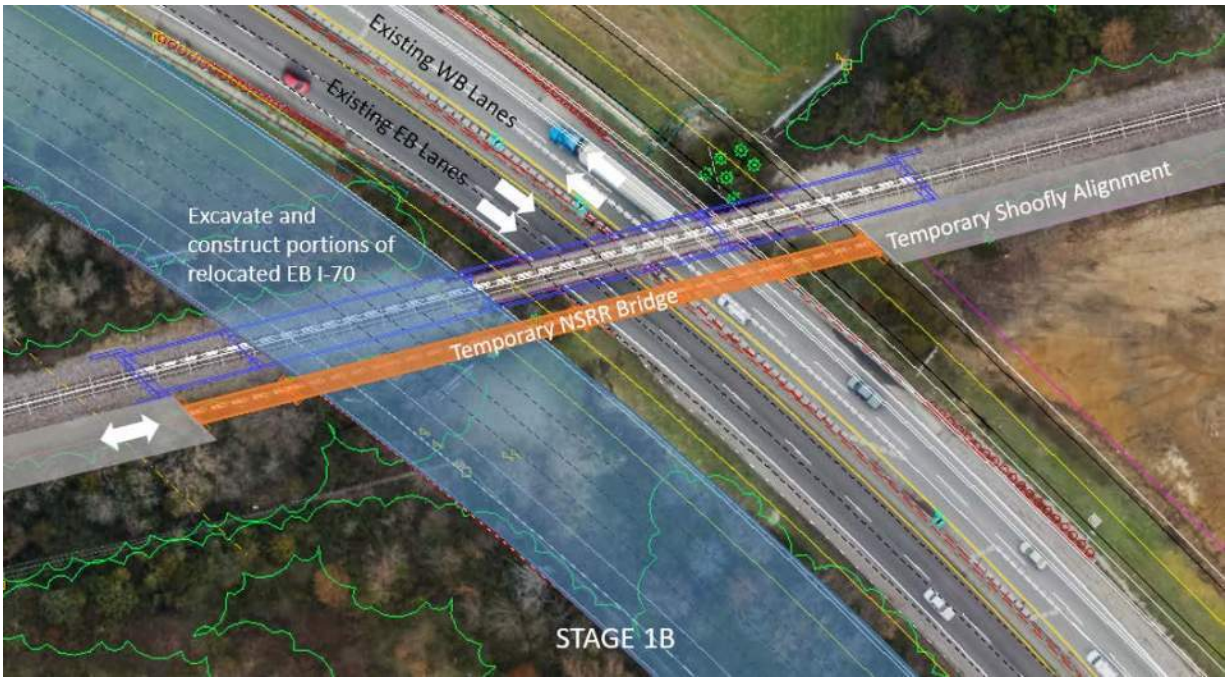
Construction Staging:

The basic premise for this I-70 relocation option is to maintain two lanes of eastbound and westbound I-70 traffic at all times during construction (with the exception of potential short term overnight or weekend lane closures) and utilize a temporary shoofly track alignment with a temporary rail bridge over I-70 to maintain rail traffic. The following is a brief description of the proposed traffic/train staging plan:

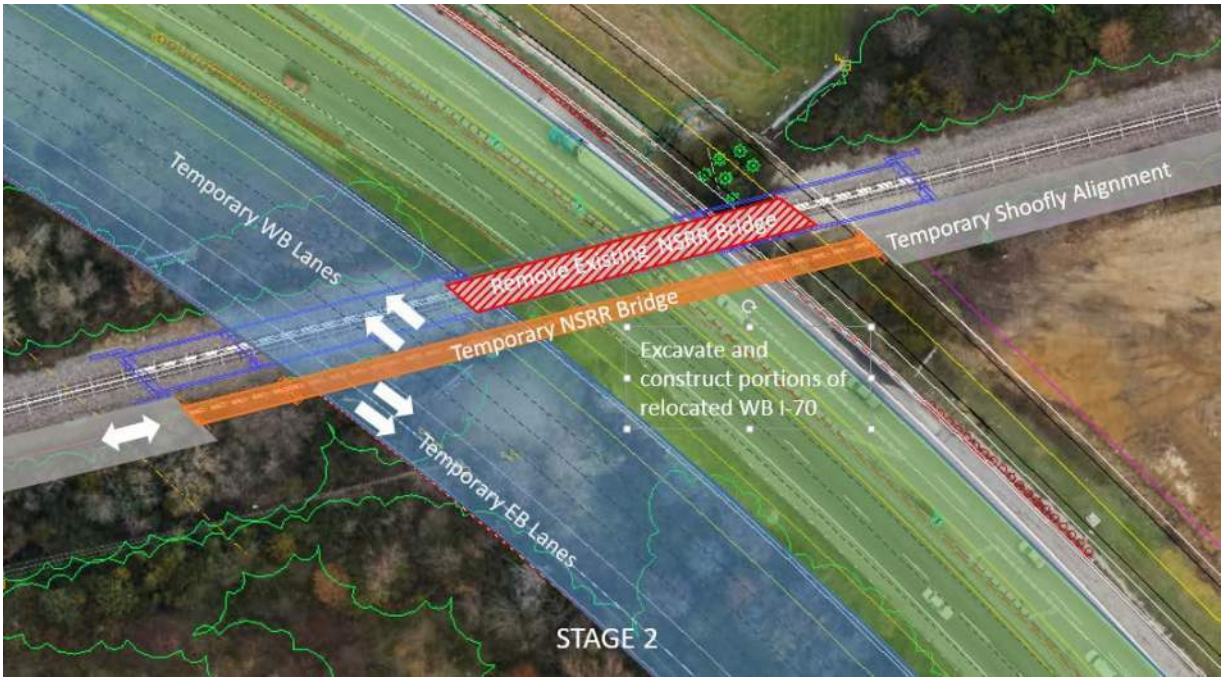
Stage 1A: Construct the temporary railroad shoofly alignment and bridge 25 feet south of the current NSRR tracks. The temporary bridge will be at approximately the same grade as the existing structure and will consist of seven spans, which will accommodate both the existing I-70 and temporary roadway alignments. This bridge layout will require a temporary support be constructed between the existing concrete traffic barriers along the median of existing I-70. Construction of this median support will require that this work be completed at night, with a single lane closure in either direction. Discussions with local MoDOT staff have found this approach to be acceptable. Upon completion of the temporary shoofly and bridge, NSRR rail traffic will be shifted to the temporary railroad alignment.



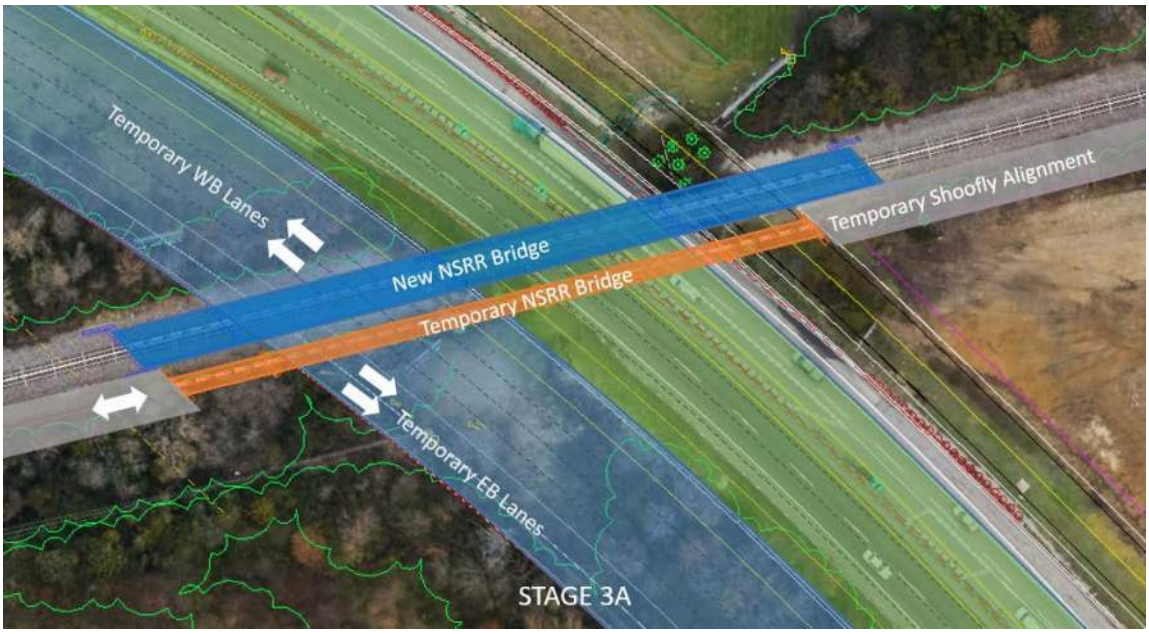
Stage 1B: The proposed eastbound lanes of relocated I-70 will be fully excavated, to include the west embankment of the NSRR alignment. Usable portions of these lanes, at the contactor's option, will be paved such that two temporary lanes in each direction can be maintained during the next construction stage. Due to the span arrangement of the temporary bridge, some of the proposed lanes will not be fully paved as their locations are occupied by temporary railroad piers.



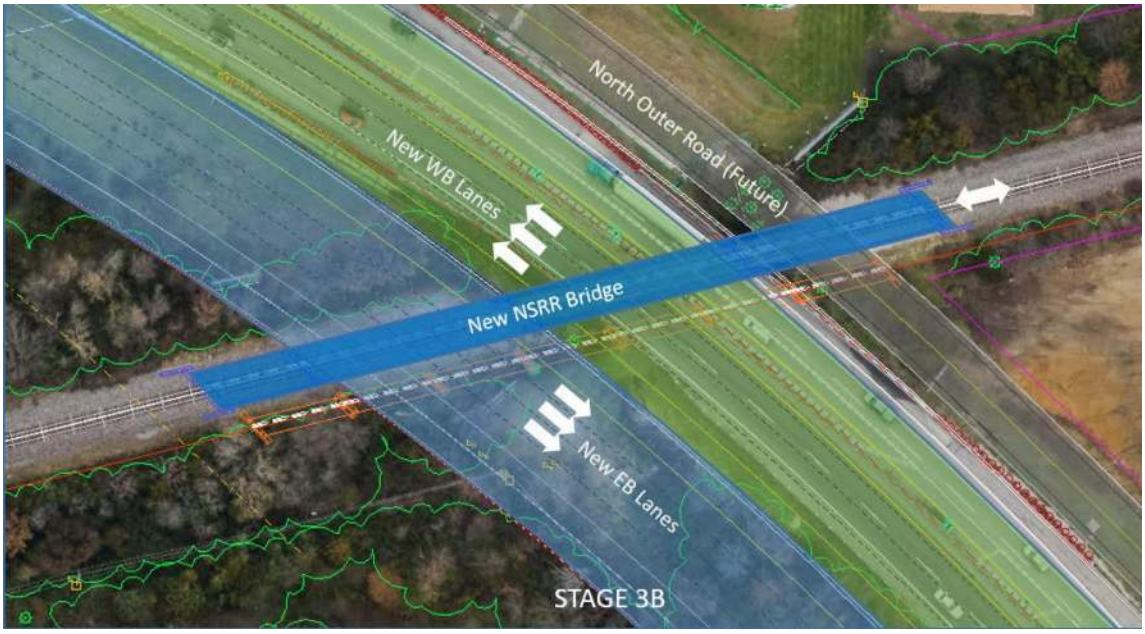
Stage 2: All eastbound and westbound traffic from existing I-70 will be shifted to the temporary portion of the proposed eastbound lanes of relocated I-70. Once traffic has been relocated, the existing NSRR Bridge will be removed and the proposed westbound lanes of relocated I-70 will be fully excavated. Similar to the proposed eastbound lanes, all westbound lanes not impacted by the temporary bridge pier locations will be constructed.



Stage 3A: Construct the proposed NSRR Bridge along the existing NSRR alignment and transfer rail traffic back to the existing alignment. This allows removal of the temporary shoofly alignment, temporary bridge, and construction of the remaining portions of relocated westbound I-70.



Stage 3B: Westbound I-70 traffic will be shifted to the newly constructed westbound lanes of relocated I-70 and the remaining pavement will be constructed as required for the eastbound lanes which were left vacant by the temporary supports of the railroad bridge. Once completed, eastbound I-70 traffic will be relocated into their final locations. The NSRR Bridge has been sized to accommodate a future North Outer Road which will be constructed at a later time as part of another project.



West Pearce Boulevard:
This option will require the realignment of approximately 2200' of West Pearce Boulevard. The road will be located approximately 24' to the north. Approximately 6 parcels will be affected by this relocation. West Pearce Boulevard will be separated from I-70 by retaining wall or concrete traffic barrier. West Pearce Boulevard will have 2-12' lanes, a 12' center turn lane, and a 2'-6" curb and gutter. There will be a 6' sidewalk located on north side of the relocated roadway and West Pearce Boulevard will be signed for 35 mph.

North Outer Road (Future):
The proposed NSRR Bridge will include an additional span such that a future outer road can be constructed along the north side of I-70. This outer road will connect to the south side of existing West Pearce Boulevard, near Patricia Court, and traverse under the new railroad bridge to the available quadrant near Mar-Le Drive. The exact location as yet to be determined. It is assumed that the outer road will be posted for 35 mph and consist of 2-12' lanes and 2-4' shoulders.

Concerns/Benefits:
The following are some concerns and benefits of this option.

Concerns:

- Additional costs related to temporary railroad bridge and track.
- Significant cost for the new NSRR Bridge.
- Additional coordination and approvals from NSRR.
- May require the reconstruction of segments of West Pierce Drive and Mar-Le Drive to accommodate full I-70 template, similar to Alternate 1.
- Right of way may be required along West Pearce Boulevard and Mar-Le Drive, impacting several commercial businesses, similar to Alternate 1.
- Significant bridge construction requires longer construction duration.
- Proposed grade for EB off ramp to Route Z matches the existing grade of 6.75%.

Benefits:

- Acceptable roadway grades and no significant fills or retaining walls.
- The new I-70 alignment and RR Bridge can be constructed without significant traffic impacts, similar to Alternate 1.
- Provides an increase in the horizontal radii of I-70 which improves sight distance, similar to Alternate 1.
- Relocated I-70 can be constructed without additional right of way as MoDOT already owns the property along the south side of I-70, similar to Alternate 1.
- Additional span length in the eastern most span of the NSRR Bridge provides space for a future outer road system which increases local mobility.
- An extra lane has been added in the area of the Route 61/I-64 on ramp which will help driver merging, similar to Alternate 1.

Conceptual Strip Maps and Profiles Sheets for Alternate 2 can be found in Appendix B.

For details of the NSRR Bridge along with Typical Sections of the Route Z Bridge widening, see Appendix C Bridge Details.

The estimated cost of Alternate 2 is **$35,881,000**; of this amount approximately **$8,850,000** is associated with NSRR costs. For a detailed breakdown of the anticipated costs see Appendix D. *The estimate assumes overbuild of the NSRR substructure elements ($450,000) to accommodate the future construction of a second mainline track by others. This additional work may or may not be included in the final project, pending coordination and agreements with NSRR.*

ALTERNATE 3: RELOCATING EASTBOUND I-70 OVER NORFOLK SOUTHERN RAILROAD

This option consists of a hybrid of the previous two alternates, in that it would involve relocating eastbound I-70 to the southwest and over the NSRR alignment. The westbound lanes will remain along the existing I-70 alignment and lowered to provide adequate vertical clearance beneath a new NSRR railroad bridge. The option will consist of three 12' through lanes, an auxiliary lane between Wentzville Parkway and Route Z, and 12' inside and outside shoulders. Similar to Alternate 1, this option will require an extensive amount of MSE walls or similar earth retention systems to accommodate the required grade raise. The overall improvements will extend from just east of the Wentzville Parkway interchange to the termini of the eastbound I-64/ Route 40/61 on ramp to eastbound I-70. The westbound off ramp to Wentzville Parkway and westbound on ramp from Route Z will be used in place. The eastbound off ramp to Route Z will be completely reconstructed. Auxiliary lanes will be constructed between Wentzville Parkway and Route Z to connect the on and off ramps. The existing I-70 bridges over Route Z will be widened to include an additional lane and new full 12' shoulders in both directions. I-70 will be restriped between Route Z and the southbound Route 61 on ramp to accommodate the additional lane work.

Construction Staging:

The benefit of this option is that relocated eastbound I-70 can be constructed with minimal interference to existing I-70 traffic operations. Majority of impacts will be for the tie in of relocated pavement to existing I-70. Staged construction will still be required for NSRR in order to construct the temporary and permanent railroad bridges over the remaining I-70 westbound lanes.

Concerns/Benefits:

The main issue with a hybrid approach is that it combines all of the concerns and limited benefits of the previous two alternatives into a single project. The concerns regarding settlement of extreme fills, embankment costs, site distance, cost of temporary railroad infrastructure, and a temporary and permanent railroad bridge spanning I-70 will overwhelm the collective benefits of the previous alternatives.

Due to the combined concerns related to the hybrid alternative, it was dismissed from further consideration.

ALTERNATE 4: SOUTHERN RELOCATION OF EASTBOUND I-70

This option calls for relocating eastbound I-70 approximately 1500’ to the south of the existing Wentzville Parkway interchange and NSRR tracks, see **Figure 15**. The proposed eastbound template will consist of three 12’ lanes with 12’ shoulders. The westbound lanes will be maintained along the existing I-70 alignment. This alternative was evaluated at an extremely high level for delineation of potential impacts prior to moving forward with a conceptual layout.

This option is feasible, has positive traffic control benefits, and opens up additional properties for economic development. Preliminary discussions were held with County and Municipal stakeholders which ultimately led to the elimination of this concept as a viable alternative. Local stakeholders were concerned with the high cost of the right of way, impacts to approved developments, need for additional bridges over NSRR, and scheduling delays associated with environmental approval along a new corridor. The City of Wentzville currently has plans to extend Wentzville Parkway south over the NSRR to Interstate Drive, which will provide access to these same properties.

Figure 15 – Alternate 4: Alignment south of Existing I-70

The cost of this southern relocation and associated improvements was never calculated due to the negative reaction of the local stakeholders.

The following are some concerns and benefits of this option.

<u>Concerns/Benefits:</u>

Concerns:

- Extensive additional right of way costs
- Potential delays due to environmental clearance process
- Three additional bridges increase initial construction and long term maintenance costs
- Skewed bridge over railroad near western project limits is extremely expensive

Benefits:

- This will allow fewer impacts to traffic during the replacement of the existing railroad bridge since traffic could be diverted to the new eastbound lanes.

TRAFFIC ANALYSIS

Introduction and Purpose

The purpose of this traffic analysis was to investigate the proposed improvements along the I-70 corridor from east of the Wentzville Parkway interchange to just west of the I-64 interchange (approximately 1.75 miles) in St. Charles County, MO. This study includes modifications to the mainline segments and ramp locations within the study area. This document examines existing conditions, 2045 "No Build" conditions, and two build alternatives.

Project Definition

The traffic analysis included interstate mainline, ramps, merge/diverge areas, weaving segments, and intersections located in the surrounding street network. This document summarizes the operational analysis for the following four scenarios:

1. Existing Conditions for AM/PM Peak periods;
2. 2045 No Build Conditions for AM/PM Peak periods;
3. 2045 Build Alternative for AM/PM Peak periods; and
4. 2045 Build "Intermediate" Alternative for AM/PM Peak periods.

Project Study Area

The project area is located along the I-70 corridor from east of the Wentzville Parkway interchange, including the intersections at Wentzville Parkway, to just west of the I-64 interchange in St. Charles County. Based on the existing traffic operations and delays experienced within the surrounding area, the traffic analysis was extended to the east of I-64 to include the Highway A/Freymuth Road interchange. The study area is shown in more detail in **Figure 16**. It should be noted that the VISSIM analysis for this project includes a small portion of Route 61 north of I-70 and I-64 south of I-70, but does not include the subsequent interchanges, as I-64 operations were not considered as part of this analysis.

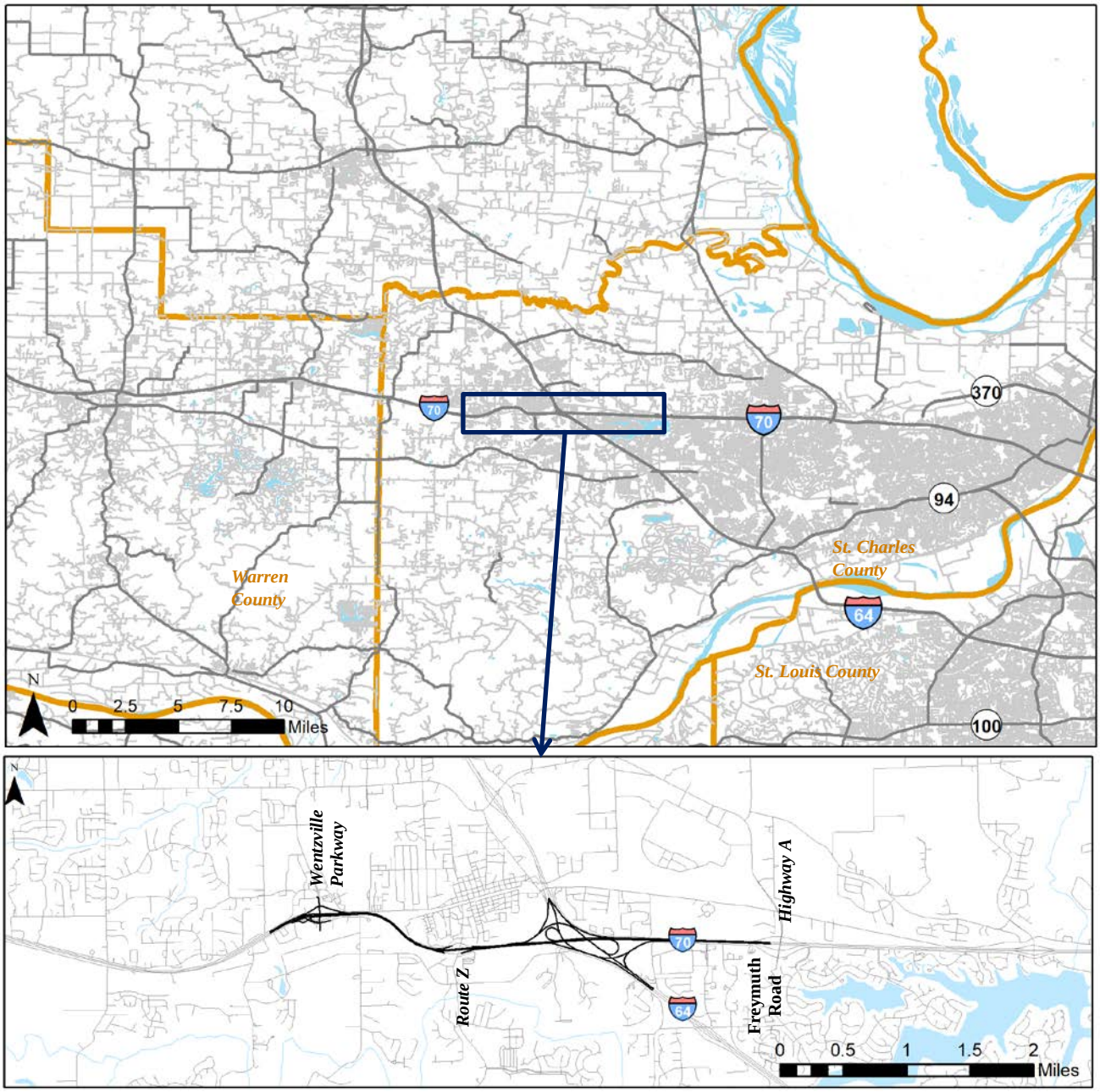


Figure 16: Location Map

Data Collection
The following data was collected to complete the traffic analyses for this project.

- **I-70 & I-64 Ramp Traffic Volumes:** On/off ramp volumes were collected along the study corridor from I-64 to Wentzville Parkway in the eastbound and westbound directions. Counts were conducted using Hi-Star in-lane vehicle detection devices for a period of one day, in 15-minute increments. Counts were conducted at the various ramp locations on November 8th, 2018.
- **I-70 Mainline Traffic Volumes:** Mainline traffic volumes were collected at two locations within the study corridor at I-70 west of Highway A and at I-70 west of Wentzville Parkway. Counts were conducted using Miovision traffic data collection cameras for a period of one day on November 8th, 2018. Data was collected in 15-minute increments for a twenty-four-hour period.
- **Intersection Turning-Movement Volumes:** Six-hour turning-movement counts were collected by Miovision cameras at two intersections within the study area: I-70 WB ramps & Wentzville Pkwy and I-70 EB ramps & Wentzville Pkwy. The counts were collected on November 13, 2018 from 6:00 – 9:00 AM and 3:00 – 6:00 PM.
- **Travel-Time Data:** Travel-time runs were completed during the AM and PM peak hours along I-70 and I-64 in the study area. GPS devices recorded speeds and positions along the study corridors for test vehicles utilizing the Average Car method, in which the test vehicle attempts to replicate the average speed of the travel stream of traffic for each run. This information was used to calibrate the existing peak-hour models with respect to network measures of effectiveness (MOEs). The travel-time runs were collected during the second week of November in 2018. Additional staff were in the field during these same peak periods, completing observations related to backups, slowdowns or other driver behavior patterns related to study-area traffic. Staff also observed corridor travel patterns, signal operations and queuing impacts at the signalized study intersections.
- **Traffic Signal Timings:** HDR was granted access to the MoDOT signal timing database in order to collect programmed cycle length, phase settings, offsets and coordination parameters for the traffic signals within the study area.
- **Geometry Data:** The number of lanes and traffic control were obtained from Google Earth aerial imagery and field data collection.

Figure 17 depicts the AM and PM peak-hour volumes used in the existing-condition peak-hour simulation models.

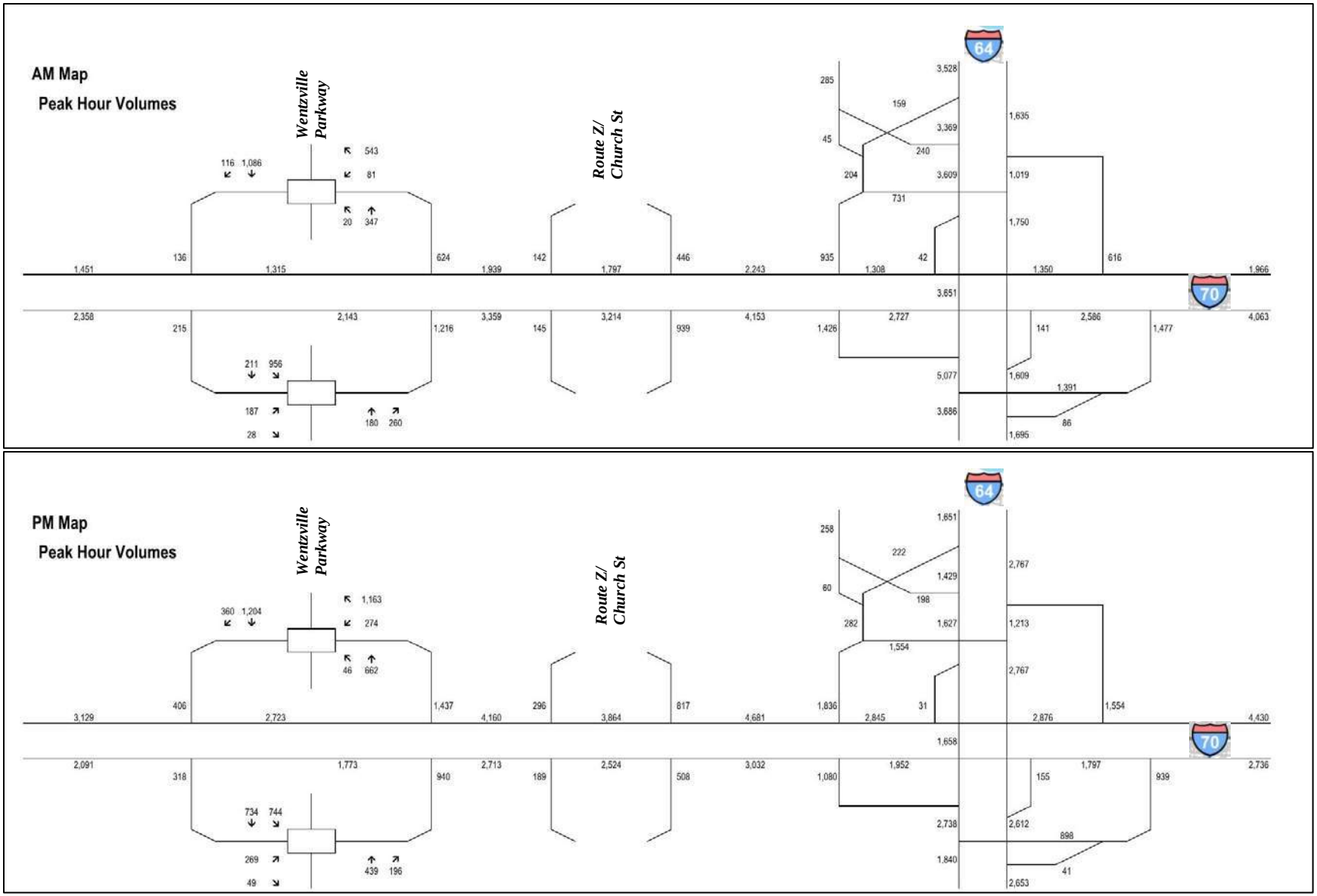


Figure 17: Existing AM and PM Peak Volumes

Traffic Evaluation Methodology

AM and PM peak-period microscopic traffic simulation models were developed for the entire project study area to evaluate traffic operations for the four analysis scenarios.

The AM peak model addressed the 6:00 AM to 9:00 AM timeframe on a typical weekday, while the PM peak model addressed 3:00 PM to 6:30 PM. These periods are representative of the two highest typical peak travel periods for the facilities in the study area. Though the model periods are three to three-and-a-half hours long, several of the measures reported in the results are based on the peak hour of the peak period. The VISSIM software package was used to conduct the analysis.

For each scenario, the freeways and ramps were coded to represent the existing geometry (e.g. number of lanes, lengths of merges/diverges, lane widths, lane closures, etc.). Driver behavior parameters such as decision sight distances, speed parameters and other required inputs were also set, with the same or similar parameters used across all models to the extent reasonable. The existing traffic volumes were then loaded into the network to simulate the traffic demand. The traffic demand included both auto and truck traffic. It also included peaking characteristics developed from the collected traffic count information.

For future demand, the St. Charles County Travel Demand Model was used to generate the various 2045 volume scenarios. The future volume scenarios assumed several roadway improvement projects for which construction funds have already been committed. This includes construction of the David Hoekel Parkway interchange to the west of Wentzville Parkway.

Model outputs were examined at both the segment and intersection levels. Analysis segments were defined as individual VISSIM links, or as groups of links that operated as one unique "functional" segment. The lengths of these segments generally correspond to the lengths recommended in the Highway Capacity Manual (HCM). For example, mainline merge and diverge segments were set at lengths of 1,500 feet in accordance with HCM guidance. Level of Service (LOS) was estimated for each freeway segment using the density threshold values identified in the HCM version 6, published by the Transportation Research Board; these values are shown in **Table 1**. Travel times were also extracted from the models, based upon measurement points that matched locations used for field travel-time data collection. Additionally, simulated segment speeds were also examined by segment.

Table 1: HCM LOS Thresholds for Freeways (6th Edition)

Level of Service	Basic Freeway Segments Density (pc/mi/ln)	Freeway Weaving & Merge/Diverge Segments Density (pc/mi/ln)	Freeway Traffic Flow Characteristics
A	**≤ 11**	**≤ 10**	Free flow, vehicle maneuverability unimpeded.
B	**> 11-18**	**> 10-20**	Reasonably free-flow, maneuverability only slightly restricted, physical and psychological comfort high.
C	**> 18-26**	**> 20-28**	Speeds near free-flow, freedom to maneuver noticeably restricted, incidents can cause local deterioration to service quality.
D	**> 26-35**	**> 28-35**	Speeds decline with increasing flow, freedom to maneuver seriously restricted, reduced physical and psychological comfort, minor incidents can create queues.
E	**> 35-45**	**> 35**	Operation at capacity, highly volatile, little room to maneuver, incidents can produce serious breakdown and queues, physical and psychological comfort levels poor.
F	**> 45 Demand exceeds capacity**	**Demand exceeds capacity**	Demand exceeds capacity, breakdown with unstable flow, these conditions exist within queues formed behind bottlenecks.

LOS is also used to characterize traffic performance at signalized and unsignalized intersections. For signalized intersections, LOS is based on the total average control delay experienced by that demand as it travels through the intersection. An acceptable LOS for a signalized intersection is considered to be LOS D or better (i.e. A, B, C or D). At unsignalized intersections, LOS is based on the control delay for the movements that must yield right-of-way. It is fairly typical for stop-controlled minor streets to experience longer delays during peak periods, while the majority of the traffic flows through the intersection on the major street experiencing little or no delay. **Table 2** highlights the delay thresholds for the different LOS categories for interchange areas, individual signalized intersections and unsignalized intersections.

Table 2: HCM LOS Thresholds for Signalized Interchanges/Intersections and Unsignalized Intersections

Level of Service	Signalized Interchange Control Delay (sec/veh)	Signalized Intersection Control Delay (sec/veh)	Unsignalized Intersection Control Delay (sec/veh)	Traffic Flow Characteristics
A	**≤ 15.0**	**≤ 10.0**	**≤ 10.0**	Free flow, insignificant delays.
B	**> 15.1-30.0**	**> 10.1-20.0**	**> 10.1-15.0**	Stable operation, minimal delays.
C	**> 30.1-55.0**	**> 20.1-35.0**	**> 15.1-25.0**	Stable operation, acceptable delays.
D	**> 55.1-85.0**	**> 35.1-55.0**	**> 25.0-35.0**	Restricted flow, common delays.
E	**> 85.1-120.0**	**> 55.1-80.0**	**> 35.1-50.0**	Maximum capacity, extended delays. Volumes at or near capacity. Long queues form upstream from intersection.
F	**> 120.0**	**> 80.0**	**> 50.0**	Forced flow, excessive delays. Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Evaluation Scenarios

Existing Conditions

The Existing Conditions scenario is based upon the existing lane geometrics, traffic control, signal timing plans, and traffic volumes obtained during the data collection portion of the study.

2045 No-Build Conditions

The 2045 Future No-Build Conditions scenario was developed to assess anticipated impacts of traffic volume increases on the existing street network. The St. Charles County travel demand model was used to extract growth volumes. The existing geometrics and future volumes were first modeled within Synchro to optimize signal timings along Wentzville parkway. These timings were then used in the VISSIM models. One future geometric improvement was assumed to be in place under this scenario, based on a traffic impact study completed for the Wentzville Parkway corridor and interchange (completed in June 2016). The study suggested building a roundabout west of Wentzville Parkway at the eastbound I-70 ramp location. The geometric configurations from the proposed design were coded into VISSIM.

2045 Build Alternative

The Build alternative included the addition of one mainline lane and an auxiliary lane in both directions between Wentzville Parkway and Route Z (Church Street), to widen the corridor to 4 lanes in total (3 lanes + auxiliary lane) and the addition of one mainline lane between Route Z and I-64. The build alternative was modeled within VISSIM. A VISUM model was used utilized to reassign the existing traffic volumes within the network based upon forecasted demand and modified system connections.

2045 Build "Intermediate" Alternative

The Intermediate alternative is similar to the 2045 Build alternative with the exception that improvements to the roadway section between Wentzville Parkway and Route Z include the auxiliary lane only in both directions, resulting in 3 lanes in total (2 lanes + auxiliary lane).

2018 Existing Conditions
The existing AM/PM peak period VISSIM models were developed using existing lane geometrics, intersection control, and traffic volumes. These models were calibrated against the existing traffic demand volumes and field-measured travel time data. Model calibration is an iterative process in which the modeler adjusts operational characteristics and constraints to fine-tune the model in an attempt to replicate real-world conditions as closely as possible.

The existing peak-hour models were first calibrated to the input and output volumes to verify that the model was matching the observed volumes. The next step was comparing modeled travel-time durations to the field-measured travel-time data. Adjustments were made to the driver characteristics and vehicle compositions to help fine-tune the model simulation outputs to the field-measured data. The calibration thresholds used to measure the effectiveness of the model were based on guidelines provided by FHWA. The calibrated models were run ten times, for the peak periods, and the AM/PM peak hour results were averaged over the ten runs to remove statistical anomalies.

Freeway Segment Results
The freeway analyses cover I-70 segments from Wentzville Parkway to Highway A. The Existing Conditions LOS, density, and speed results for each freeway segment are provided in **Table 3**.

AM Peak Hour
The Existing Conditions freeway operations results indicate that, during the AM peak period, most study segments are currently operating at LOS C or better along eastbound and westbound I-70. All segments along westbound I-64 are shown to operate at LOS C or better; however, there are six segments along eastbound I-64/southbound Route 61 that currently operate at LOS E or worse:

- the basic freeway segment along Route 61, south of Wentzville Parkway,
- the diverge segment from Route 61 SB to I-70 WB On-Ramp,
- the basic freeway segment between the Route 61-SB-to-I-70-WB Off-Ramp and the Luetkenhaus On-Ramp to I-64 EB,
- the merge segment between the Luetkenhaus On-Ramp to I-64 EB and the I-70 WB on-loop to I-64 EB,
- the merge segment between I-70 WB On-Ramp to I-64 EB and the I-70 EB On-Ramp to I-64 EB; and
- the weaving segment between I-70 EB On-Ramp to I-64 EB and the I-64-EB-to-I-70-EB Off-Ramp.

Speeds are expected to continue to decline within these freeway segments, as well.

PM Peak Hour
During the PM peak period, all segments along eastbound I-70 currently operate at LOS C or better. However, five segments along westbound I-70 operate at LOS F, essentially creating a bottleneck for westbound travelers along the entire length of I-70 between Wentzville Parkway interchange and I-64. Specifically, the five poorly operating segments are:

- the basic freeway segment between the I-70 WB Off-Ramp to I-64 EB and the Route 61 SB On-Ramp to I-70 WB,
- the weaving segment between the Route 61 SB On-Ramp and the Route Z Off-Ramp,
- the basic freeway segment between Route Z Off-Ramp & On-Ramp,
- the merge segment at the Route Z On-Ramp to I-70 WB; and
- the basic freeway segment between the Route Z On-Ramp and the Wentzville Parkway Off-Ramp.

Along westbound I-64, there are four segments that operate at LOS E or worse:

- the basic freeway segment north of Prospect Rd,
- the diverge segment at the I-64 WB Off-Ramp to I-70 EB,
- the basic freeway segment between the I-64 WB Off-Ramp and the I-70 EB On-Ramp; and
- the merge segment between I-70 EB On-loop and the Route 61 SB Off-Ramp to I-70 WB.

Along southbound Route 61, one segment currently operates at LOS E: the basic freeway segment south of Wentzville Parkway. **Figure 18** depicts freeway LOS of the AM and PM peak-hour volumes for the existing conditions.

I-70 Bottleneck

As described above, the existing conditions analysis reports a major traffic bottleneck occurring during the PM peak period along westbound I-70. This analysis is in agreement with observed field conditions as well as prior studies, including the St. Louis Regional Freightway Plan, which includes improvements to this area of I-70 on its 2020 Freightway Multimodal Transportation Project List.

The project fact sheet for the *I-70 Improvements from Warrenton to Stan Musial Veterans Memorial Bridge* project states that the I-70 / I-64 interchange is one of the greatest freight bottlenecks in the St. Louis region, and the 20-mile section of I-70 west of the interchange, from Wentzville to Warrenton, experienced an estimated user delay cost of $12.7 million in 2016. It goes on to say that by reconstructing and expanding the existing four-lane interstate to six-lanes for that 20-mile section (which includes the Wentzville project study area), that the safety, reliability, and capacity of I-70 for both freight and passenger vehicles will be improved.

As suggested by the Freightway plan, the Build alternatives for this Wentzville project (presented in the following sections) include widening of I-70 from four-lanes to six-lanes as a way to help improve this bottleneck.

Table 3: Existing Conditions Freeway Results Summary

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Eastbound I-70	West of Wentzville Parkway	Basic	B	17.3	65.9	B	16.2	65.9
	I-70 EB Off-Ramp to Wentzville Parkway	Diverge	B	14.5	65.0	B	13.6	65.0
	Between Wentzville Parkway On-Ramp & Off-Ramp	Basic	B	15.8	65.3	B	13.8	65.6
	Wentzville Parkway On-Ramp to I-70 EB	Merge	C	22.4	58.9	B	18.1	61.5
	Between Wentzville Parkway On-Ramp & Route Z Off-Ramp	Basic	C	25.6	63.0	C	21.2	63.9
	I-70 EB Off-Ramp to Route Z	Diverge	C	21.2	63.6	B	17.7	64.3
	Between Route Z On-Ramp & Off-Ramp	Basic	C	20.3	63.8	B	16.4	64.3
	Route Z On-Ramp to I-70 EB	Merge	B	15.2	64.7	B	11.4	64.8
	I-70 EB Off-Ramp to I-64 EB	Diverge	B	15.9	64.2	B	11.7	65.0
	Between I-70 EB Off-Ramp to I-64 EB & I-70 EB Off-Ramp to US-61 NB Off-Ramp	Basic	B	13.4	65.7	A	10.1	66.0
	I-70 EB Off-Ramp to US-61 NB	Diverge	B	11.1	63.9	A	8.3	64.0
	Between I-70 EB Off-Ramp to US-61 NB & I-64 WB to I-70 EB On-Ramp	Basic	B	12.7	65.9	A	9.3	66.3
	I-64 WB On-Ramp to I-70 EB	Merge	B	19.3	60.1	B	13.0	63.0
	West of Highway A	Basic	C	19.9	64.9	B	13.8	65.7
Westbound I-70	West of Highway A	Basic	A	9.7	66.3	C	23.2	64.5
	I-70 WB Off-Ramp to US-61 NB	Diverge	A	9.8	65.7	C	23.7	63.2
	Between US-61 NB Off-Ramp & I-64 EB On-loop	Basic	A	10.1	65.9	C	22.9	63.5
	I-70 WB Off-Ramp to I-64 EB	Diverge	A	8.4	64.0	B	19.3	61.8
	Between I-70 WB Off-Ramp to I-64 EB & US-61 SB On-Ramp to I-70 WB	Basic	A	9.8	65.8	F	45.5	37.7
	Between US-61 SB On-Ramp & Route Z Off-Ramp	Weave	B	10.0	60.7	F	64.5	25.6
	Between Route Z Off-Ramp & On-Ramp	Basic	B	13.4	65.2	F	85.5	24.0
	Route Z On-Ramp to I-70 WB	Merge	B	12.3	63.7	F	55.1	34.7
	Between Route Z On-Ramp & Wentzville Parkway Off-Ramp	Basic	B	14.8	64.7	F	52.1	40.9
	I-70 WB to Wentzville Parkway Off-Ramp	Diverge	B	12.4	64.5	D	30.1	58.5
	Between Wentzville Parkway Off-Ramp & On-Ramp	Basic	A	9.1	65.7	C	21.5	63.6
	Wentzville Parkway On-Ramp to I-70 WB	Merge	A	8.4	65.3	C	20.6	63.3

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Westbound I-64	North of Prospect Rd	Basic	B	12.7	66.1	E	38.7	51.3
	I-64 WB Off-Ramp to I-70 EB	Diverge	B	10.7	62.0	F	51.8	39.5
	Between I-70 EB Off-Ramp & I-70 EB On-loop	Basic	B	12.2	65.4	F	75.9	31.9
	Between I-70 EB On-loop & I-64 WB Off-Ramp to I-70 WB	Merge	B	11.5	58.9	F	46.4	36.0
	Between I-64 WB Off-Ramp to I-70 WB & I-70 EB Off-Ramp to US-61 NB	Basic	A	7.7	64.7	A	10.8	58.4
	After I-70 WB Off-Ramp to US-61 NB	Weave	A	8.3	64.5	B	15.0	63.1
Eastbound I-64	South of Wentzville Pkwy	Basic	E	41.7	31.1	E	38.7	51.3
	US-61 SB to I-70 WB Off-Ramp	Diverge	F	131.4	8.9	A	7.6	66.8
	Between US-61 SB to I-70 WB Off-Ramp & Luetkenhaus On-Ramp to I-64 EB	Basic	F	107.9	14.5	A	7.7	66.3
	Between Luetkenhaus On-Ramp to I-64 EB & I-70 WB On-loop to I-64 EB	Merge	F	85.5	19.0	A	10.0	66.3
	Between I-70 WB On-loop to I-64 EB & I-70 EB Off-Ramp to I-64 EB	Merge	F	80.3	19.8	A	9.7	63.1
	Between I-70 EB On-Ramp to I-64 EB & I-64 EB to I-70 EB On-Ramp	Weave	F	66.7	24.0	A	9.9	61.3
	North of Prospect Rd	Basic	A	3.8	54.3	B	14.3	61.7

Intersection Results

The LOS and delay results for the signalized intersections are provided in **Table 4**. The results indicate that the intersections within the study area operate acceptably during the AM and PM peak hours, at LOS C or better.

Table 4: Existing Conditions Intersection Results Summary

		AM Peak Hour		PM Peak Hour	
Description	**Intersection Type**	**Delay [sec/veh]**	**LOS**	**Delay [sec/veh]**	**LOS**
I-70 WB ramps & Wentzville Pkwy	Signal	7.6	A	13.3	B
I-70 EB ramps & Wentzville Pkwy	Signal	26.1	C	26.5	C

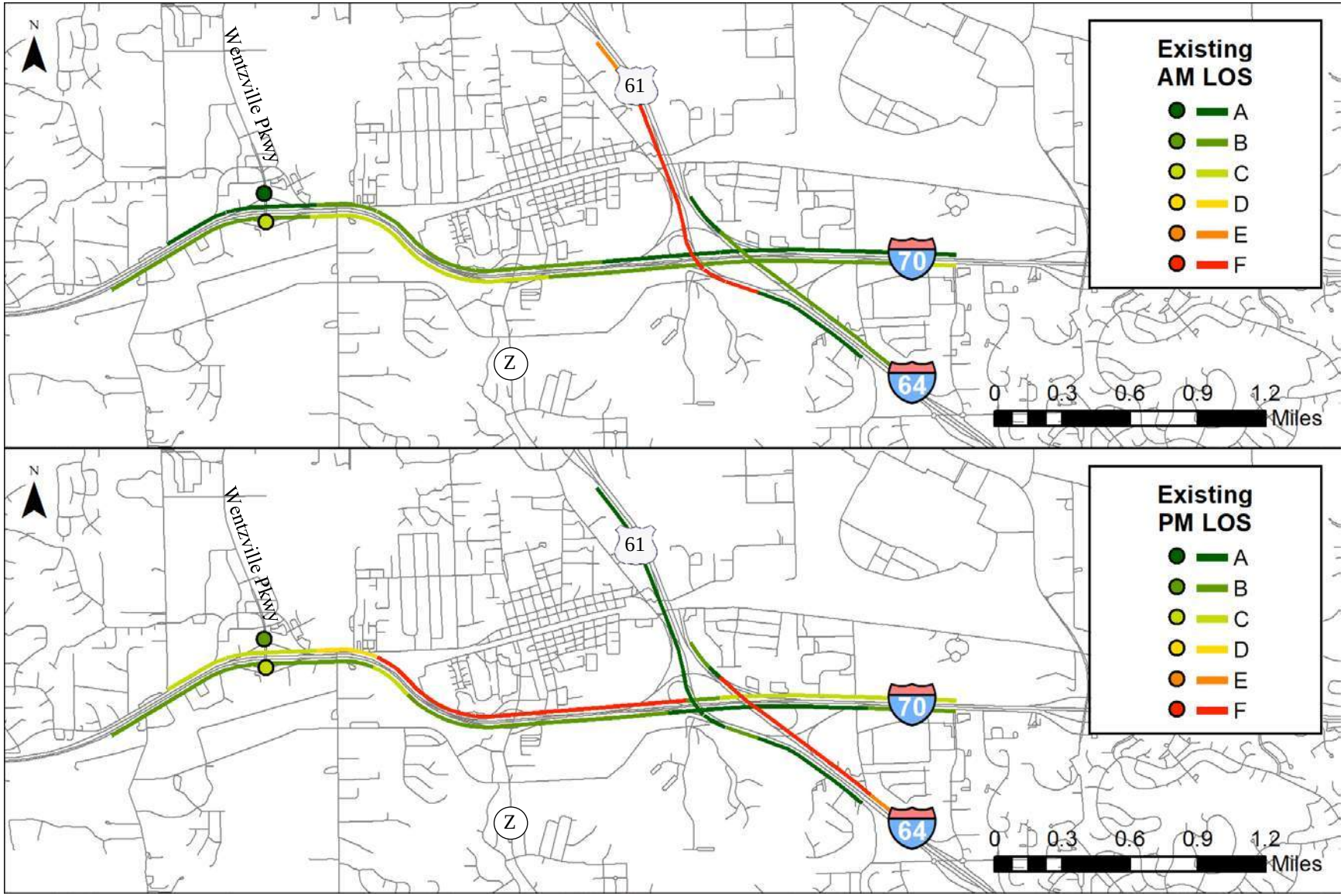


Figure 18: Existing Freeway LOS for AM and PM peak hours

2045 Traffic Volume Forecasts
The alternatives in this Concept Study were evaluated considering future traffic volumes to account for expected changes over the next couple of decades, to identify the long-term viability of improvements.

Future traffic growth volumes were extracted from the St. Charles County Travel Demand Model. This was achieved by subtracting the 2015 Base Year model volumes from the 2045 committed model volumes. The resulting traffic volumes represent the anticipated growth from 2015 to 2045 on the basis of socio-economic data. This calculation was performed for both the AM and PM peak-period models. The peak-period growth volumes were then added to the existing traffic volumes.

Figure 19 illustrates the 2045 volume forecasts.

2045 No-Build Conditions
To assess traffic operations for the 2045 Future No-Build Conditions, the existing calibrated AM and PM peak-period simulation models were modified with the developed 2045 future traffic volumes.

Freeway Segment Results
The LOS, density, and speed results for the 2045 No-Build Conditions freeway segments are listed in **Table 5**. As shown below, the forecasted increase in volumes by 2045 is expected to result in increased congestion and reduced speeds, leading to poor LOS along many segments within the study area under the no-build conditions.

AM Peak Hour
During the AM peak hour, the 2045 No Build Conditions freeway operational results indicate that LOS will be maintained at LOS D or better for all segments along westbound I-70. Two segments on eastbound I-70 are expected to degrade to LOS E or worse by 2045:

- the merge segment at the Wentzville Parkway On-Ramp to I-70 EB and,
- the basic freeway segment between the Wentzville Parkway On-Ramp and the Route Z Off-Ramp.

All segments of westbound I-64 are expected to continue to operate at LOS C or better, during the AM peak. However, on eastbound I-64, six segments are expected to operate at LOS F:

- the basic freeway segment on Route 61 south of Wentzville parkway,
- the diverge segment at the Route 61-SB-to-I-70-WB Off-Ramp,
- the basic freeway segment between I-70 WB Off-Ramp and the Luetkenhaus On-Ramp to I-64 EB,
- the merge segment between the Luetkenhaus On-Ramp to I-64 EB and the I-70 WB On-loop to I-64 EB,
- the merge segment between the I-70 WB On-loop to I-64 EB and the I-70 EB On-Ramp to I-64 EB, and

- the weaving segment between the I-70 EB On-Ramp to I-64 EB and the I-64-EB-to-I-70-EB Off-Ramp.

Speeds are expected to continue to decline with the additional background traffic growth on the network.

PM Peak Hour

During the PM peak hour, the same two segments of eastbound I-70 (as the AM peak) are expected to operate at LOS E or worse. On westbound I-70, the bottleneck that was present under Existing conditions is expected to worsen, extending queues all the way back to Highway A. In the No-Build scenario, nine segments are expected to operate at LOS F:

- the basic freeway segment west of Highway A,
- the diverge segment at the I-70 WB Off-Ramp to Route 61 NB,
- the basic freeway segment between the Route 61 NB Off-Ramp and the I-64 EB On-loop
- the diverge segment at the I-70 WB Off-loop to I-64 EB,
- the basic freeway segment between the I-70 WB Off-Ramp to I-64 EB and the Route 61 SB On-Ramp to I-70 WB,
- the weaving segment between the Route 61 SB On-Ramp and the Route Z Off-Ramp,
- the basic freeway segment between the Route Z Off-Ramp and On-Ramp,
- the merge segment at the Route Z On-Ramp to I-70 WB, and
- the basic freeway segment between the Route Z On-Ramp and the Wentzville Parkway Off-Ramp.

Along I-64, all of the freeway segments along eastbound I-64/southbound Route 61 are expected to operate at LOS F. In addition, four segments along westbound I-64 are projected to operate at LOS F:

- the basic freeway segment north of Prospect Rd,
- the diverge segment at the I-64 WB Off-Ramp to I-70 EB,
- the basic freeway segment between the I-70 EB Off-Ramp & I-70 EB On-loop, and
- the merge segment between the I-70 EB On-loop and the I-64 On-Ramp to I-70 WB.

2045 Traffic Volume Forecasts are shown in **Figure 19**. Due to congestion and high density, the speed is projected to drop significantly at these locations.
Figure 20 depicts freeway LOS of the AM and PM peak-hour volumes for the 2045 No-Build conditions.

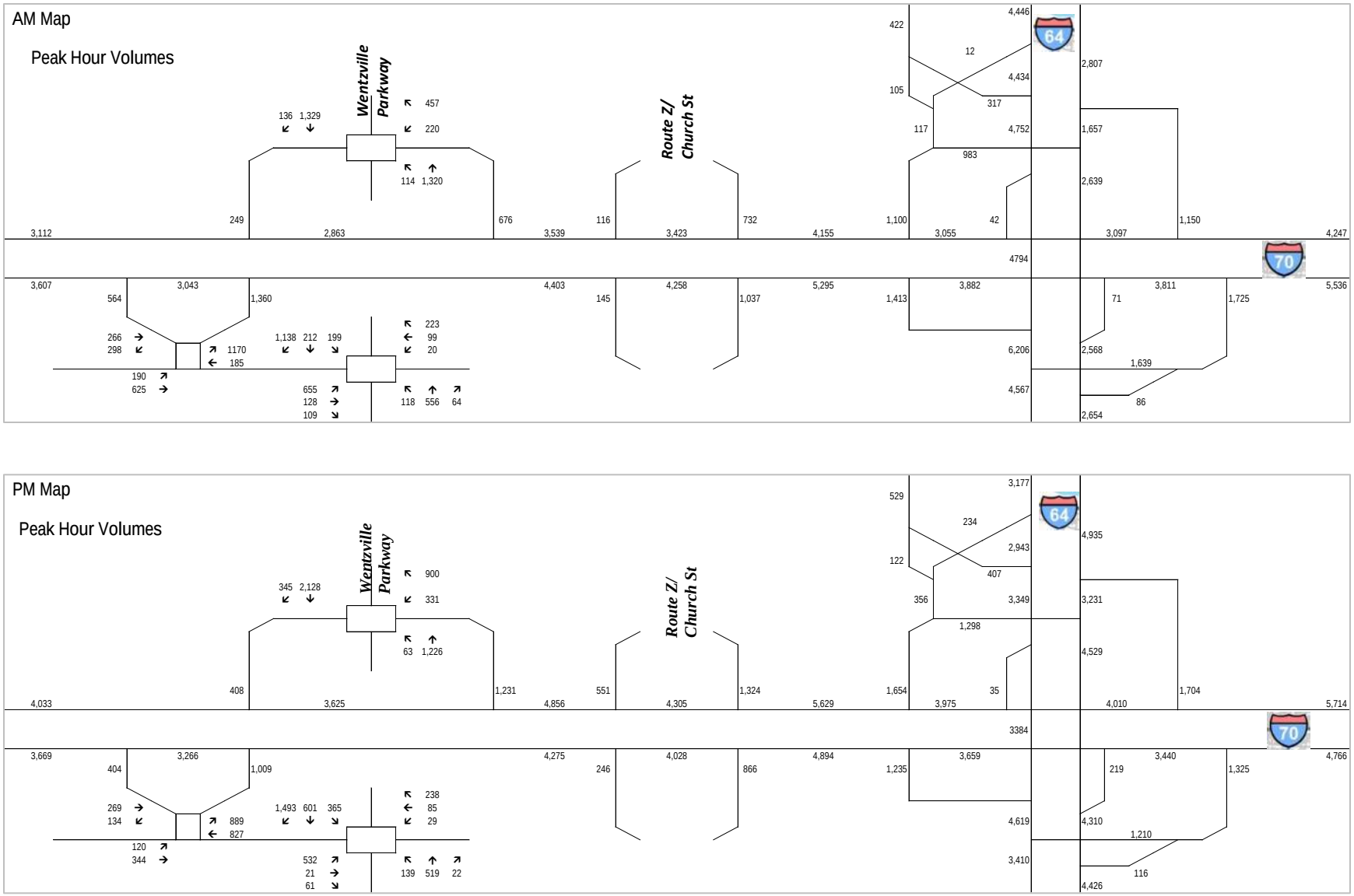


Figure 19: 2045 Volume Forecasts

Table 5: 2045 No-Build Conditions Freeway Results Summary

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Eastbound I-70	West of Wentzville Parkway	Basic	D	28.4	63.7	D	29.2	63.2
	I-70 EB Off-Ramp to Wentzville Parkway	Diverge	C	23.8	63.0	C	25.6	60.6
	Between Wentzville Parkway On-Ramp & Off-Ramp	Basic	C	25.6	60.3	D	28.7	58.4
	Wentzville Parkway On-Ramp to I-70 EB	Merge	F	74.2	34.8	F	74.5	34.7
	Between Wentzville Parkway On-Ramp & Route Z Off-Ramp	Basic	E	37.7	54.8	E	38.4	53.7
	I-70 EB Off-Ramp to Route Z	Diverge	D	29.3	59.9	D	29.4	59.4
	Between Route Z On-Ramp & Off-Ramp	Basic	D	27.2	62.0	D	26.3	62.1
	Route Z On-Ramp to I-70 EB	Merge	B	18.9	64.5	B	17.9	64.3
	I-70 EB Off-Ramp to I-64 EB	Diverge	B	19.4	64.6	B	18.2	64.7
	Between I-70 EB Off-Ramp to I-64 EB & I-70 EB Off-Ramp to US-61 NB Off-Ramp	Basic	C	19.1	65.1	C	18.7	65.0
	I-70 EB Off-Ramp to US-61 NB	Diverge	B	15.9	63.5	B	15.8	63.2
	Between I-70 EB Off-Ramp to US-61 NB & I-64 WB to I-70 EB On-Ramp	Basic	C	18.8	65.1	B	17.5	65.1
	I-64 WB On-Ramp to I-70 EB	Merge	C	24.4	61.6	C	23.7	60.9
	West of Highway A	Basic	D	26.1	64.0	C	25.3	63.9
Westbound I-70	West of Highway A	Basic	C	22.0	64.7	F	88.2	23.1
	I-70 WB Off-Ramp to US-61 NB	Diverge	C	25.2	57.6	F	98.9	17.1
	Between US-61 NB Off-Ramp & I-64 EB On-loop	Basic	D	26.5	59.2	F	106.9	15.4
	I-70 WB Off-Ramp to I-64 EB	Diverge	C	21.1	60.6	F	92.7	19.2
	Between I-70 WB Off-Ramp to I-64 EB & US-61 SB On-Ramp to I-70 WB	Basic	C	24.9	62.2	F	113.4	14.4
	Between US-61 SB On-Ramp & Route Z Off-Ramp	Weave	C	20.8	56.0	F	74.5	20.8
	Between Route Z Off-Ramp & On-Ramp	Basic	D	28.2	60.4	F	98.3	19.0
	Route Z On-Ramp to I-70 WB	Merge	C	25.6	57.7	F	59.4	32.6
	Between Route Z On-Ramp & Wentzville Parkway Off-Ramp	Basic	D	30.4	58.7	F	46.8	46.0
	I-70 WB to Wentzville Parkway Off-Ramp	Diverge	C	24.9	61.5	D	29.5	60.8
	Between Wentzville Parkway Off-Ramp & On-Ramp	Basic	C	22.3	63.6	C	24.6	63.8
	Wentzville Parkway On-Ramp to I-70 WB	Merge	C	20.3	61.9	C	23.3	62.3

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Westbound I-64	North of Prospect Rd	Basic	C	20.0	65.1	F	90.7	23.4
	I-64 WB Off-Ramp to I-70 EB	Diverge	B	16.9	61.0	F	75.4	26.2
	Between I-70 EB Off-Ramp & I-70 EB On-loop	Basic	C	19.6	64.2	F	92.9	22.7
	Between I-70 EB Onloop & I-64 WB Off-Ramp to I-70 WB	Merge	B	17.5	57.8	F	45.6	41.2
	Between I-64 WB Off-Ramp to I-70 WB & I-70 EB Off-Ramp to US-61 NB	Basic	B	12.6	63.4	C	25.0	60.9
	After I-70 WB Off-Ramp to US-61 NB	Weave	B	14.4	63.7	C	23.1	64.3
Eastbound I-64	South of Wentzville Pkwy	Basic	F	146.2	9.1	F	52.8	26.3
	US-61 SB to I-70 WB Off-Ramp	Diverge	F	151.2	8.0	F	129.1	9.8
	Between US-61 SB to I-70 WB Off-Ramp & Luetkenhaus On-Ramp to I-64 EB	Basic	F	114.9	13.9	F	109.2	14.8
	Between Luetkenhaus On-Ramp to I-64 EB & I-70 WB On-loop to I-64 EB	Merge	F	89.3	19.0	F	84.4	20.2
	Between I-70 WB On-loop to I-64 EB & I-70 EB Off-Ramp to I-64 EB	Merge	F	82.5	20.1	F	74.2	22.8
	Between I-70 EB On-Ramp to I-64 EB & I-64 EB to I-70 EB On-Ramp	Weave	F	68.6	24.2	F	63.9	25.7
	North of Prospect Rd	Basic	B	15.4	37.1	F	51.3	10.4

Intersection Results

The LOS and delay results for the signalized intersections are provided in **Table 6**.The results of the intersection analysis show that the signalized intersections are projected to operate acceptably during the AM and PM peak hours, at LOS D or better. The operations at I-70 EB Off-Ramp & Veterans Memorial Parkway are projected to become congested and operate at LOS E during the AM peak. This delay is caused by the heavy eastbound freeway volumes exiting within this area.

Table 6: 2045 No Build Conditions Intersection Results Summary

		AM Peak Hour		PM Peak Hour	
Description	**Intersection Type**	**Delay [sec/veh]**	**LOS**	**Delay [sec/veh]**	**LOS**
I-70 ramps & Wentzville Pkwy	Signal	51.6	D	35.7	D
Veterans Memorial Pkwy & Wentzville Pkwy	Signal	42.3	D	30.3	C
I-70 EB ramps & Veterans Memorial Pkwy	Roundabout	39.3	E	14.8	B

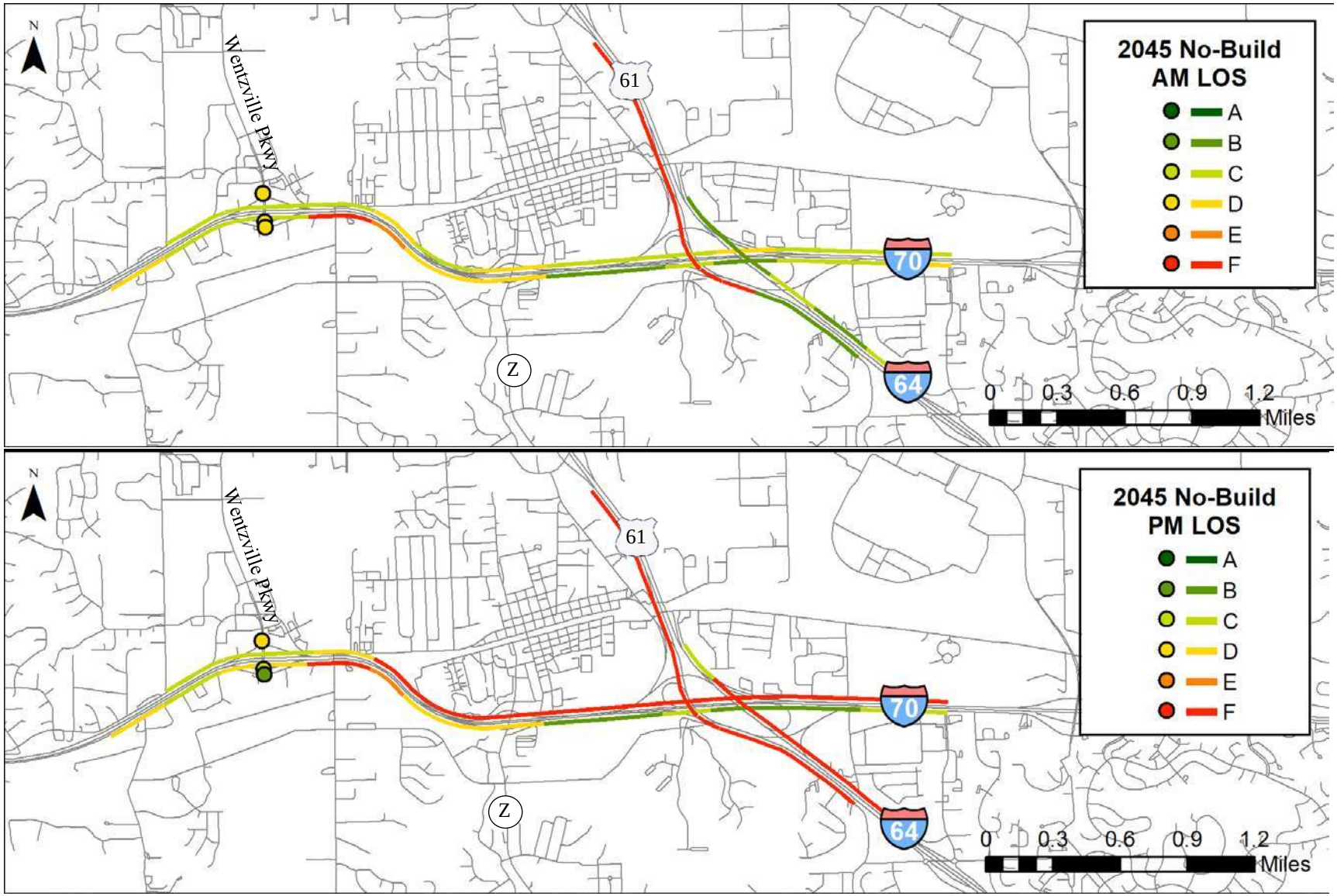


Figure 20: 2045 No-Build Freeway LOS Conditions for AM and PM peak hours

2045 Build Alternative Conditions
To evaluate the proposed improvements between Wentzville Parkway and I-64 for the 2045 Build Alternative, the existing calibrated AM and PM peak-period simulation models were modified to include the developed 2045 future traffic volumes, and the following geometric improvements:

1- Addition of a mainline lane and an auxiliary lane in both directions between Wentzville Parkway and Route Z (Church Street), for 4 total lanes (3 lane + auxiliary lane).
2- Addition of a mainline lane in both directions between Route Z and I-64.

Freeway Segment Results
The LOS, density, and speed results for the 2045 Build Alternative freeway segments are listed in **Table 7**.

AM Peak Hour
The 2045 Build Alternative freeway operations results indicate that all segments are forecasted to improve to LOS D or better during the AM peak along eastbound and westbound I-70. Along I-64, the Build alternative includes no proposed improvements; therefore, the projected westbound and eastbound I-64 freeway operations are the same as for the 2045 No Build alternative, with multiple segments operating at LOS F in the eastbound direction.

PM Peak Hour
During the PM peak, most freeway segments are projected to improve to LOS D or better along eastbound and westbound I-70. There is one segment that is still forecasted to operate at LOS E on I-70 westbound: the diverge at the I-70 WB Off-Ramp to Route 61 NB, however, this is beyond the area where the Build improvements are assumed. The bottleneck along westbound I-70, observed under Existing and No-Build conditions (between I-64 and Wentzville Parkway), is expected to be eliminated under the Build conditions.

As with the AM peak, the I-64 freeway operations show similar forecasted results to 2045 No Build alternative. **Figure 21** depicts freeway LOS of the AM and PM peak-hour volumes for the 2045 Build Alternative Conditions.

Table 7: 2045 Build Alternative Conditions Freeway Results Summary (3 Lanes + 1 Auxiliary Lane)

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Eastbound I-70	West of Wentzville Parkway	Basic	D	28.4	63.7	D	30.1	62.0
	I-70 EB Off-Ramp to Wentzville Parkway	Diverge	C	23.8	63.0	C	27.8	58.6
	Between Wentzville Parkway On-Ramp & Off-Ramp	Basic	C	19.6	65.2	C	21.7	63.9
	Wentzville Parkway On-Ramp to I-70 EB	Merge	B	18.8	64.8	B	17.7	64.8
	Between Wentzville Parkway On-Ramp & Route Z Off-Ramp	Basic	B	16.6	65.9	B	16.1	65.8
	I-70 EB Off-Ramp to Route Z	Diverge	B	16.3	63.7	B	15.7	63.9
	Between Route Z On-Ramp & Off-Ramp	Basic	C	21.8	65.1	C	20.6	65.1
	Route Z On-Ramp to I-70 EB	Merge	C	21.6	63.3	C	20.1	63.3
	I-70 EB Off-Ramp to I-64 EB	Diverge	C	21.1	63.0	B	19.5	63.6
	Between I-70 EB Off-Ramp to I-64 EB & I-70 EB Off-Ramp to US-61 NB Off-Ramp	Basic	C	19.9	65.0	C	19.0	65.0
	I-70 EB Off-Ramp to US-61 NB	Diverge	B	16.5	62.1	B	16.2	61.8
	Between I-70 EB Off-Ramp to US-61 NB & I-64 WB to I-70 EB On-Ramp	Basic	C	19.5	65.1	B	17.9	65.1
	I-64 WB On-Ramp to I-70 EB	Merge	C	24.4	60.8	C	23.7	60.0
	West of Highway A	Basic	D	26.7	64.1	C	25.5	64.1
Westbound I-70	West of Highway A	Basic	C	22.0	64.7	D	31.5	58.5
	I-70 WB Off-Ramp to US-61 NB	Diverge	C	25.2	57.6	E	41.5	46.5
	Between US-61 NB Off-Ramp & I-64 EB On-loop	Basic	D	26.5	59.2	D	33.9	55.7
	I-70 WB Off-Ramp to I-64 EB	Diverge	C	21.1	60.6	C	26.1	59.1
	Between I-70 WB Off-Ramp to I-64 EB & US-61 SB On-Ramp to I-70 WB	Basic	C	24.7	62.6	D	30.2	61.6
	Between US-61 SB On-Ramp & Route Z Off-Ramp	Weave	B	16.5	63.2	C	21.4	63.1
	Between Route Z Off-Ramp & On-Ramp	Basic	B	17.5	64.9	C	21.0	65.0
	Route Z On-Ramp to I-70 WB	Merge	B	10.9	66.6	B	16.0	65.6
	Between Route Z On-Ramp & Wentzville Parkway Off-Ramp	Basic	B	13.4	65.5	B	17.8	65.0
	I-70 WB to Wentzville Parkway Off-Ramp	Diverge	B	10.3	64.5	B	15.4	62.5
	Between Wentzville Parkway Off-Ramp & On-Ramp	Basic	C	18.7	62.4	C	23.3	61.1
	Wentzville Parkway On-Ramp to I-70 WB	Merge	C	20.7	61.4	C	26.9	59.2

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Westbound I-64	North of Prospect Rd	Basic	C	20.0	65.1	F	90.7	23.5
	I-64 WB Off-Ramp to I-70 EB	Diverge	B	16.9	61.0	F	75.8	26.1
	Between I-70 EB Off-Ramp & I-70 EB On-loop	Basic	C	19.6	64.2	F	93.0	22.7
	Between I-70 EB On-loop & I-64 WB Off-Ramp to I-70 WB	Merge	B	17.5	57.8	F	45.6	41.3
	Between I-64 WB Off-Ramp to I-70 WB & I-70 EB Off-Ramp to US-61 NB	Basic	B	12.7	63.4	C	25.0	61.0
	After I-70 WB Off-Ramp to US-61 NB	Weave	B	14.4	63.7	C	24.2	64.0
Eastbound I-64	South of Wentzville Pkwy	Basic	F	148.4	8.7	F	64.4	20.6
	US-61 SB to I-70 WB Off-Ramp	Diverge	F	153.8	7.8	F	133.9	9.1
	Between US-61 SB to I-70 WB Off-Ramp & Luetkenhaus On-Ramp to I-64 EB	Basic	F	116.3	13.6	F	110.4	14.5
	Between Luetkenhaus On-Ramp to I-64 EB & I-70 WB On-loop to I-64 EB	Merge	F	90.2	18.5	F	85.6	19.8
	Between I-70 WB On-loop to I-64 EB & I-70 EB Off-Ramp to I-64 EB	Merge	F	83.5	19.7	F	75.6	22.3
	Between I-70 EB On-Ramp to I-64 EB & I-64 EB to I-70 EB On-Ramp	Weave	F	69.2	24.0	F	64.9	25.3
	North of Prospect Rd	Basic	B	15.3	37.4	F	57.9	9.4

Interchange/Intersection Results

The LOS and delay results for the 2045 Build Alternative signalized intersections are provided in **Table 8.** The results of the intersection analysis show that the intersections are projected to operate at LOS C or better during the AM peak hour and PM peak hour.

Table 8: 2045 Build Alternative Conditions Intersection Results Summary

		AM Peak Hour		PM Peak Hour	
Description	**Intersection Type**	**Delay [sec/veh]**	**LOS**	**Delay [sec/veh]**	**LOS**
I-70 WB ramps & Wentzville Pkwy	Signal	15.2	B	26.6	C
Veterans Memorial Pkwy & Wentzville Pkwy	Signal	31.2	C	31.2	C
I-70 EB ramps & Veterans Memorial Pkwy	Roundabout	24.9	C	17.8	B

Figure 21: 2045 Build Freeway LOS Conditions for AM and PM peak hours

2045 Build Intermediate Alternative Conditions
To assess the impact of 2045 Build Intermediate Alternative Conditions, the existing calibrated AM and PM peak-period simulation models were modified to include the developed 2045 future traffic volumes, and the following geometric improvements:

1- Addition of an auxiliary lane in both directions between Wentzville Parkway and Route Z (Church Street), for 3 total lanes (2 lanes + auxiliary lane).

The purpose of this alternative was to investigate the effect of adding an auxiliary lane only, versus adding a basic lane and an auxiliary lane, as in the 2045 Build Alternative.

Freeway Segment Results
The LOS, density, and speed results for the 2045 Build Intermediate Alternative freeway segments are listed in **Table 9**.

AM Peak Hour
The 2045 Build Intermediate Alternative freeway operations results indicate that all study segments are forecasted to improve to LOS D or better along eastbound and westbound I-70, during AM peak. Freeway speeds under this alternative will be decreased slightly compared to the 2045 Build Alternative. Eastbound and westbound I-64 freeway operations show similar projected results to the 2045 Build Alternative.

PM Peak Hour
During the PM peak, all freeway segments are projected to improve to LOS D or better along eastbound I-70. Many of the study segments along westbound I-70 are also expected to improve under the Build Intermediate conditions, however, three segments are expected to remain at LOS E:

- the diverge segment at the I-70 WB Off-Ramp to Route 61 NB,
- the basic freeway segment between the Route 61 NB Off-ramp and the I-64 EB On-loop, and
- the basic freeway segment between the I-70 WB Off-Ramp to I-64 EB and the Route 61 SB On-Ramp to I-70 WB.

Similar to the Build alternative, each of these segments remaining at LOS E are beyond the limits of the assumed geometric improvements. Like the Build alternative, the Build Intermediate alternative is expected to eliminate the bottleneck along westbound I-70 between Wentzville Parkway and I-64.

The Eastbound and Westbound I-64 freeway segments are projected to operate similarly to the 2045 Build Alternative. **Figure 22** depicts freeway LOS of the AM and PM peak-hour volumes for the 2045 Build Intermediate Alternative Conditions.

Table 9: 2045 Build Intermediate Alternative Freeway Results Summary (2 Mainline Lanes + 1 Auxiliary Lane)

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Eastbound I-70	West of Wentzville Parkway	Basic	D	28.4	63.7	D	30.2	62.2
	I-70 EB Off-Ramp to Wentzville Parkway	Diverge	C	23.8	63.0	D	28.1	57.7
	Between Wentzville Parkway On-Ramp & Off-Ramp	Basic	C	23.7	64.2	D	26.4	62.4
	Wentzville Parkway On-Ramp to I-70 EB	Merge	C	21.9	61.7	C	21.2	62.1
	Between Wentzville Parkway On-Ramp & Route Z Off-Ramp	Basic	C	24.4	61.4	C	23.5	61.9
	I-70 EB Off-Ramp to Route Z	Diverge	C	22.4	61.5	C	20.9	62.6
	Between Route Z On-Ramp & Off-Ramp	Basic	D	29.5	60.7	D	27.2	61.8
	Route Z On-Ramp to I-70 EB	Merge	B	19.7	64.1	B	18.3	64.1
	I-70 EB Off-Ramp to I-64 EB	Diverge	C	20.1	64.4	B	18.7	64.3
	Between I-70 EB Off-Ramp to I-64 EB & I-70 EB Off-Ramp to US-61 NB Off-Ramp	Basic	C	19.9	64.9	C	19.1	64.8
	I-70 EB Off-Ramp to US-61 NB	Diverge	B	16.5	63.2	B	16.1	62.9
	Between I-70 EB Off-Ramp to US-61 NB & I-64 WB to I-70 EB On-Ramp	Basic	C	19.6	64.9	B	17.9	65.0
	I-64 WB On-Ramp to I-70 EB	Merge	C	25.0	61.4	C	24.1	60.5
	West of Highway A	Basic	D	26.8	63.8	C	25.6	63.9
Westbound I-70	West of Highway A	Basic	C	22.0	64.7	D	31.5	58.5
	I-70 WB Off-Ramp to US-61 NB	Diverge	C	25.2	57.6	E	41.8	46.2
	Between US-61 NB Off-Ramp & I-64 EB On-loop	Basic	D	26.5	59.2	E	35.2	54.5
	I-70 WB Off-Ramp to I-64 EB	Diverge	C	21.1	60.6	D	28.5	57.0
	Between I-70 WB Off-Ramp to I-64 EB & US-61 SB On-Ramp to I-70 WB	Basic	C	24.9	62.2	E	37.1	55.0
	Between US-61 SB On-Ramp & Route Z Off-Ramp	Weave	C	20.7	56.3	D	33.4	47.8
	Between Route Z Off-Ramp & On-Ramp	Basic	D	28.0	60.8	D	34.5	59.1
	Route Z On-Ramp to I-70 WB	Merge	B	17.5	63.4	C	24.1	61.9
	Between Route Z On-Ramp & Wentzville Parkway Off-Ramp	Basic	C	18.3	63.9	C	24.2	63.2
	I-70 WB to Wentzville Parkway Off-Ramp	Diverge	B	17.1	64.6	C	23.2	64.2
	Between Wentzville Parkway Off-Ramp & On-Ramp	Basic	C	22.2	63.9	D	26.8	63.6
	Wentzville Parkway On-Ramp to I-70 WB	Merge	C	20.7	61.5	C	25.9	60.8

Rte	Description	Segment Type	AM Peak Hour			PM Peak Hour		
			LOS	Density [veh/mi/ln]	Speed [mph]	LOS	Density [veh/mi/ln]	Speed [mph]
Westbound I-64	North of Prospect Rd	Basic	C	20.0	65.1	F	91.0	23.4
	I-64 WB Off-Ramp to I-70 EB	Diverge	B	16.9	61.0	F	75.8	26.2
	Between I-70 EB Off-Ramp & I-70 EB On-loop	Basic	C	19.6	64.2	F	93.2	22.6
	Between I-70 EB On-loop & I-64 WB Off-Ramp to I-70 WB	Merge	B	17.5	57.8	F	45.7	41.2
	Between I-64 WB Off-Ramp to I-70 WB & I-70 EB Off-Ramp to US-61 NB	Basic	B	12.7	63.4	C	24.9	61.1
	After I-70 WB Off-Ramp to US-61 NB	Weave	B	14.4	63.7	C	24.2	64.1
Eastbound I-64	South of Wentzville Pkwy	Basic	F	147.7	8.9	F	58.1	22.8
	US-61 SB to I-70 WB Off-Ramp	Diverge	F	153.1	7.9	F	134.9	8.9
	Between US-61 SB to I-70 WB Off-Ramp & Luetkenhaus On-Ramp to I-64 EB	Basic	F	116.2	13.7	F	110.5	14.6
	Between Luetkenhaus On-Ramp to I-64 EB & I-70 WB On-loop to I-64 EB	Merge	F	90.3	18.6	F	85.0	20.0
	Between I-70 WB On-loop to I-64 EB & I-70 EB Off-Ramp to I-64 EB	Merge	F	83.5	19.8	F	75.0	22.5
	Between I-70 EB On-Ramp to I-64 EB & I-64 EB to I-70 EB On-Ramp	Weave	F	67.9	24.5	F	63.7	25.9
	North of Prospect Rd	Basic	B	15.6	37.0	F	67.1	8.9

Interchange/Intersection Results

The LOS and delay results for the interchange areas and signalized intersections are provided in **Tables 10**. The results of the intersections analysis show that the intersections are projected to operate at LOS C or better during the AM peak hour and PM peak hour.

Table 10: 2045 Build Intermediate Alternative Intersection Results Summary

		AM Peak Hour		PM Peak Hour	
Description	**Intersection Type**	**Delay [sec/veh]**	**LOS**	**Delay [sec/veh]**	**LOS**
I-70 WB ramps & Wentzville Pkwy	Signal	15.3	B	26.0	C
Veterans Memorial Pkwy & Wentzville Pkwy	Signal	31.4	C	32.5	C
I-70 EB ramps & Veterans Memorial Pkwy	Roundabout	25.1	C	18.8	B

Figure 22: 2045 Build Intermediate Alternative LOS Conditions for AM and PM peak hours

Alternatives Comparison

Both the Build and Intermediate Build Alternatives are expected to improve conditions through the study area. As mentioned previously, the geometric improvements of both Build alternatives are expected to relieve the existing bottleneck along westbound I-70 during the PM peak hour. **Table 11** displays the LOS results of both Build alternatives next to the No-Build results for comparison purposes. Results are shown along I-70 only because, as discussed in previous sections, no modifications were assumed along I-64, therefore no improvements to LOS are expected.

Table 11: Freeway LOS for 2045 No-Build, Build and Intermediate Build Alternatives

			AM Peak Hour			PM Peak Hour		
Rte	**Description**	**Segment Type**	**NB**	**Build**	**Int. Build**	**NB**	**Build**	**Int Build**
Eastbound I-70	West of Wentzville Parkway	Basic	D	D	D	D	D	D
	I-70 EB Off-Ramp to Wentzville Parkway	Diverge	C	C	C	C	C	D
	Between Wentzville Parkway On-Ramp & Off-Ramp	Basic	C	C	C	D	C	D
	Wentzville Parkway On-Ramp to I-70 EB	Merge	F	B	C	F	B	C
	Between Wentzville Parkway On-Ramp & Route Z Off-Ramp	Basic	E	B	C	E	B	C
	I-70 EB Off-Ramp to Route Z	Diverge	D	B	C	D	B	C
	Between Route Z On-Ramp & Off-Ramp	Basic	D	C	D	D	C	D
	Route Z On-Ramp to I-70 EB	Merge	B	C	B	B	C	B
	I-70 EB Off-Ramp to I-64 EB	Diverge	B	C	C	B	B	B
	Between I-70 EB Off-Ramp to I-64 EB & I-70 EB Off-Ramp to US-61 NB Off-Ramp	Basic	C	C	C	C	C	C
	I-70 EB Off-Ramp to US-61 NB	Diverge	B	B	B	B	B	B
	Between I-70 EB Off-Ramp to US-61 NB & I-64 WB to I-70 EB On-Ramp	Basic	C	C	C	B	B	B
	I-64 WB On-Ramp to I-70 EB	Merge	C	C	C	C	C	C
	West of Highway A	Basic	D	D	D	C	C	C
Westbound I-70	West of Highway A	Basic	C	C	C	F	D	D
	I-70 WB Off-Ramp to US-61 NB	Diverge	C	C	C	F	E	E
	Between US-61 NB Off-Ramp & I-64 EB On-loop	Basic	D	D	D	F	D	E
	I-70 WB Off-Ramp to I-64 EB	Diverge	C	C	C	F	C	D
	Between I-70 WB Off-Ramp to I-64 EB & US-61 SB On-Ramp to I-70 WB	Basic	C	C	C	F	D	E
	Between US-61 SB On-Ramp & Route Z Off-Ramp	Weave	C	B	C	F	C	D
	Between Route Z Off-Ramp & On-Ramp	Basic	D	B	D	F	C	D
	Route Z On-Ramp to I-70 WB	Merge	C	B	B	F	B	C
	Between Route Z On-Ramp & Wentzville Parkway Off-Ramp	Basic	D	B	C	F	B	C
	I-70 WB to Wentzville Parkway Off-Ramp	Diverge	C	B	B	D	B	C
	Between Wentzville Parkway Off-Ramp & On-Ramp	Basic	C	C	C	C	C	D
	Wentzville Parkway On-Ramp to I-70 WB	Merge	C	C	C	C	C	C

As shown, along eastbound I-70 there were two segments that were expected to operate poorly under No-Build conditions that are expected to improve under both Build alternatives.

- The merge segment from the Wentzville Parkway On-Ramp to I-70 EB improves in both peak periods from LOS F to LOS B under Build conditions and LOS C in Intermediate Build conditions.

- The basic segment between the Wentzville Parkway On-Ramp and the Route Z Off-Ramp improves in both peak periods from LOS E to LOS B under Build conditions and LOS C in Intermediate Build conditions.

Along westbound I-70, during the AM peak hour, the No-Build conditions did not show any levels of service at E or F. However, in the PM peak hour, almost the entire length of the study area was shown to operate at LOS F under No-Build conditions. With the Build alternatives, most of those segments are shown to improve. Of particular interest to this study:

- The merge segment from the Route Z On-Ramp to I-70 WB is expected to improve from LOS F under No-Build conditions to LOS B under Build conditions and LOS C under Intermediate Build conditions.
- The I-70 westbound basic segment between the Route Z On-Ramp and the Wentzville Parkway Off-Ramp is expected to improve from LOS F under No-Build conditions to LOS B under Build conditions and LOS C under Intermediate Build conditions.

Network-wide Performance Comparison

VISSIM provides network-wide performance measures that can be used to compare the overall effectiveness of proposed corridor improvements. The following bullets highlight the network-wide performance measures, the specific data they collect, and how that information relates to overall network operations:

- Average Speed (mph) – This metric averages the total travel distance divided by the travel time to calculate the average speed for all vehicles traveling within the model during the peak hour.
- Total Delay of All Vehicles (Hr) – This metric calculates the total hours of delay for all vehicles experienced throughout the model during the peak hour.
- Average Delay per Vehicle (sec/veh) – This metric measures the total delay divided by the total number of vehicles that travel through the network during the peak hour.
- Average Number of Active Vehicles within the Network (veh) – This metric measures the total number of vehicles still traveling within the model at the end of the peak hour. A higher comparative value for this metric will be an indication of increased delays within a model, preventing entering vehicles from reaching their respective destinations.
- Average Number of Arrived Vehicles (veh) – This metric measures that total number of entering vehicles that have reached their destinations and are no longer active within the model. A higher comparative value indicates a model that flows better, allowing a greater number of vehicles to reach their destinations.
- Average Number of Demand Latent (veh) – This metric measures that total number of vehicles that have not entered the network within the model. A higher comparative value for this metric will be an indication of increased delays within a model, preventing an entering vehicles from reaching their respective destinations.

The network performance results indicate that, during the AM Peak, the two Build Alternatives exhibit similar performance in terms of average speed, total delay and average delay per vehicle.

During the PM peak, the 2045 Build Alternative`s results were superior to the 2045 Intermediate Build results for the following metrics:

- The average speed for the 2045 Build Alternative was 42 mph, compared to 40 mph in the Intermediate Build Alternative.
- The average delay per vehicle for the 2045 Build Alternative was 76 seconds, compared to 88 seconds in the Intermediate Build Alternative.
- The total hours of delay experienced by the vehicles within the 2045 Build Alternative was 510 hours, compared to 594 hours for the Intermediate Build Alternative.
- The average number of active vehicles within the network was 1,409 vehicles for the 2045 Build Alternative, while the Intermediate Build Alternative had an average of 1,588 vehicles at the end of the peak-hour simulation.
- The average number of arrived vehicles during the PM peak hour was 22,776 vehicles for 2045 Build Alternative while the Intermediate Build Alternative averaged 22,594 vehicles.

Table 12 summarize the network performance measures along all scenarios.

Table 12: Network Performance Results Comparison

AM Peak Hour	Average Speed (mph)	Total Delay All Veh (hr)	Average Delay (sec/veh)	Active Vehicles (veh)	Arriving Vehicles (veh)	Demand Latent (veh)
Existing	40	349	97	817	12,050	737
2045 No Build	28	1,071	190	1,950	18,337	2,532,842
2045 Build	31	901	161	1,772	18,346	2,562,178
2045 Intermediate Build	31	907	162	1,776	18,370	2,450,859

PM Peak Hour	Average Speed (mph)	Total Delay All Veh (hr)	Average Delay (sec/veh)	Active Vehicles (veh)	Arriving Vehicles (veh)	Demand Latent (veh)
Existing	44	309	67	1,021	13,964	6,248
2045 No Build	28	1,216	184	2,125	21,678	9,058,567
2045 Build	42	510	76	1,409	22,776	6,378,631
2045 Intermediate Build	40	594	88	1,588	22,594	6,358,943

As shown in the table, the 2045 Build Alternative will provide improved performance measurements in all categories over the 2045 Intermediate Build alternative. Additionally, the 2045 Build alternative will allow over 60 percent more vehicles to reach their destinations compared to the existing volume scenario, with less total delay. **Table 12** compare the freeway LOS for 2045 No-Build, Build and Intermediate Build scenarios.

ACCIDENT DATA AND SAFETY ENHANCEMENTS

This section presents a safety assessment of the corridor, both for existing and historical conditions.

Crash History and Statistics

Crash data were obtained within the study area for the five-year period from 2013 through 2017. This included crashes along I-70 from west of the Wentzville Parkway interchange to east of the Route Z (Church Street) interchange, as well as along those cross-street arterials between the ramp terminals, and along the southern outer road in the vicinity of the Wentzville Parkway interchange. As would be expected, crashes occurred most frequently in areas with high concentrations of conflicting traffic volumes, such as freeway ramp junctions and major arterial intersections. In the five-year analysis period, 640 crashes were reported, classified in the following manner:

Property Damage Only	81.9%
Minor Injury	16.9%
Disabling Injury	1.1%
Fatal	0.2%

Figure 23 shows the distribution of the crashes by severity, and **Figure 24** highlights where crash "hot spots" occur.

Figure 23: Crashes by Severity

Figure 24: Crash Densities

In the five-year analysis period, there was one fatal crash and seven disabling injury crashes. **Figure 25** is a summary chart of crash severity by year. The fatal crash occurred in 2015 and was a passing collision along westbound I-70, in which the vehicle ran off the road. The crash occurred under clear, dry, and dark with street lights off conditions. **Figure 26** includes an illustration of crash severity. There were no noticeable trends with the disabling injury crashes.

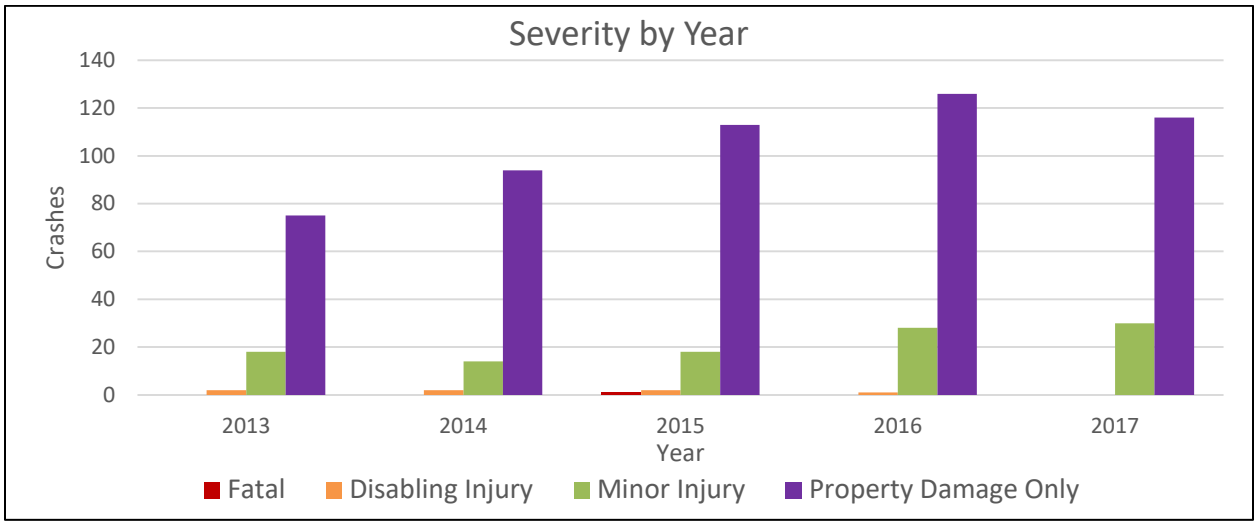


Figure 25: Crash Severity by Year

Figure 26: Crash Severity – Location Map

Figure 27 summarizes crashes by facility type. The majority of the reported crashes occurred on the interstate, and the trends were fairly consistent from year-to-year. Ramp crashes increased appreciably in 2016 and 2017.

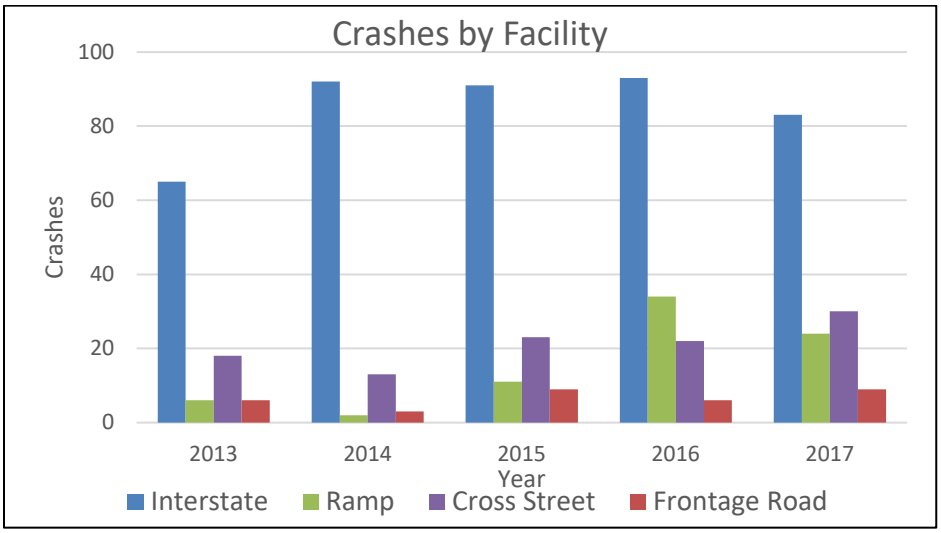


Figure 27: Crashes by Facility Type

Intersection collisions (developed using a 250-foot buffer around the intersections) accounted for approximately 25 percent of the crashes along the corridor, and accounted for the majority (75-percent range) of the ramp and cross-street crashes.

Crashes by time of day are indicative of traffic exposure, typically peaking during the typical a.m. and p.m. traffic peak hours – See **Figure 28**. The analysis did not reveal significant time trends/outliers except for the rear-end crashes at the mid-day, the out-of-control crashes at the morning and the passing crashes at late evening.

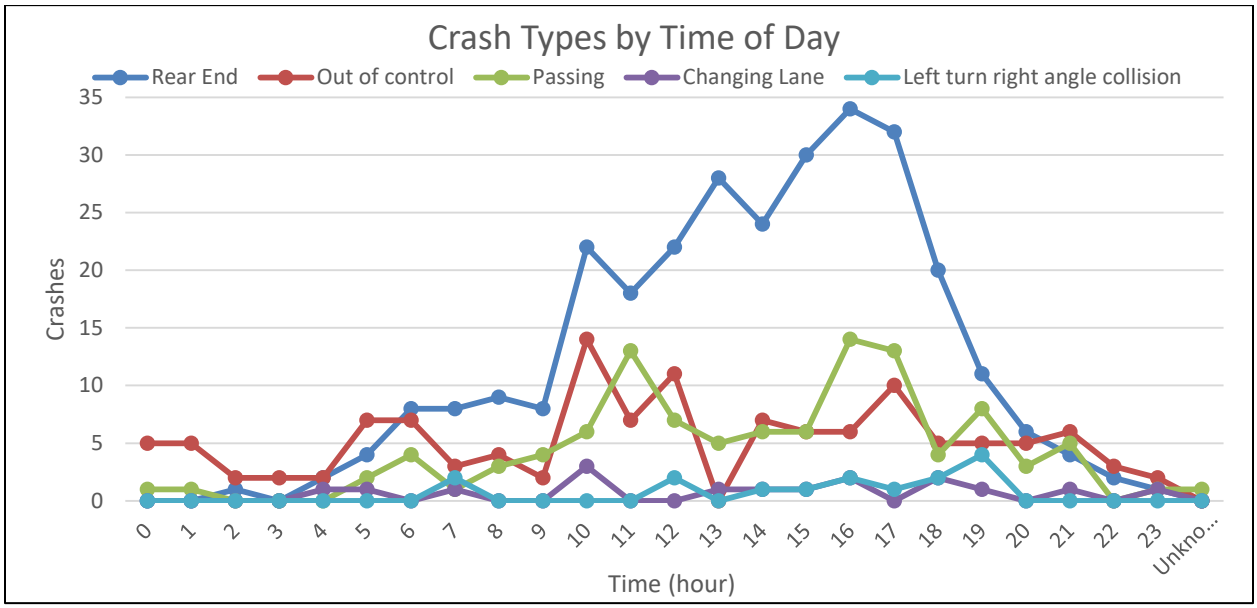


Figure 28: Crashes by Time of Day

Crashes also vary by day of the week (not shown), especially when looking at the interstate collisions. There are significantly lower crashes on Wednesdays, Saturdays, and Sundays. Ramps and outer roads have a significant increase in crashes for Fridays (with slight increases on Saturdays).

As **Figure 29** illustrates, rear-end collisions were by far the most common crash type, followed by out of control, passing, and changing lane. The prevalence of rear-end crashes is typically a sign of congestion.

Cross-examining the most common crash types by time-of-day shows that rear-end crashes trend with the overall time-of-day trend (in fact, they likely drive the trend), while out of control crashes also trend slightly with traffic volumes, although not as noticeably as rear–end crashes. The other common collision types show less variation throughout the day.

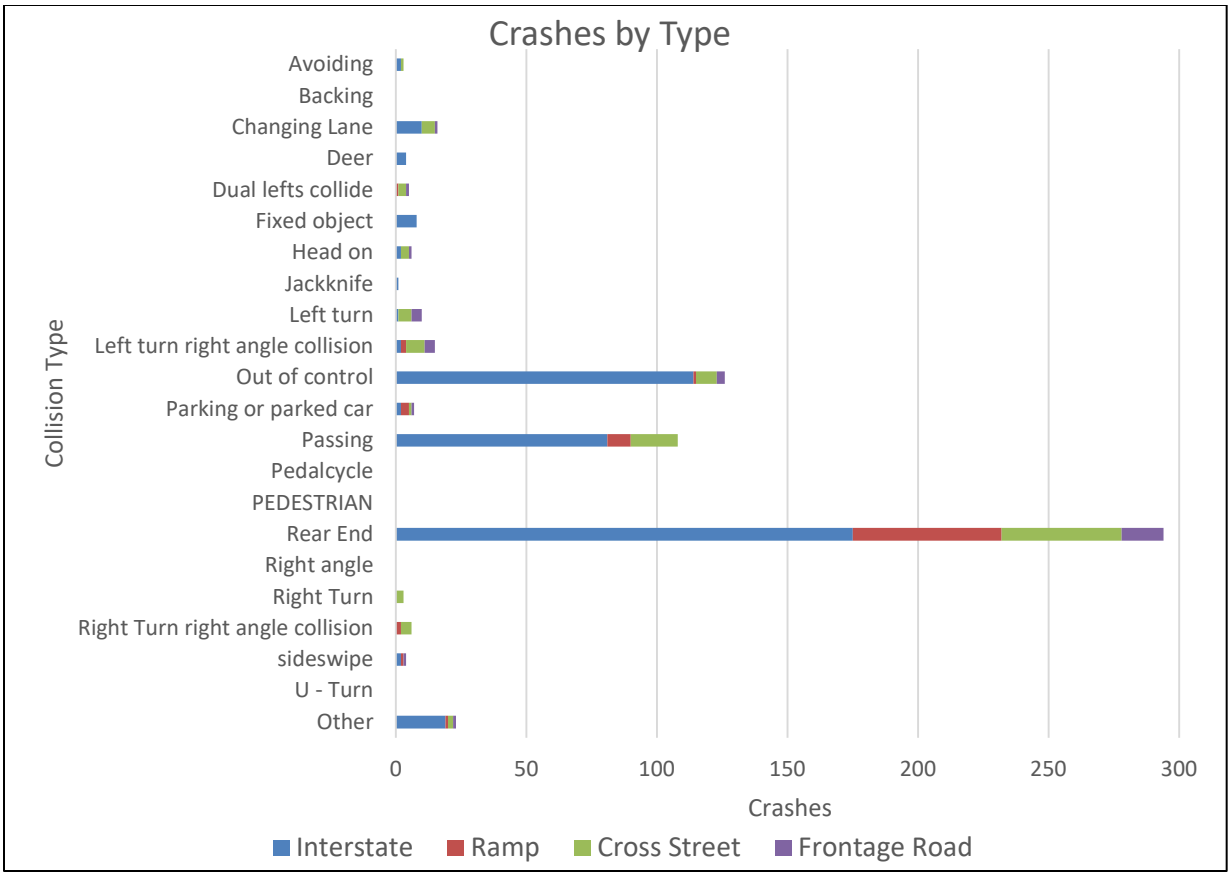


Figure 29: Crashes by Type

The crash analysis also examined weather, lighting conditions, and roadway surface conditions. As an example, **Figure 30** illustrates the distribution of weather conditions. None of these elements appear to be major factors in the crash trends, and exhibit fairly typical distributions.

Cross-examining roadway surface conditions with the common collision types shows that approximately half of the out-of-control crashes are attributed to non-dry roadway conditions (wet, snow, ice, slush, etc.). Non-dry conditions also account for 18 percent of rear-end crashes and 24 percent of passing crashes.

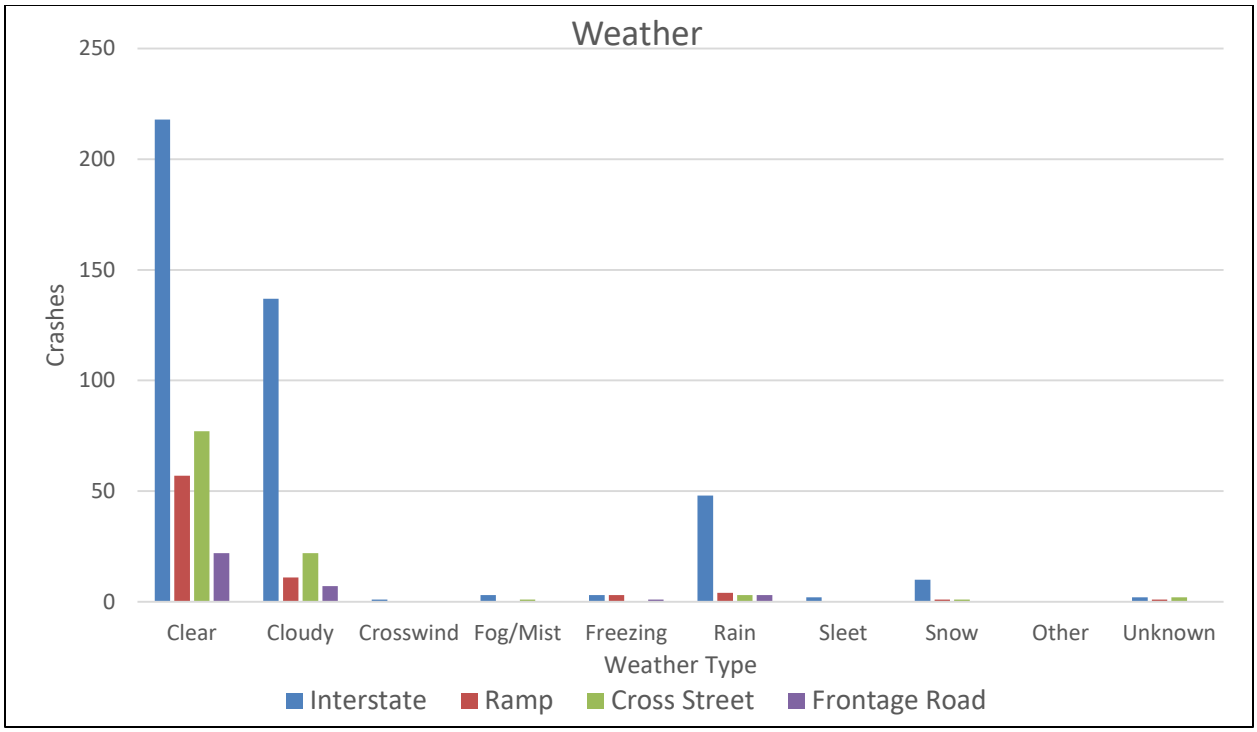


Figure 30: Contributing Circumstances – Weather

Crashes were specifically examined within the curved segment of I-70 (east of the Wentzville Parkway ramps to west of the Route Z ramps) to determine whether any spikes occur in that area that could be attributed (in part) to the roadway geometry. There were 96 crashes occurring within the curved area, which has a length of approximately 0.54 miles. There were 361 crashes within the remaining portions of I-70 outside of the curve, which has a total length of 1.14 miles. This indicates that there are a higher number of crashes per mile outside of the curved area. Specific types of crashes, including out-of-control, ran-off-road, and wet/icy/snowy condition crashes were also analyzed within and outside of the curved area. Again, the number of crashes per mile falling into each of those category types was higher outside of the curve. This is likely because there are fewer conflict points (merge areas) within the curve than outside the curve.

Crash rates along the interstate portion of the study area were calculated for each of the 5 years of the data collection period. The calculated crash rates are higher than the Missouri statewide average rate for interstates for each of the study years. However, the fatal crash rates calculated along this portion of I-70 are lower than the statewide average for similar facilities. **Table 13** summarize the annual crash rate for the interstate.

Table 13: Annual Crash Rates – Interstate

	2013	2014	2015	2016	2017	Average
Total Number of Fatal Crashes	0	0	1	0	0	0.2
Total Number of Crashes	65	92	91	93	83	84.8
Fatal Crash Rate (per 100MVM)	0.0000	0.0000	0.0017	0.0000	0.0000	0.0003
Total Crash Rate (per 100MVM)	145.37	200.34	180.68	179.80	156.35	172.49
MO Statewide Avg Fatal Crash Rate for Interstates (per 100MVM)	0.38	0.32	0.38	0.37	0.41	0.37
MO Statewide Avg Total Crash Rate for Interstates (per 100MVM)	88.14	68.52	78.72	82.49	80.78	79.73
Difference Fatal Rate	-0.38	-0.32	-0.38	-0.37	-0.41	-0.37
% Diff Fatal Rate	-100.00%	-100.00%	-99.55%	-100.00%	-100.00%	-99.91%
Difference Total Crash Rate	57.23	131.82	101.96	97.31	75.57	92.76
% Diff Total Crash Rate	65%	192%	130%	118%	94%	116%

UTILITIES

As concepts were developed and studied for the J6I0624 project, a high-level utility investigation was completed along the I-70 project corridor. This investigation included coordination with utility companies, records research, compilation of facility maps, submittal of tickets for field locates, coordination with survey crews, and review of survey deliverables to verify accuracy. A goal of the conceptual plan development is to raise awareness of utilities along the corridor and to minimize impacts to surrounding parcels. By constructing a majority of the recommended improvements within existing right-of-way, this helps lower projected utility relocation costs as these costs are typically non-reimbursable. Further analysis of impacts to existing utilities will be conducted as the project design progresses. An overview of the existing utilities located throughout the project limits is included below.

The following utilities exist between the Wentzville Parkway and Route Z Interchanges, see **Figure 31**:

- AT&T Distribution fiber optic along north side of West Pearce Boulevard.
- AT&T Distribution fiber optic crosses beneath I-70, north of Layla Lane.
- Century Link (local) fiber optic along the north side of West Pearce Boulevard and the WB I-70 off ramp to Wentzville Parkway
- Century Link (national) fiber optic along the north side of West Pearce Boulevard and along the north side of westbound I-70
- Charter/Spectrum along north side of I-70 westbound ramp to Wentzville Parkway and West Pearce Boulevard to Schroeder Creek Boulevard; crosses I-70 overhead between Schroeder Creek Boulevard and Wilmer road; along west side of Route Z running beneath I-70.
- Extenet crosses beneath I-70 midway between Schroeder Creek Boulevard and Campus Drive; extends east along the north side of West Pearce Boulevard.
- MCI/Verizon extends east along the north side of West Pearce Boulevard from Schroeder Creek Boulevard.
- MoDOT fiber optic along north side of the westbound lanes of I-70.
- MoDOT power and light poles along the south side of the eastbound I-70 lanes from Wentzville Parkway to NSRR; north side of I-70 westbound exit ramp at Wentzville Parkway and westbound I-70 lanes to Schroeder Creek Boulevard; north and south ramps at Route Z interchange
- Wentzville Water Facilities along the R/W limits north of the westbound I-70 Wentzville Parkway exit ramp passing beneath West Pearce Boulevard; buried line extends beneath I-70 north of Layla Lane; water line along the north side of Mar-Le Drive extending east from Route Z to Lodora Drive
- Ameren gas lines along north side of West Pearce Boulevard; crossing beneath I-70 between Schroeder Creek Boulevard and Wilmer Road.
- Ameren overhead power lines along the R/W limits north of the westbound I-70 Wentzville Parkway exit ramp crossing to the north side West Pearce Boulevard and extending to the east; overhead power line crosses I-70 north of Layla Lane; along the south side of eastbound I-70 east of NSRR tracks.

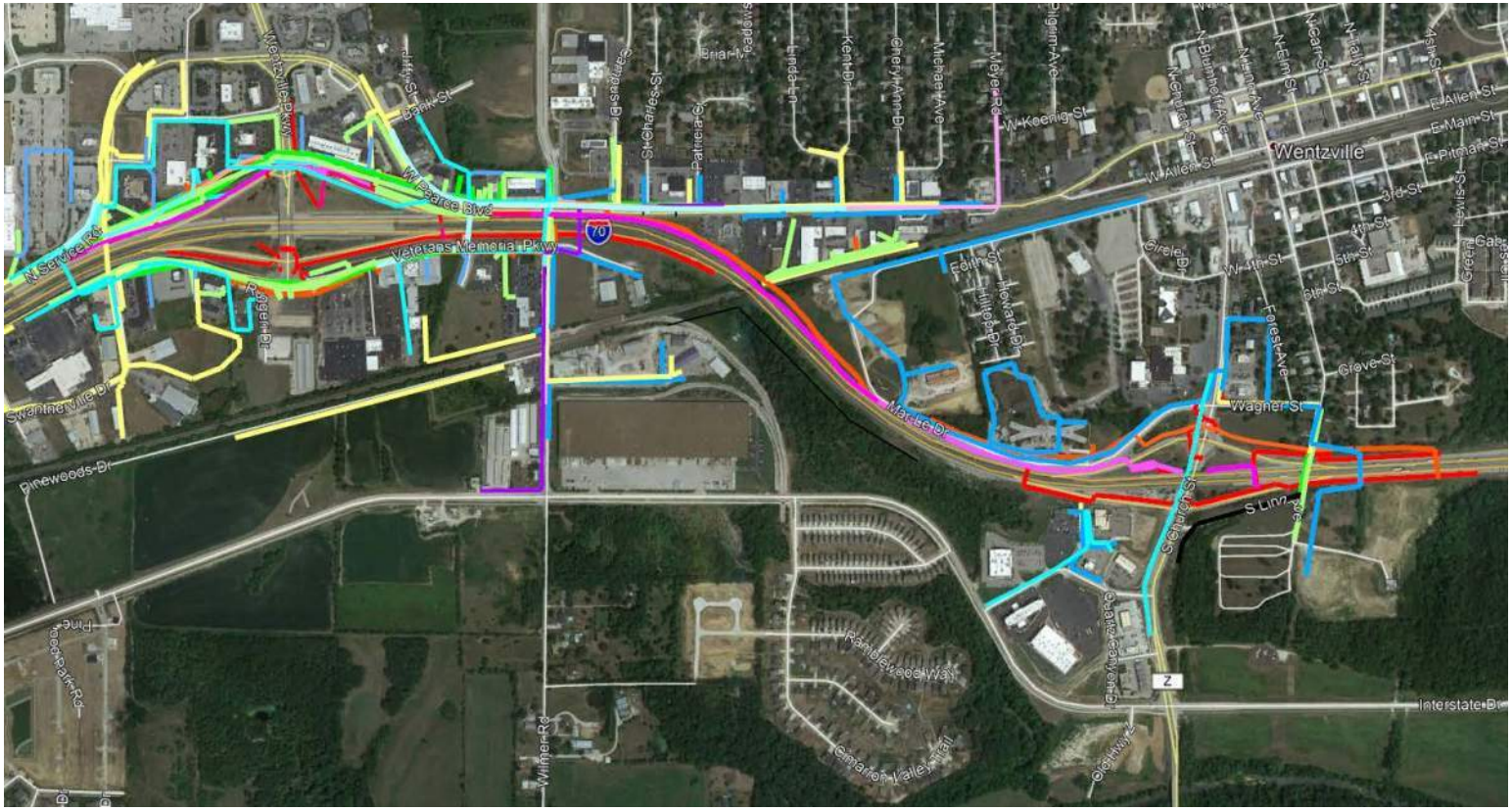


Figure 31: Utilities

Nearly all affected utilities are located within existing public right-of-way and will be relocated at the owner's expense, with the exception of the Century Link fiber optic line which runs along the north side of I-70 through the project limits. Relocation of this line will need to be reimbursed, per existing agreements with MoDOT. The anticipated cost of this reimbursement ($300,000) is included in the project cost estimate.

The presence of additional utilities in the corridor is not presently known and will be investigated as the proposed concept is further refined.

ENVIRONMENTAL SUMMARY

One of the most important limited-access highways across the United States is Interstate 70 (I-70), which provides an east-west connection across much of the United States. Construction of the I-70 corridor in Missouri began in 1956 and continued for nine years to span a distance of more than 250 miles across the state. Short portions of the corridor have been reconstructed, but otherwise, the newest sections of I-70 are more than 50 years old. With maintenance provided by the Missouri Department of Transportation (MoDOT), the facility has outlasted its original design life of 20 years and has carried traffic volumes of both cars and heavy trucks that have far exceeded the expectations of the original designers.

Per the Second Tier EIS completed for SIU 7, improvements within the SIU have been prioritized by MoDOT and SIU 7 has been packaged into smaller implementable sections. Since it has been more than three years since FHWA's approval of the EIS, a NEPA re-evaluation must be completed as required by 23 CFR 771.129. The smaller SIU 7 segment is Project J6I0624, see **Figure 32**, which will have construction limits east-west along the I-70 corridor from a point approximately 1,000 feet west of the centerline of Wentzville Parkway to a point approximately 1000 feet east of the centerline of the Route Z (Church Street) interchange. FHWA requires a detailed environmental review of Project J6I0624 and a desktop review of the entire SUI 7 corridor.

Figure 32: J6I0624 Project Limits

Affected Environment and Environmental Consequences

NEPA requires that federal project sponsors evaluate the potential social, economic and natural environmental impacts for the alternatives being considered for a proposed project. This is done so that decision-makers have the best available information to make an informed decision and so that the public and stakeholders are also informed. As individual projects progress with the SIU 7 corridor, a more detailed analysis will be conducted to determine the potential environmental effects of the proposed projects, along with mitigation measures.

Because this evaluation serves to evaluate the significance of impacts of the proposed J6I0624 project, the focus is on the context and intensity of effects that may significantly affect the quality of the human and natural environment. Due to the absence of certain resources, the results of previous environmental review, and a review of the project, there are several topics that do not warrant evaluation and are therefore not included in this evaluation. Those topics include:

- Geology
- Topography
- Mineral Resources
- Seismic Risk
- Caves
- Groundwater Resources
- Visual & Aesthetic Resources

Additional detail on other resources is included in the following sections.

Land Use and Related Characteristics

Land Use and Zoning

Local jurisdictions are responsible for land use planning along the I-70 corridor, including within SIU 7. These entities address existing and future land use in comprehensive plans and other planning documents. Since 2006, land use largely remains the same with limits of the J6I0624 project (see **Figure 33**). The study corridor is mostly retail/commercial in nature, flanked by residential development.

Figure 33: Prior/Existing Land Use Map

Comparison of Land Use, 2006 & 2018
Source: Google Earth Imagery
The proposed project is located within a developed urban area with a mix of commercial, office, industrial and residential uses along an interstate roadway. Future Land Uses are comprised of what currently exists.

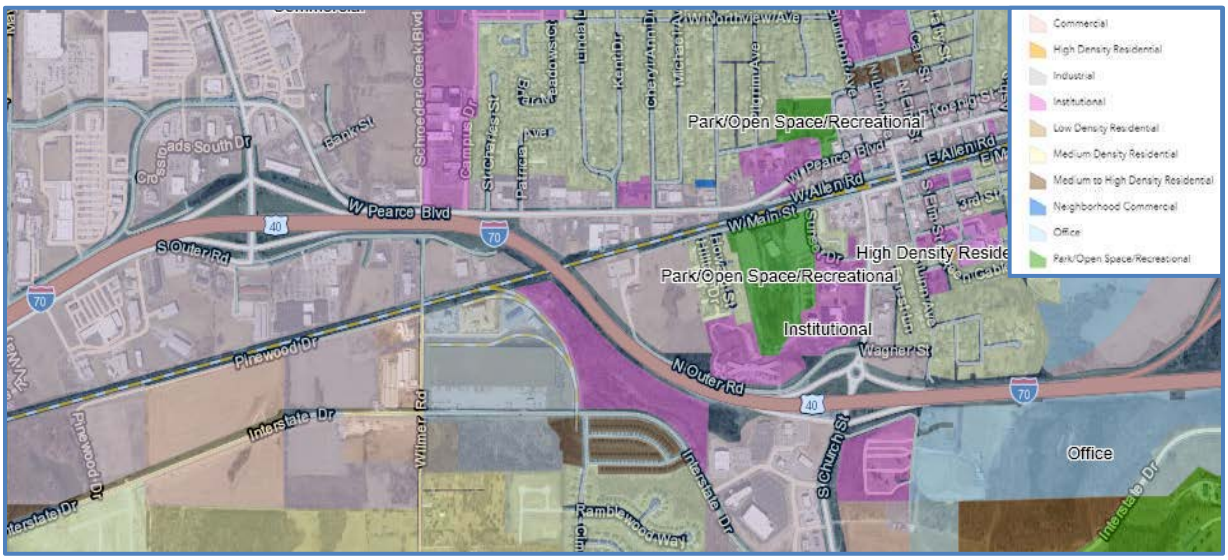


Figure 34: Future Lands Use Map

Future Land Use
Source: St. Charles County Master Plan – Envision 2030, January 28, 2019.
There will be no significant direct land use changes as a result of the proposed project because the proposed improvements will be constructed predominantly within existing right-of-way. The proposed project will be consistent with, and supportive of, land use plans.

The No Build Alternative will not support the St. Charles County Master Plan, which calls for completion of the transportation improvements to I-70 (St. Charles County, 2019).

Parks and Open Space
There are no parks located adjacent to project corridor. The closest park is Memorial Park located approximately 0.75 east of the eastern limits of the J6I0624 project. No impacts to parks or open spaces will occur as a result of the proposed project.

Pedestrian and Bicycle Facilities
Pedestrian and bicycle facilities will not be installed along I-70 due to interstate design standards.

The City of Wentzville's Comprehensive Plan Update includes planned trails or accommodations along the frontage roads of the I-70 corridor, including within the limits of the J6I0624 project. Ongoing coordination efforts should be carried out as the project progresses into more detailed engineering.

Socioeconomic Characteristics

Demographic data for the J6I0624 project was derived from the 2010 United States census and the American Community Survey 5-Year Estimates. This data is provided at the county and census tract areas to provide a summary of social and economic trends within the study corridor. The four block groups that border the project corridor were used as the foundation for the existing conditions analysis. Specifically, the block groups were used in the evaluation of demographics and economics. Demographic and economic data presented in the following tables.

The median household income for the block groups along the corridor ranges from $40,032 to $96,866; three of the six census tracts along the corridor have higher medians than that of St. Charles County ($78,380).

Environmental Justice (EJ) focuses on identifying and addressing disproportionately high and adverse human health or environmental effects of the project activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens. EJ populations were identified through analysis of U.S. Census Bureau data at the county level and the Block Group level.

Concentrations of minority and low-income populations in the CSA were identified through analysis of the 2010 U.S. Census data and the 2009-2013 American Community Survey 5-year data at both the county and the Block Group level. Individual Block Group data was compared to the respective countywide data to determine whether any of the Block Groups will qualify as an "EJ Block Group" along the corridor. An EJ Block Group was defined to include any Block Group in which the minority or low-income population meets either of the following:

• The minority or low-income population in the Block Group exceeds 50 percent
• The percentage of a minority or low-income population in the affected area is higher than the average for St. Charles County.

The overall percentage of minorities in St. Charles County is 9.8 percent, and the low-income population in St. Charles County is 5.7 percent.

Based on review of the aforementioned Census and American Community Survey data, there are no concentrated areas of low income and/or minority populations that would be disproportionately impacted by the proposed project.

Demographic Profile, Project J6I0624

Census Tract	BG	Total Population	One Race	%	White	%	Black or African American	%	Am. Indian & Alaska Native	%	Asian	%	Nat. Hawaiian or Other	%	Other Race	%	Two or More Races	%	Hispanic or Latino of any Race	%
St. Charles County		385,115	375,577	97.5	347,505	90.2	16,439	4.3	687	0.2	9,167	2.4	116	0	1,663	0.4	9,538	2.5	12,163	3.2
3121.92	1	4,754	4,645	97.7	4,410	92.8	74	1.6	0	0	35	0.7	0	0	126	2.7	109	2.3	160	3.4
3121.93	1	7,532	7,498	99.5	7,168	95.2	307	4.1	0	0	23	0.3	0	0	0	0	34	0.5	15	0.2
3121.94	1	3,346	3,246	97.0	3,161	94.5	16	0.5	23	0.7	34	1.0	0	0	12	0.4	100	3.0	65	1.9
3121.95	1	1,997	1,920	96.1	1,835	91.9	78	3.9	0	0	7	0.4	0	0	0	0	77	3.9	51	2.6
	2	1,322	1,301	98.4	1,240	93.8	44	3.3	7	0.5	10	0.8	0	0	0	0	21	1.6	32	2.4

Source: U.S. Census Bureau 2013-2017a, b

Notes: One Race and Two or More Races make up the Total Population. One Race is the sum of White, Black or African American, Asian, Native Hawaiian or Other Pacific Islander, and Other Race.

2017 Census Tracts, Block Groups boundaries were used. The data come from the 2013-2017 American Community Survey (ACS).

Economic Profile, Project J6I0624

Location		Population	Income ($)		Poverty* (# of persons)			
Tract	Block Group		Median Household Income	Per Capita Income	Income below Poverty Level	%	Income at or Above Poverty Level	%
St. Charles County		376,960	78,380	35,628	21,362	5.7	355,598	94.3
3121.92	1	4,745	81,771	39,090	128	2.7	4,617	97.3
3121.93	1	7,514	96,866	33,284	325	4.3	7,189	95.7
3121.94	1	3,344	89,839	42,574	207	6.2	3,137	93.8
3121.95	1	1,881	40,349	21,114	179	9.5	1,702	90.5
	2	1,293	61,513	27,154	136	10.5	1,157	89.5
	3	1,056	40,032	19,531	177	16.8	879	83.2

Source: U.S. Census Bureau 2013-2017e, f, g

Natural and Cultural Features

Water Resources (Wetlands, Ponds, Lakes, Rivers, and Streams)

A desktop and field wetland and stream review were conducted using available NWI mapping, USGS quadrangle mapping, and Google Earth online aerial photography to determine if potential waters of the U.S. (including wetlands) occur and will potentially be impacted by fill activities regulated under Section 404 of the Clean Water Act. NWI mapping and National Hydrography Dataset (NHD) USGS mapping depicts two blue line intermittent streams adjacent to I-70, see the impacted streams highlighted in **Figure 35**. No wetlands are depicted.

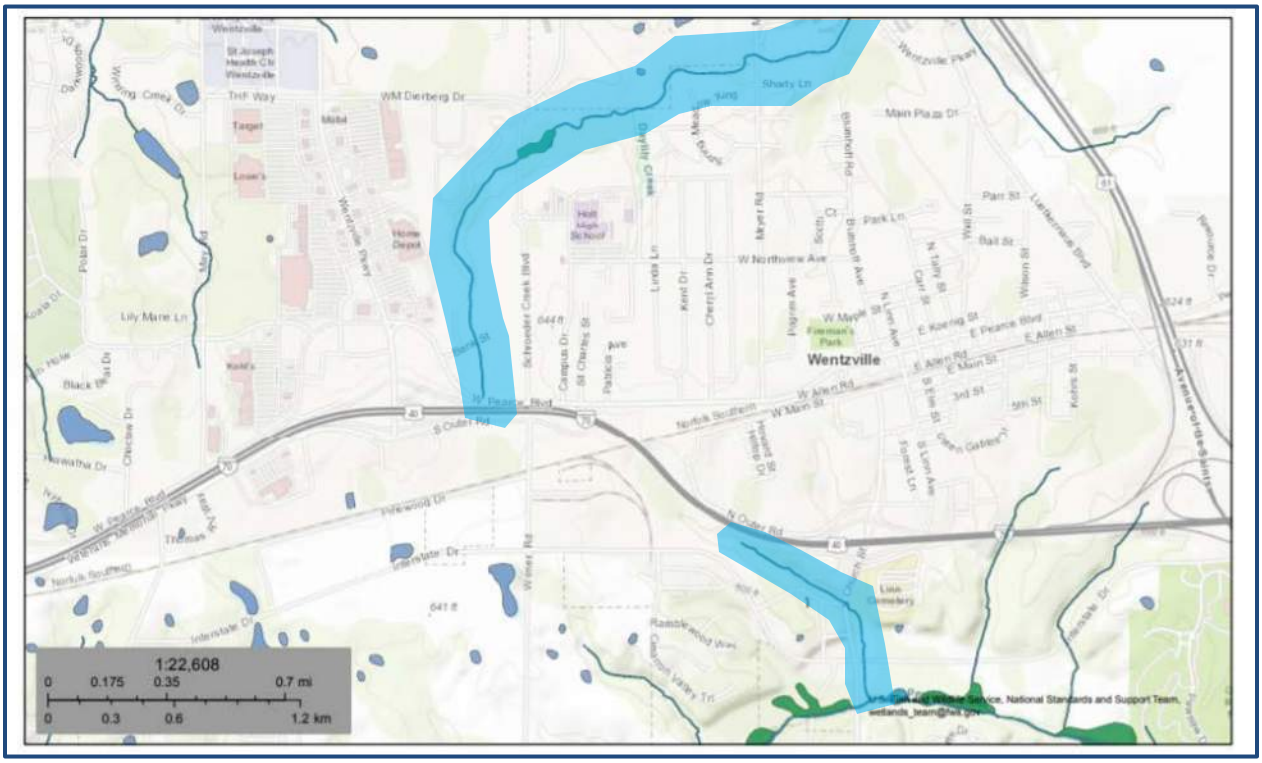


Figure 35: Water Resources Map (Source: USGS, National Wetlands Inventory, 2019)

A field assessment was conducted by MoDOT staff in August 2019 that confirmed the mapped stream channel adjacent to I-70 near the eastern limits of the project; and the mapped stream channel near the western limits of the project. No wetlands were observed.

A preliminary review of project concept design indicates potential impact to the stream channel adjacent to I-70 near the eastern limits of the project; and the mapped stream channel near the western limits of the project. The type of required Section 404 permit will be based on total impacts to waters of the U.S. If the project's impacts will likely be less than 0.5 acre of permanent fill in any single crossing, a Nationwide Permit # 14 (Linear Transportation) will be anticipated to authorize road fill and bridge and culvert construction. Steam mitigation will be determined by the USACE's review process for jurisdiction and impacts.

The federal Clean Water Act gives authority to the state of Missouri, specifically DNR, to issue a Section 401 water quality certification in coordination with the USACE Section 404 permit. The certification is verification by the state that a project will not violate state water quality

standards. A conditionally certified NWP 401 water quality certification is anticipated. No individual 404 or 401 permits are anticipated.

Threatened and Endangered Species

An official USFWS IPaC online review was conducted for federally listed threatened and endangered (T&E) species occurring in the Project study area. An MDC online Natural Heritage Review was also conducted. The IPaC auto-generated report is attached to this report in Attachment A. Federally listed species in the IPaC review included Gray Bat, Indiana Bat, Northern Long-eared Bat, Decurrent False Aster, and Running Buffalo Clover. No critical habitats for these species were indicated in the IPaC report. No sandy floodplains or areas of periodic flooding exist along the project corridor that will support Decurrent False Aster, and none have been recorded in the project area. Likewise, it is unlikely that Running Buffalo Clover will be encountered given lack of suitable habitat along the corridor.

Indiana bats and Northern long-eared bats may occur near the project area. These two species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas. There are no known hibernaculum nearby, known maternity sites and/or known roost trees for the species. A pedestrian survey was conducted and 20 mature trees located along a stream that could be suitable bat habitat were identified.

Per Department of Interior policy (see DOI Memorandum M-37050 Dec. 22, 2017) changes regarding incidental take of migratory birds, chicks, and bird eggs protected under the Migratory Bird Treaty Act have been made; incidental take is now not considered a willful "take". Therefore, tree and vegetation tree clearing associated with construction activities could be considered incidental to and will not result in a "direct" or purposeful "take" of migratory birds, chicks, or eggs. USFWS and related other federal agencies regulations to codify have not been promulgated. Therefore, further consultation with regulatory agencies should be conducted in the future to ascertain survey needs.

Noise

The federal regulation that FHWA uses to assess noise impacts is 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. The MoDOT noise policy, Policy on Highway Traffic Noise Abatement, constitutes the official MoDOT noise policy and procedures for the purpose of meeting the requirements of 23 CFR Part 772. Noise-abatement criteria (NAC) are used to define the noise levels that are considered an impact (in hourly A-weighted sound-level decibels) for each land-use activity category.

Per MoDOT policy, traffic noise analysis is performed for developed lands containing noise-sensitive land uses, undeveloped lands where noise-sensitive development is permitted, and to predict future noise levels for undeveloped lands. As further noted in MoDOT policy, land uses that are sensitive to highway noise can generally be identified based on review of project plans, aerial photography, web-based mapping, and property data.

For the purposes of the current level of design (conceptual), potential noise-sensitive land uses were identified (see **Figure 36**), and then assessed for potential noise barrier placement if NAC

is exceeded. Noise barriers do not typically work for isolated receptors. However, they are typically more successful for areas where receptors are clustered together. MoDOT Noise Policy requires at least a 5 dBA insertion loss for a minimum of two first-row, impacted receivers for noise abatement to be considered feasible. First-row receptors are noise-sensitive land uses that face the project roadways without substantial visual occlusion from traffic noise. Additionally, receptor parcels are required to abut the roadway right-of-way to be considered first-row. Receptors with developable intervening parcel(s) separating the receptor parcel from the abutting roadway right-of-way are considered second row or greater receptors. As shown on the aforementioned figure, two first-row receivers are not located next to one another in the preliminary noise study zone.

A more detailed noise analysis should be completed as design progresses.

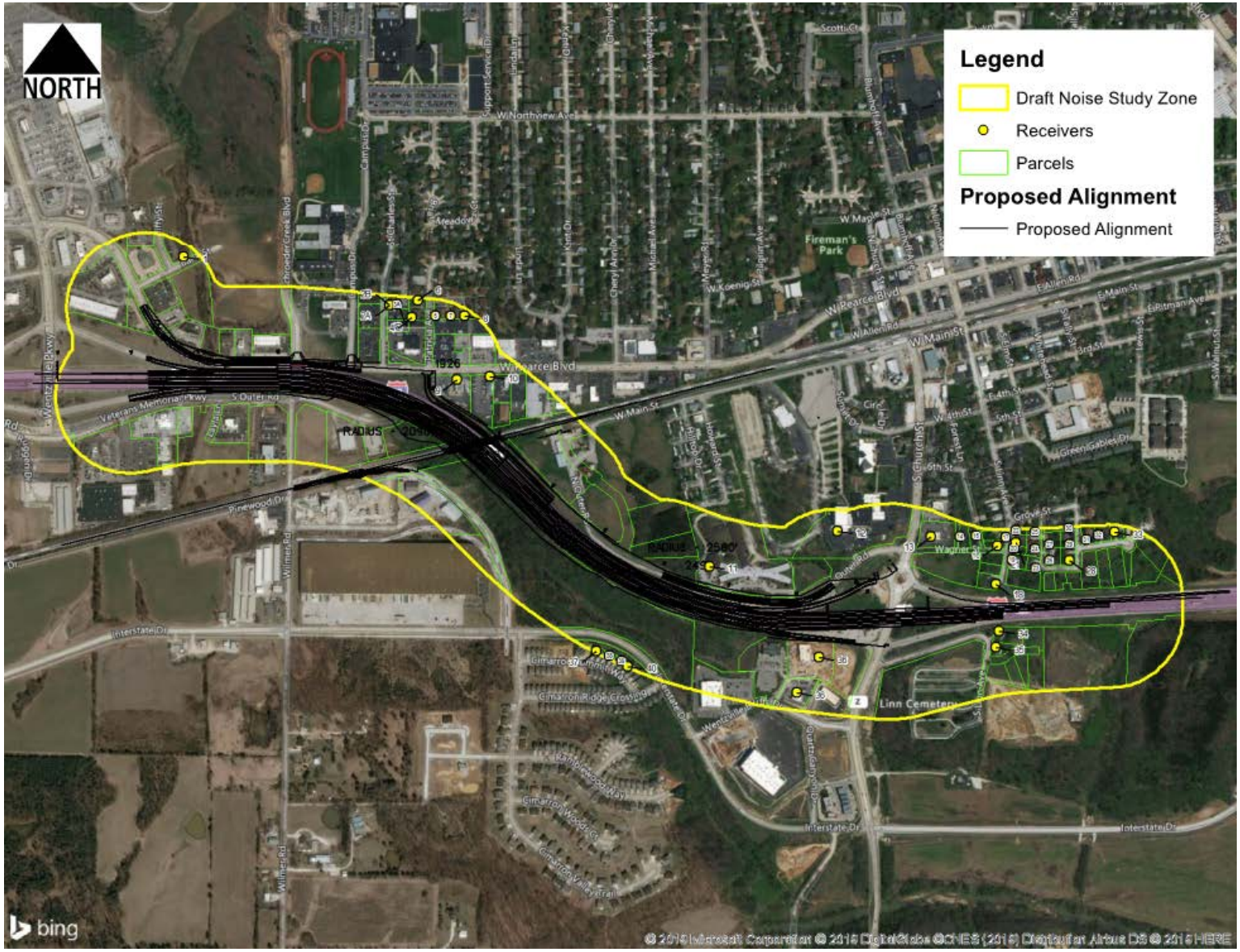


Figure 36: Noise Sensitive Receivers

Archaeological Resources and Cemeteries
No known archaeological sites, including cemeteries, are located within the limits of the J6I0624 project corridor. At this level of review, no environmental/agency approvals have been sought. As the project progresses, the SHPO should be contacted for additional information.

Historic Resources
No listed historic sites are located within the limits of the J6I0624 project corridor. The only site listed in the city of Wentzville is the Wentzville Tobacco Company Factory, located at 406 Elm Street in Wentzville. This site is located approximately 0.25-mile north of the eastern project limits and will not be impacted by the project.

Coordination
NEPA requires that agencies "make diligent efforts to involve the public and resource and regulatory agencies in preparing and implementing their NEPA procedures" (40 CFR 1506.6). Public and agency participation has been an important part of the Improve I-70 project since its inception. MoDOT made a commitment at the beginning of the project to encourage and solicit public and agency participation and feedback.

As the J6I0624 project progresses into more detailed design, additional information should be provided to the public and agencies, particularly those who could be affected by the project. MoDOT will subsequently work to address the issues that have been identified.

Conclusions and Commitments Summary
A summary of potential impacts of the J6I0624 project are as follows:

Land Use
Direct land use changes will be minimal. There will be no significant direct land use changes as a result of the proposed project. The proposed project will be consistent with, and supportive of, land use plans.
Socioeconomic Characteristics
No disproportionate impacts to low income or minority populations
Floodplains
There are no floodplains within the J6I0624 project.
Wetlands and Streams
A field assessment confirmed a mapped stream channel adjacent to I-70 near the eastern limits of the project; and a mapped stream channel near the western limits of the project. A preliminary review of project concept design indicates potential impact to the stream channels. No wetlands were observed.
Plant Communities / Wildlife
Limited impacts to plant communities and wildlife are anticipated.
Threatened and Endangered Species

Indiana bats and Northern long-eared bats may occur near the project area. A pedestrian survey was conducted and 20 mature trees located along a stream that could be suitable bat habitat were identified. Further consultation with regulatory agencies should be conducted in the future to ascertain survey needs.
Air Quality
No impacts to air quality anticipated.
Noise
For the purposes of the current level of design (conceptual), potential noise-sensitive land uses were identified and then assessed for potential noise barrier placement if NAC is exceeded. Even if noise impacts will occur, a noise barrier will not be feasible. A more detailed noise analysis should be completed as design progresses.
Archaeological / Historic Resources
No known archaeological or historical sites are located within the limits of the J6I0624 project corridor. As the project progresses, the SHPO should be contacted for additional information.

CONCEPTUAL STUDY RECOMMENDATIONS

Based on the findings of this study, Alternative 2 is the recommended approach. This alternative includes the following:

Bridges:

Norfolk Southern Bridge over I-70:

- Replace existing railroad bridge over I-70 with a new single track 4 span structure.

  NOTE: Conceptual Cost Estimate, Appendix D, includes increased substructure costs associated with overbuilding the substructure elements to accommodate a future second mainline track constructed by others. This additional work may, or may not, be included in the final project pending negotiations and agreements with NSRR.

- Construct temporary shoofly (approximately 2400' of track).
- Construct temporary 7 span railroad bridge south of the existing structure to maintain train access throughout construction.
- Main bridge spans will accommodate 4-12' traffic lanes with 12' inside and outside shoulders and an additional 12' clearance, in each direction in accordance with the I-70 EIS documents.
- End span will allow for future north outer road connection between West Pearce Boulevard and Mar-Le Drive.
- End span will not preclude the proposed City of Wentzville Bike/Pedestrian Plan.

I-70 Bridges over Route Z:

- The existing 42'-1 ½" wide eastbound and westbound bridges will be widened to the outside by 20'-1" to facilitate an additional 12' lane and full 12' shoulder in each direction. Resulting width 62'-2 ½" out to out.

Roadway:

I-70 Mainline:

- Relocate I-70 approximately 65' southwest of existing location in the vicinity of the NSRR Bridge
- Proposed typical section (each direction) includes:
  - 12' inside shoulder
  - 3-12' lanes
  - 12' auxiliary lane between Wentzville Parkway and Route Z
  - 12' outside shoulder
  - 12' additional horizontal clearance
- Improve horizontal curvature, increase site distance, and provide standard shoulder widths to improve safety.
- Lower mainline profile to provide standard vertical clearance.
- Maintain two lanes of traffic in each direction during peak traffic periods. Temporary short term lane closures may be required during overnight or weekend operations.

Wentzville Parkway Interchange:

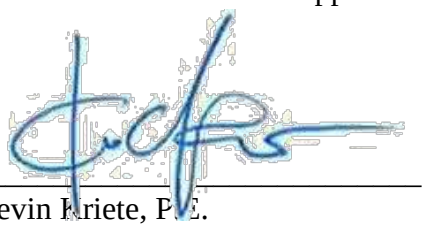
- Partially reconstruct westbound off ramp from I-70.
- Extend proposed auxiliary lane to connect with new eastbound on-ramp from Wentzville Parkway that is being constructed within a separate project.

- Realign segment of West Pearce Boulevard (3 lane template, 6’ sidewalk).

Route Z Interchange:

- Reconstruct ramps on western side of interchange.
- Restripe I-70 between Route Z and the I-64/ Route 40/61 interchange to accommodate the additional lane work.
- Realign segment of Mar-Le Drive (2 lane template).

A conceptual level strip map is shown in Appendix B and the conceptual cost estimate for the proposed items of work listed above is located in Appendix D.

Approved by:  Date: 4/30/2020

Kevin Kriete, P.E.
Project Manager
HDR Engineering, Inc.

Recommendations or Comments:

Approved by: _____ Date: _____

Thomas Blair, P.E.
District Engineer
MoDOT St. Louis District

Appendices:

A: As-Built Plans
B: Roadway Conceptual Strip map and Profile Sheets
C: Bridge Details
D: Conceptual Cost Estimate

cc: Design Division
Construction and Materials Division
Traffic Division

Appendix B

Noise Analysis Report

NOISE TECHNICAL REPORT

I-70 St. Charles County Improvement Project
From just east of Wentzville Parkway to just east of MO Route Z (Church Street)

Wentzville, MO
St. Charles County

Job No. J6I0624

Prepared for:

Missouri Department of Transportation

August 2021

Prepared by:

401 S. 18th Street, Suite 300
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1.0 Executive Summary

This traffic noise technical report has been prepared in support of the I-70 St. Charles County Corridor Improvement Project (J6I0624). A summary of this project's traffic noise analysis and abatement evaluation is included in Table 1.

Table 1. Noise Analysis and Abatement Evaluation Overview

Item	Summary
Project Location and Type I Status Explanation	This project is located in the city of Wentzville, St. Charles County, Missouri. It is a Type I project because it includes the reconfiguration of interchange ramps, changes to the vertical and horizontal alignment, and the addition of traffic lanes.

Noise Level and Impact Overview	• Existing (2018) modeled noise levels range from 49.0 to 76.4 A-weighted decibels (dBA) at 120 receivers[1], which represent 120 receptors.
	• Future (2045) modeled noise levels for the No-Build Alternative range from 49.9 dBA to 77.9 dBA at 120 receivers, which represent 120 receptors.
	• Future (2045) modeled noise levels for the Build Alternative range from 50.3 dBA to 78.0 dBA at 120 receivers, which represent 120 receptors. The Build Alternative is expected to impact the following receivers and receptors:
	  ○ 24 residential (Activity Category B) receivers representing 24 receptors
	  ○ 4 veterinary/boarding facility/recreation/cemetery (Category C) receivers representing 4 receptors
	  ○ 2 restaurants with outdoor seating (Category E) receivers representing 2 receptors

Noise Abatement Considerations and Commitments Overview	Barriers for all impacted receptors in NSA A, NSA B, NSA E, NSA F, NSA G, and NSA H were considered however, no barriers qualified for feasibility or reasonableness evaluation because either the impacted receptor(s) are isolated or the number of first-row receptors is insufficient (a minimum of two first-row receptors is required) per MoDOT policy.
Information for Local Officials	This project's Noise Study Area includes land that is unpermitted and undeveloped (i.e., Activity Category G). Therefore, Part 772.17 of Title 23 of the Code of Federal Regulations (23 CFR 772.17) is applicable and information does need to be submitted to local officials, as described in Section 11.0.

[1] A receiver is a modeled point that represents one or more receptors. Receptor types are listed in Table 4, in the column titled "Description of Activity Category." A receiver that represents more than one receptor must represent receptors of the same Activity Category.

2.0 Project Description

The Missouri Department of Transportation (MoDOT), in consultation with the Federal Highway Administration (FHWA), is proposing to improve approximately 1.5 miles along the Interstate 70 (I-70) Corridor from Wentzville Parkway to MO Route Z (Church Street). The improvements described in Table 2 and hereafter called the Proposed Action constitute a Type I project because of the reconfiguration of interchange ramps, changes to the vertical and horizontal alignment, and the addition of traffic lanes. Figure 1 shows the study area.

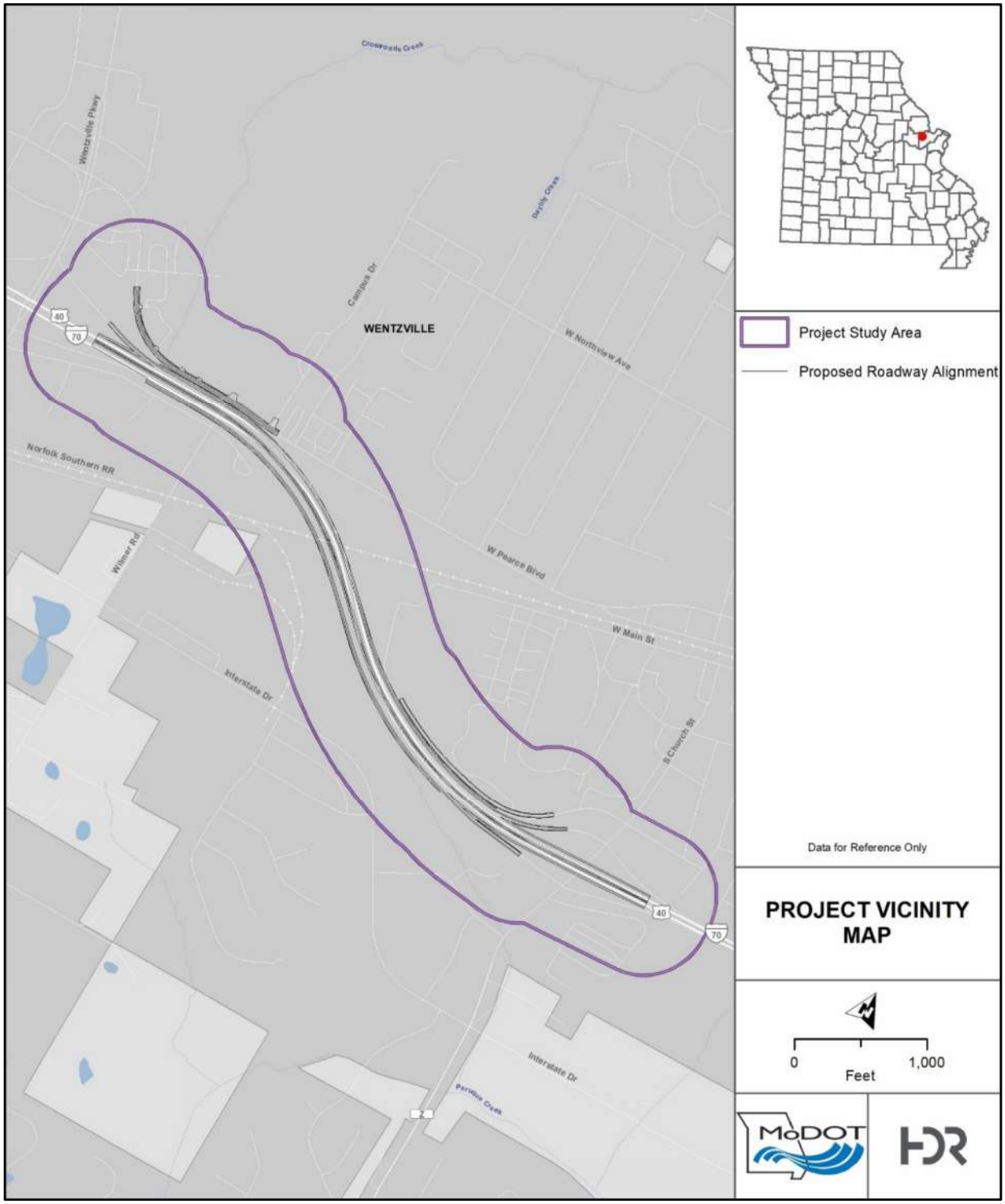
Table 2. Project Background

Item	Summary
Project Location	City of Wentzville, St. Charles County, Missouri
Affected Roadways	I-70 and surrounding service roads.
Project Purpose	The purpose of the proposed project is to decrease congestion and improve safety.
Project Need	The basic configuration of the corridor does not meet the traffic demand requirements and the corridor has experienced increasing congestion along the I-70 mainline alignment due to the heavy traffic and substandard alignment beneath the Norfolk Southern Railroad structure. Congestion is expected to further increase along the corridor in the future.
Proposed Action Description	The approximately 1.5 mile project is identified as J6I0624 in the 2020-2024 State Transportation Improvement Program (STIP) and includes modifications to the following major corridor elements: • Shift existing I-70 westbound between Wentzville Parkway and MO Route Z (Church Street) to occupy the entirety of the existing I-70 eastbound and westbound and widen the new I-70 westbound to a three-lane typical section design that includes a 12-foot shoulder, three 12-foot through lanes, a 12-foot auxiliary lane, and a 12-foot outside shoulder. • Construction of new I-70 eastbound immediately southwest of the new I-70 westbound lanes between Wentzville Parkway and MO Route Z (Church Street) as a three-lane typical section design that includes a 12-foot shoulder, three 12-foot through lanes, a 12-foot auxiliary lane, and a 12-foot outside shoulder. • Replacement of the existing Norfolk Southern Railroad bridge over I-70 with a longer 4 span structure to accommodate the widening of I-70. • Revisions to Wentzville Parkway Interchange. • Revisions to MO Route Z (Church Street) Interchange. • Realignment of West Pearce Boulevard from Bank Street to Campus Drive. • Roadway design accommodations for a future outer road connecting Pearce Boulevard and Mar-Le drive on the north side of I-70.
No-Build Alternative Description	This alternative would not improve the corridor and would leave the roadway as-is.

Because the Proposed Action is Type I and there is at least one Activity Category A, B, C, D, and/or E receptor within the Noise Study Area, a noise analysis was needed to determine if the Proposed Action would create noise impacts. HDR, acting on behalf of MoDOT, conducted a

noise analysis for the Proposed Action and prepared this report. Table 2 includes background information about this project and provides context for this traffic noise analysis.

Figure 1. Project Vicinity Map



3.0 Criteria for Determining Impacts

The noise study for this project was prepared in accordance with Article 127.13 of the Missouri Engineering Policy Guide (EPG 127.13) – Policy on Highway Traffic Noise Abatement (June 17, 2019) to comply with 23 CFR 772 (the FHWA noise regulation, *Procedures for Abatement of Highway Traffic and Construction Noise)*.

The noise study includes the current year (2018) Existing condition, design year (2045) No-Build Alternative, and the design year (2045) Build Alternative.

3.1 Traffic Noise Terminology

The decibel (dB) is a unit of measure of sound level[1]. For traffic noise purposes, the A-weighted scale, which closely approximates the range of frequencies a human ear can hear, is used. The A-weighted decibel is abbreviated dBA.

The noise level descriptor used by MoDOT is the L_{eq}. L_{eq} is the equivalent steady-state sound level, which, in a stated period of time, contains the same acoustic energy as the time-varying sound level during the same time period, with $L_{eq(h)}$ being the hourly value of the L_{eq}. Table 3 illustrates how traffic noise levels relate to other sound sources.

Table 3. Common Indoor and Outdoor Noise Levels

Common Outdoor Noise Levels	Noise Level (dBA)	Common Indoor Noise Levels
	110	Rock Band
Jet Flyover at 1,000 feet	100	Inside Subway Train (NYC)
Gas Lawn Mower at 3 feet	95	
Diesel Truck at 50 feet	90	Food Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area	65	Normal Speech at 3 feet
	55	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	35	Library
Quiet Rural Nighttime	25	Bedroom at Night, Concert Hall (Background)
	15	Broadcast and Recording Studio
	0	Threshold of Human Hearing

[1] The number of decibels is calculated as ten times the base-10 logarithm of the square of the ratio of the mean-square sound pressure (often frequency weighted), and the reference mean-squared sound pressure of 20 µPa, the threshold of human hearing.

Source: Adapted from Guide on *Evaluation and Attenuation of Traffic Noise,* American Association of State Highway and Transportation Officials (AASHTO). 1974 (revised 1993).

3.2 Noise Abatement Criteria

The FHWA Noise Abatement Criteria (NAC), summarized in Table 4, establish criteria for traffic noise impact assessment with respect to various land uses.

Table 4. Noise Abatement Criteria

Hourly Equivalent A-Weighted Sound Level [decibels (dBA)]				
Activity Category	Activity Criteria[1] $L_{eq(h)}$[2]		Evaluation Location	Description of Activity Category
	FHWA	MoDOT		
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67	66	Exterior	Residential
C[3]	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[3]	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	--	Undeveloped lands that are not permitted.

Source: Title 23 CFR 772

[1] The $L_{eq(h)}$ Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

[2] The equivalent steady-state sound level, which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with $L_{eq(h)}$ being the hourly value of L_{eq}.

[3] Includes undeveloped lands permitted for this activity category.

If one or more receptors are affected by project-related traffic noise levels that approach or exceed the abatement criteria, or that substantially exceed existing noise levels, then abatement measures must be considered. By MoDOT policy, as approved by FHWA, approaching the criteria means within 1 dB of the appropriate FHWA abatement criteria. A substantial noise increase is defined as 15 dBA or more in the design year above the existing noise level as a direct result of the transportation improvement project. If the abatement criteria is not approached or exceeded, or if projected traffic noise levels do not substantially exceed existing noise levels, abatement measures will not be considered.

4.0 Identification of Noise Sensitive Land Uses and Noise Study Areas

4.1 Noise Sensitive Land Uses

A receptor is a discrete or representative location of a noise sensitive site or area for any of the land use categories listed in Table 4.

In determining traffic noise impacts, primary consideration is given to exterior areas where frequent human use occurs. If no exterior areas of frequent human use are present, no further analysis is required, with the exception being any Category D land uses. An individual receptor was modeled for each noise-sensitive property within approximately 500 feet of the design roadway edge of pavement. The location of each receptor is shown on the detailed mapping in Appendix A.

Existing land use within the corridor is mainly commercial/industrial (Category F) with pockets of residential (Category B), institutional/recreational (Categories C and D) uses, and restaurants with outdoor seating (Category E) scattered throughout. Additionally, areas of undeveloped lands that are not permitted for development (Category G) are located in the project area. Interior noise levels were evaluated for four Category D receivers (see Appendix E) using Table 5 and assumed masonry building construction with closed single-glazed windows for an outdoor to indoor noise reduction of 25 dB.

Table 5. Building Noise Reduction Factors

Building Type	Window Condition[1]	Noise Reduction Due to Exterior of the Structure
All	Open	10 dB
Light Frame	Ordinary Sash (closed)	20 dB
	Storm Windows	25 dB
Masonry	Single Glazed	25 dB
	Double Glazed	35 dB

Source: Measurement of Highway-Related Noise, FHWA-PD-96-009, FHWA. June 2018.

[1] The windows shall be considered open unless there is firm knowledge that the windows are in fact kept closed almost every day of the year.

4.2 Noise Study Areas

Noise-sensitive land use in the project area includes 120 receivers, representing 120 receptors.

To simplify the noise analysis and discussion, the study area was divided into eight noise study areas (NSA) as shown in the detailed mapping in Appendix A. These NSAs contain noise-sensitive land uses with similar noise environments and were grouped as follows:

- **NSA A** includes one veterinary/boarding facility receptor on Pearce Boulevard.
- **NSA B** includes 18 residential receptors on St. Charles Street and Patricia Court. Additionally, NSA B includes one restaurant receptor with outdoor seating off Pearce Boulevard, as well as two school receptors on Campus Drive and Pearce Boulevard.
- **NSA C** includes one restaurant receptor with outdoor seating off Veterans Memorial Parkway.
- **NSA D** includes two restaurant receptor with outdoor seating off Pearce Boulevard.
- **NSA E** includes 60 residential receptors on Grand Central Avenue. Additionally, NSA E includes two recreational facility receptors, five restaurant receptors with outdoor seating, and one hotel receptor with outdoor activity area off Lodora Drive, as well as one senior living facility receptor on Mar-Le Drive, and one Place of Worship receptor on MO Route Z (Church Street).
- **NSA F** includes 11 residential receptors on Cimarron Summit Way and three restaurant receptors with outdoor seating scattered throughout a commercial area off Wentzville Bluffs Drive.
- **NSA G** includes seven residential receptors on Wagner Street, Forest Avenue, and Linn Avenue. Additionally, NSA G includes one restaurant receptor with outdoor seating off MO route Z (Church Street).
- **NSA H** includes two residential receptors and one cemetery receptor on Linn Avenue.

5.0 Determination of Existing Sound Levels

Existing noise conditions within the noise study area were evaluated to assist in determining the noise impacts of the proposed project. A noise measurement program was conducted, consistent with FHWA and MoDOT recommended procedures, to document existing ambient noise levels throughout the noise study area. Worst-hour existing noise levels were determined using the FHWA Traffic Noise Model software (TNM v.2.5) and the maximum between the AM and PM peak-hour traffic data for the existing year (2018).

5.1 Ambient Noise Levels

Ambient (existing) noise is the combination of all noise sources that occur, typically described for a specific environment, location, and/or period of time. HDR staff measured ambient noise levels in four locations within the study area on June 23, 2021. Traffic noise measurements were conducted in accordance with the publication FHWA-HEP-18-066 Measurement of Highway Related Noise (June 2018) and MoDOT recommended procedures.

The study area for the project includes a 500-foot boundary around the extent of the roadway design. Noise monitoring was conducted using a Larson Davis 824 Sound Level Meter (SLM) with the microphone set at a height of approximately five (5) feet for all measurements and covered with a windscreen. Table 6 describes the instruments used to collect the noise measurement data for this noise analysis and Table 7 summarizes the average meteorological conditions.

Table 6. Ambient Noise Measurement Instrumentation Summary

Instrument	Make	Model	Serial Number
Sound Level Meter	Larson Davis	824	A0764
Microphone	Larson Davis	2541	4185
Calibrator	Larson Davis	CAL200	4467
Preamplifier	Larson Davis	PRM902	1207

Table 7. Ambient Noise Measurement Meteorological Conditions

Temperature	Humidity	Wind	Conditions	Barometric pressure
≈ 74° - 79° F	≈ 38-50%	≈ 10-11 mph	Fair	≈ 29.40 – 29.42 inches

The SLM was programmed to compute the A-weighted equivalent sound level (L_{eq}), expressed in dBA, which closely approximates the range of frequencies a human ear can hear. The duration of the L_{eq} measurements was 20 minutes. The SLM was calibrated before and after monitoring. No significant calibration drifts were detected during the study. Table 8 summarizes the measurement data and the detailed mapping in Appendix A shows the site locations. Additional noise monitoring data, field monitoring logs, and instrument calibration certificates are included in Appendix B.

Table 8. Noise Monitoring Data

Measurement Location[1]	Description	Date	Start Time (H:M)	Duration (mins)	Measured L_{eq} (dBA)
Site A	15078 Veterans Memorial Parkway	06/23/21	09:38	20	65.4
Site B	1200 Lodora Drive	06/23/21	10:31	20	65.1
Site C	On hill across from 1008 Linn Avenue	06/23/21	12:03	20	76.7
Site D	813 Linn Avenue	06/23/21	11:18	20	72.5

[1] Noise measurement site numbers were assigned based on preliminary review of the study area.

Table 8 shows that the measured equivalent sound levels range from a low of 65.1 dBA at Site B to a high of 76.7 dBA at Site C. Ambient outdoor noise sources that were not related to traffic included local community activity, truck horns and jake brakes, as well as a highway striping machine.

The worst noise hour results from “the combination of natural and mechanical sources and human activity usually present in a particular area” (23 CFR 772.5). Dominant existing transportation noise sources for receptors throughout the project corridor include I-70, Pearce Boulevard, MO Route Z (Church Street), and other local roadways.

5.2 Validation

Title 23 CFR 772.11(d)(2) requires that the analysis of traffic noise impacts, for projects on existing alignments, validate predicted noise levels through comparison between measured and predicted levels. A TNM model is considered ‘validated’ if it is a reasonable representation of the existing noise sensitive area and/or project area, and the TNM-predicted noise levels are within the acceptable tolerance of the noise level data obtained in the field. The MoDOT-accepted tolerance for TNM model validation is ±3.0 decibels (±3.0 dB).

In accordance with MoDOT Traffic Noise Policy, this Noise Technical Report (NTR) utilized validated computer models created with the FHWA TNM v.2.5 to predict noise levels (Existing, No-Build, and Build conditions) and define impacted receptors along the project. Validation results are presented in Table 9.

Table 9. Validation Summary

Measurement Location[1]	Description	Date	Start Time (H:M)	Duration (mins)	Measured L_{eq} (dBA)	TNM L_{eq} (dBA)	Difference (TNM – Measured)
Site A	15078 Veterans Memorial Parkway	06/23/21	09:38	20	65.4	68.4	3.0
Site B	1200 Lodora Drive	06/23/21	10:31	20	65.1	67.5	2.4
Site C	On hill across from 1008 Linn Avenue	06/23/21	12:03	20	76.7	76.6	-0.1
Site D	813 Linn Avenue	06/23/21	11:18	20	72.5	75.1	2.6

[1] Noise measurement site numbers were assigned based on preliminary review of the study area.

5.3 Existing (2018) Condition

For this NTR, existing worst-hour noise levels were assessed as the TNM-predicted noise levels. Under the existing (2018) conditions, exterior sound levels range from 49.0 dBA to 76.4 dBA. TNM plan view sheets are included in Appendix D.

Existing conditions are not described as having noise impacts. If the project were not built, MoDOT would not be responsible to mitigate noise via an abatement measure regardless of if existing noise levels exceeded NACs.

6.0 Traffic Data

The existing (2018) and design year (2045) traffic data for this project was assembled for the AM and PM peak hours. Traffic data for the I-70 mainline and ramps was adapted from the *Route I-70, St. Charles County Conceptual Study Report* (2020) prepared by HDR, and traffic data for MO Route Z (Church Street) was adapted from the *Wentzville Historic Downtown Transportation Revitalization Plan* (2018) prepared by CBB. Vehicle percentages were determined based on traffic count data. This analysis uses the maximum between the AM and PM peak hour traffic volumes on area roadways moving at posted traffic speeds or proposed design speeds. The traffic parameters used in the noise model for prediction of future noise levels are presented in Appendix C.

7.0 Determination of Future Sound Levels

Design year (2045) traffic noise levels for the No-Build and Build Alternatives were calculated using FHWA TNM v.2.5 computer models created in accordance with FHWA and MoDOT recommended procedures.

Concept plans and the proposed typical section overlaid on project aerials were used in conjunction with field reviews to develop the horizontal and vertical coordinate input data required by TNM. Roadway coordinates were placed along the center of each roadway lane in both directions. Receptor locations were identified from project aerials and field reconnaissance. Terrain lines, building rows, building barriers, and retaining walls were modeled where appropriate.

Sound levels were calculated for 120 receptors. Traffic noise impacts are summarized in Section 8.0 and detailed tabular noise level results for each receptor are in Appendix E. The predicted noise levels reflect the existing conditions, elevation differences, and the proposed roadway alignment in relation to the noise receptor sites.

7.1 No-Build (2045) Alternative

No-Build (2045), exterior sound levels would range from 49.9 dBA to 77.9 dBA. Sound level increases relative to existing conditions are predicted to be up to 1.5 dBA for receptors in the study area under No-Build conditions. TNM plan view sheets are included in Appendix D.

7.2 Build (2045) Alternative

Build (2045) exterior sound levels would range from 50.3 dBA to 78.0 dBA. Sound level increases relative to existing conditions are predicted to be up to 4.1 dBA for receptors in the study area under Build conditions. TNM plan view sheets are included in Appendix D.

Additionally, several noise receptor sites under the Build Alternative are predicted to experience a reduction in noise levels relative to existing conditions. This is due to either changes in future traffic patterns and/or changes in the vertical and horizontal alignment.

8.0 Impact Determination Analysis

MoDOT considers traffic noise impacts to occur when the predicted traffic noise levels either:

1) Approach or exceed the NAC; with “approach” meaning within 1 dBA of the NAC values shown in Table 4.

   – or –

2) Substantially increase over existing noise levels; with “substantial increase” meaning a 15 dBA increase over the existing noise level.

Traffic noise levels were modeled for the Existing (2018), No-Build (2045) and Build (2045) conditions at 120 receivers, representing 120 receptors. The results of the noise analysis predict that traffic-related noise impacts would occur for 20 receivers representing 20 receptors under the No-Build Alternative, and 30 receivers representing 30 receptors under the Build Alternative. Table 10 summarizes the impacts due to the proposed project by NAC and Table 11 summarizes the impacts due to the proposed project by impact type. The location of each receptor is shown on the detailed mapping in Appendix A and detailed tabular noise level results for each receptor

are in Appendix E. Review of the predicted noise levels indicates the proposed project will not cause substantial noise level increases.

Table 10. Traffic Noise Impacts by Activity Category

Activity Category	Total Receivers	Impacted Receivers	
		2045 No-Build	2045 Build
A	0	0	0
B	98	14	24
C	4	4	4
D	4	0	0
E	14	2	2
Total	**120[1]**	**20[2]**	**30[3]**

[1] 120 receivers representing 120 receptors.
[2] 20 receivers representing 20 receptors.
[3] 30 receivers representing 30 receptors.

Table 11. Traffic Noise Impact Summary (Build Alternative Only)

NSA	Summary of Impacted Receivers			
	Impacts due to Approaching or Exceeding FHWA NAC Only	Impacts due to Substantial Noise Level Increase Only[1]	Impacts due to Both Approaching or Exceeding FHWA NAC and Substantial Noise Level Increase[1]	Total Impacts
A	1	0	0	1
B	1	0	0	1
C	0	0	0	0
D	0	0	0	0
E	22	0	0	22
F	1	0	0	1
G	2	0	0	2
H	3	0	0	3
Total	**30[2]**	**0**	**0**	**30[3]**

[1] "Substantial increase" meaning a 15 dBA increase over the existing noise level traffic noise level impact per MoDOT Traffic Noise Manual.
[2] 30 receivers representing 30 receptors.
[3] 30 receivers representing 30 receptors.

9.0 Noise Abatement Evaluation

In accordance with 23 CFR, Part 772, noise abatement measures must be evaluated for the noise receptor sites predicted to approach or exceed the FHWA Noise Abatement Criteria as a result of the Build Alternative (see Appendix E) or which are predicted to experience a substantial (15 dBA or more) noise level increase over existing noise levels. The noise abatement measures considered include traffic management measures, alignment modifications, land-use controls, and the construction of noise barriers within the highway project's right-of-way.

9.1 Traffic Management

Traffic system management measures that limit vehicle type, speed, volume, and time of operations were considered as possible traffic noise abatement measures. However, these types of measures are not considered appropriate for this project due to their diminishing effect on the capacity and level of service of the proposed alternatives and the fact that they would not meet the purpose of and need for the proposed project. Furthermore, the implementation of traffic systems management measures would not be reasonable as they would not provide a minimum noise reduction of 7 dBA as required by MoDOT policy.

9.2 Alignment Modifications

Alignment modifications generally involve orienting and/or siting the roadway sufficient distances from noise sensitive areas so as to minimize noise impacts. This project is being built on available right-of-way, through an existing corridor, with little to no room for alignment modifications on either side. Therefore, additional alignment modifications are not considered a feasible or reasonable measure.

9.3 Buffer Zones

In areas of impacted receptors where other abatement measures were considered and found to be not reasonable, a vegetative barrier could be considered for psychological and aesthetic screening. Vegetation that is high enough, wide enough, and dense enough so it cannot be seen through, can decrease highway traffic noise. Studies have shown that a 200-foot width of dense vegetation can reduce noise levels by about 5 dBA.

The development of buffer zones to provide noise mitigation was not considered appropriate as a noise abatement measure for this project. The amount of additional right-of-way required to create effective buffer zones would negatively impact existing adjacent urban land uses.

9.4 Noise Barriers

Noise barriers reduce noise levels by blocking the sound path between a roadway and noise sensitive area. A noise barrier evaluation was performed for this project following the MoDOT Traffic Noise Policy to determine whether feasible and reasonable barriers could be

constructed at the noise receptor sites predicted to approach or exceed the Noise Abatement Criteria as a result of the Build Alternative.

9.4.1 Noise Barrier Feasibility

Feasibility is the ability to provide abatement in a given location considering the acoustic and engineering limitations of the site. Acoustic feasibility refers to a noise abatement measure's ability to achieve the minimum noise reduction at impacted receptors. MoDOT requires at least a 5 dBA insertion loss for a minimum of two first-row, impacted receivers for noise abatement to be considered feasible. Engineering feasibility refers primarily to physical constraints and other constructability constraints, such as topography, access, drainage, safety, maintenance, and presence of other noise sources. In general, if these factors are too extreme or cannot be accommodated in providing the minimum noise reduction, noise abatement will be deemed infeasible. For reasons of safety (primarily wind load and clear space concerns), a noise wall's height is limited to 20 feet. The wall height criterion alone cannot be used to consider noise abatement infeasible.

9.4.2 Noise Barrier Reasonableness

"Reasonableness" addresses the use of common sense and good judgment when considering noise abatement. Each of the following three required reasonableness factors must be collectively achieved in order for a noise abatement measure to be deemed reasonable:

1) Noise abatement measures must provide a minimum noise reduction of 7 dBA for 100 percent of first-row benefited receptors.
2) Noise abatement measures shall not exceed 1,300 square feet per benefitted receptor, in the case of noise walls. Where noise walls are not options, other noise abatement techniques may be considered, but cannot exceed $46,000 per benefitted receptor. MoDOT does not allow cost averaging.

   Third party funding cannot be used to make up the difference in cost between the reasonable cost allowance and the actual cost. Third party funding can only be used to pay for additional features such as landscaping, aesthetic treatments, etc. for noise barriers that meet cost-effectiveness criteria.
3) Viewpoints of owners and residents of the benefitted receptors will be obtained. These will usually be obtained by ballot through mailings or at a public forum. All first-row benefitted receptors will receive a ballot for voting. A simple majority (51%) of returned ballots is required to qualify a noise wall. The viewpoints of non-owner residents will be evaluated as a portion of an aggregate of 25 percent of the total. The viewpoints of owners will be evaluated as a portion of an aggregate of 75 percent of the total.

Barriers for all impacted receptors in NSA A, NSA B, NSA E, NSA F, NSA G, and NSA H were considered however, no barriers qualified for feasibility or reasonableness evaluation because either the impacted receptor(s) are isolated or the number of first-row receptors is insufficient

(a minimum of two first-row receptors is required) per MoDOT policy. These locations are summarized as follows:

NSA A: One receptor (A01), located west of Pearce Boulevard and south of Bank Street is impacted by the project. A noise barrier in this location would be unable to satisfy MoDOT's feasibility requirement to provide at least a 5 dBA noise reduction for a minimum of two first-row impacted receivers. Hence, a noise barrier in this area is not feasible and was not investigated per MoDOT policy.

NSA B: One receptor (B01), located north of Pearce Boulevard and west of Schroeder Boulevard is impacted by the project. A noise barrier in this location would be unable to satisfy MoDOT's feasibility requirement to provide at least a 5 dBA noise reduction for a minimum of two first-row impacted receivers. Hence, a noise barrier in this area is not feasible and was not investigated per MoDOT policy.

NSA E: Twenty-two receptors (E06, E07, E08B, E08C, E09B, E09C, E10B, E10C, E11B, E11C, E16B, E16C, E17B, E17C, E18B, E18C, E19B, E19C, E20B, E20C, E21B, E21C) along located Lodora Dive south of the Norfolk Southern Railroad and east of I-70 are impacted by the project. Due to intervening development between these receptors and the roadway as well as intervening parcels separating the receptor parcel from abutting the roadway right-of-way; these receptors do not qualify as first-row receptors. A noise barrier in this location would be unable to satisfy MoDOT's feasibility requirement to provide at least a 5 dBA noise reduction for a minimum of two first-row impacted receivers. Hence, a noise barrier in this area is not feasible and was not investigated per MoDOT policy.

NSA F: One receptor (F12), located south of I-70 and west of MO Route Z (Church Street) is impacted by the project. A noise barrier in this location would be unable to satisfy MoDOT's feasibility requirement to provide at least a 5 dBA noise reduction for a minimum of two first-row impacted receivers. Hence, a noise barrier in this area is not feasible and was not investigated per MoDOT policy.

NSA G: Two receptors (G07 and G08), located along Linn Avenue north of I-70 are impacted by the project. While receptor G07 does qualify as a first-row receptor, receptor G08 does not qualify due to intervening parcels separating the receptor parcel from abutting the roadway right-of-way. A noise barrier in this location would be unable to satisfy MoDOT's feasibility requirement to provide at least a 5 dBA noise reduction for a minimum of two first-row impacted receivers. Hence, a noise barrier in this area is not feasible and was not investigated per MoDOT policy.

NSA H: Three receptors (H01, H02, and H03), located along Linn Avenue south of I-70 are impacted by the project. While receptor H01 does qualify as a first-row receptor, receptors H02 and H03 do not qualify due to intervening parcels separating the receptor parcel from abutting the roadway right-of-way. A noise barrier in this location would be unable to satisfy MoDOT's feasibility requirement to provide at least a 5 dBA noise reduction for a minimum of two first-row impacted receivers.

Hence, a noise barrier in this area is not feasible and was not investigated per MoDOT policy.

9.5 Statement of Likelihood

MoDOT Noise Policy requires the identification as to whether it is "likely" or "unlikely" that noise abatement measures will be installed for each noise-sensitive area identified. "Likely" does not mean a firm commitment. The final decision on the installation of the abatement measures shall be made upon completion of the project design, the public involvement process, concurrence with the MoDOT Noise Policy, and FHWA approval. No barriers are considered likely for this project.

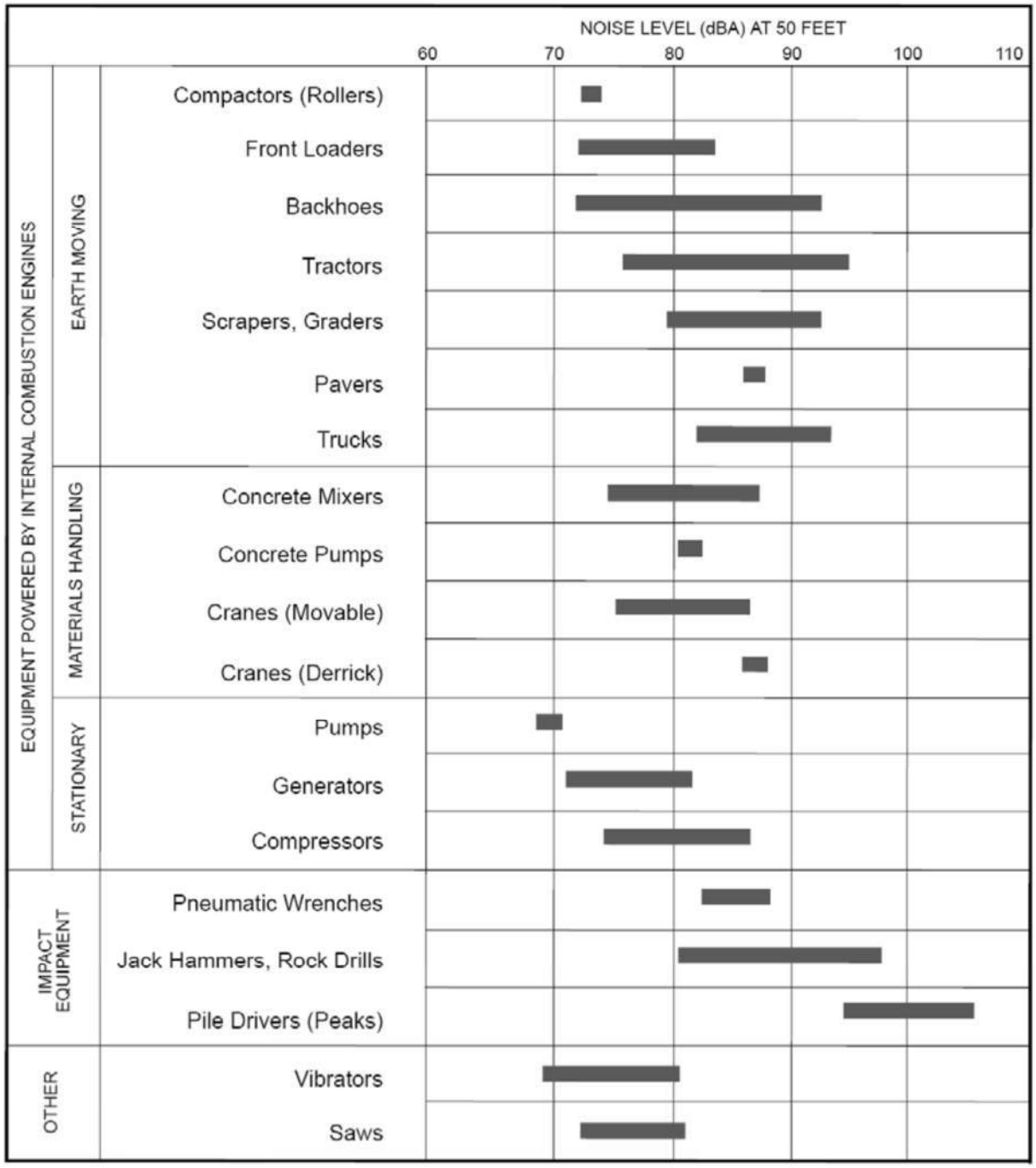
10.0 Construction Noise and Vibration

The major construction activities for this project are expected to be earth removal, tree clearing, hauling, grading, bridge construction, and paving. As required by 23 CFR 772.19, the temporary increase in noise levels due to construction activities was considered. Temporary speech interference for passers-by and individuals living or working near the project can be expected as noise levels in the project area will be increased during construction. The sound levels resulting from construction activities at nearby noise-sensitive receivers will be a function of the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. Default sound levels from construction equipment used in roadway construction are shown in Figure 2.

If meeting the project schedule requires that earth removal, tree clearing, hauling, grading, bridge construction, and/or paving, must occur during evening, nighttime, and/or weekend hours in the vicinity of residences, the Contractor shall notify MoDOT as soon as possible. In such instances, all reasonable attempts shall be made to notify and to make appropriate arrangements for the mitigation of the predicted construction noise impacts upon the affected property owners and/or residents. Construction projects lasting longer than two years that are known to cause impacts must also incorporate mitigation measures.

Low-cost and easily implemented construction noise control measures should be incorporated into the project plans and specifications to the extent possible. These measures include, but are not limited to, limiting construction to Monday through Friday (to the extent possible), equipment condition and exhaust muffler requirements, haul-road locations, elimination of "tail gate banging," ambient-sensitive backup alarms, construction noise complaint mechanisms, and consistent and transparent community communication. Overall, noise impacts due to construction are expected to be minor and to occur infrequently.

Figure 2. Typical Sound Levels for Construction Equipment



Note: Based on limited available data samples.

11.0 Information for Local Officials

MODOT encourages local governments with jurisdiction over undeveloped lands, as well as potential developers of these lands, to practice noise compatibility planning to avoid future noise impacts.

More information on noise compatible land use planning can be found in the following FHWA guidance documents:

- *The Audible Landscape: A Manual for Highway Noise and Land Use*, FHWA, November, 1974.
- *Entering the Quiet Zone: Noise Compatibility Land Use Planning*, FHWA, May, 2002.

As properties near a highway are developed or redeveloped, providing a buffer between a highway and future noise sensitive development can minimize or eliminate noise impacts. This abatement measure can be implemented through local land use planning. The distances between the highway and location where traffic noise levels approach the NAC for Activity Categories B, C, and E are determined to facilitate future land use planning that is compatible with the traffic noise environment. For the proposed conceptual design, the distance between the nearest through lane and the location where traffic noise levels would approach a particular NAC is provided in Table 12. The distances do not account for any reduction in noise levels that may be provided by berms, privacy walls or intervening structures. Distances also do not account for any increase in noise levels that may be caused by a variation in the noise path, increased roadway elevation or increased elevation of the noise sensitive site (i.e., second floor patio).

The noise contour predictions do not represent predicted noise levels at every location at a particular distance back from the roadway. Sound levels will vary with changes in terrain and will be affected by the shielding of objects such as buildings. This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels.

Table 12. Traffic Noise Contours for Land Use Planning

Activity Category[1]	Build Alternative Contour Distances[2]
	I-70 EB (65 mph speed limit)
B & C (66 dBA)	≈ 40 ft
E (71 dBA)	≈ 25 ft

[1] Activity Categories are defined in 23 CFR 772 and summarized in Table 4.

[2] Distance is approximate and is referenced to the nearest through lane. Distance does not account for any reduction in noise levels that may be provided by berms, privacy walls or intervening structures. Distance does not account for any increase in noise levels that may be caused by a variation in the noise path, increased roadway elevation or increased elevation of the noise sensitive site (i.e. second floor patio).

12.0 Conclusion

Traffic noise and temporary construction noise can be a consequence of transportation projects, especially in areas in close proximity to high-volume and high-speed existing steady-state traffic noise sources. This analysis was conducted to evaluate the potential noise impacts associated with the proposed improvements along the I-70 Corridor from Wentzville Parkway to MO Route Z (Church Street) as part of the I-70 St. Charles County Corridor Improvement Project (J6I0624). This NTR utilized computer models created with the FHWA TNM v.2.5 to predict existing and future noise levels and define impacted receptors within the project area.

The results of the noise analysis predict 30 traffic-related noise impacts (30 receivers representing 30 receptors) would occur under the Build Alternative; therefore, noise abatement was analyzed for the project. Barriers for all impacted receptors in NSA A, NSA B, NSA E, NSA F, NSA G, and NSA H were considered however, no barriers qualified for feasibility or reasonableness evaluation because either the impacted receptor(s) are isolated or the number of first-row receptors is insufficient per MoDOT policy. Final decision on the installation of an abatement measure shall be made upon completion of the project design, the public involvement process, concurrence with the MoDOT Traffic Noise Policy, and FHWA approval.

Temporary and localized noise level increases will occur due to the close proximity of noise-sensitive receptors to project construction activities. Construction noise control measures such as limiting construction to Monday through Friday (to the extent possible), equipment condition and exhaust muffler requirements, haul-road locations, elimination of “tail gate banging,” ambient-sensitive backup alarms, construction noise complaint mechanisms, and consistent and transparent community communication will be incorporated into the project plans and specifications.

13.0 References

CBB. Wentzville Historic Downtown Transportation Revitalization Plan. February 2, 2018.

HDR. Route I-70, St. Charles County Conceptual Study Report, May 8, 2020.

Missouri Department of Transportation (MoDOT). Policy on Highway Traffic Noise Abatement, Article 127.13 of the Engineering Policy Guide. June 17, 2019.

U.S. Department of Transportation, Federal Highway Administration. FHWA Traffic Noise Model: User's Guide. FHWA Report Number FHWA-PD-96-009. January1998.

U.S. Department of Transportation, Federal Highway Administration. FHWA Traffic Noise Model: User's Guide (Version 2.5 Addendum). April 2004.

U.S. Department of Transportation, Federal Highway Administration. Measurement of Highway-Related Noise. FHWA Report Number FHWA-HEP-18-066. June 2018.

U.S. Environmental Protection Agency (EPA). Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. Washington, D.C. 1971.

U.S. National Archives and Records Administration, Office of the Federal Register. Title 23, Code of Federal Regulations, Part 772. Procedures for Abatement of Highway Traffic Noise and Construction Noise. [75 FR 39820-39838, July 13, 2010].

14.0 Appendices

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Appendix A. Detailed Mapping

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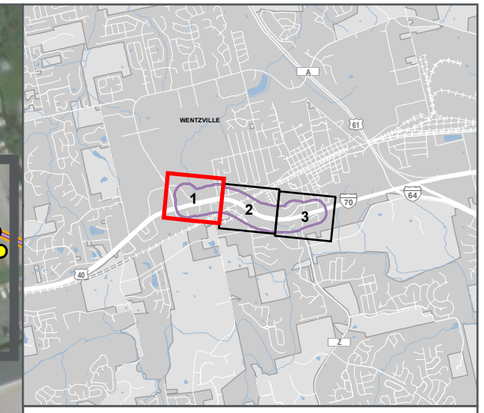


- Project Study Area
- Noise Study Area
- Proposed Roadway Alignment
- Field Noise Monitoring Location
- Not Impacted and Benefited Receptor
- Impacted and Benefited Receptor
- Impacted and Not Benefited Receptor
- Impacted and Not Benefited Receptor

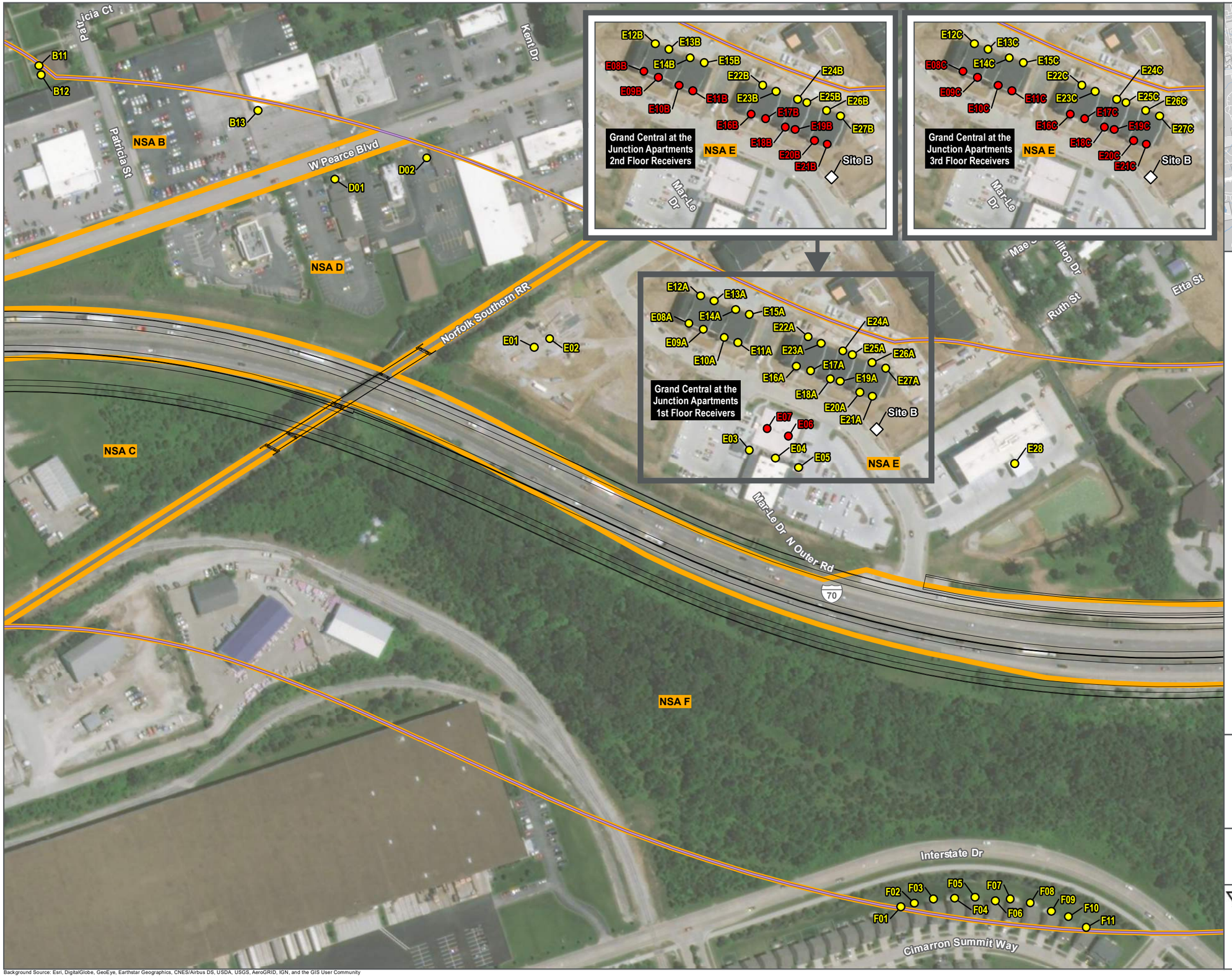
Data for Reference Only

DETAILED STUDY AREA MAP

0 200
FEET

SHEET 1 OF 3

Background Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Project Study Area

Noise Study Area

Proposed Roadway Alignment

Field Noise Monitoring Location

Not Impacted and Benefited Receptor

Impacted and Not Benefited Receptor

Impacted and Benefited Receptor

Not Impacted and Not Benefited Receptor

Data for Reference Only

DETAILED STUDY AREA MAP

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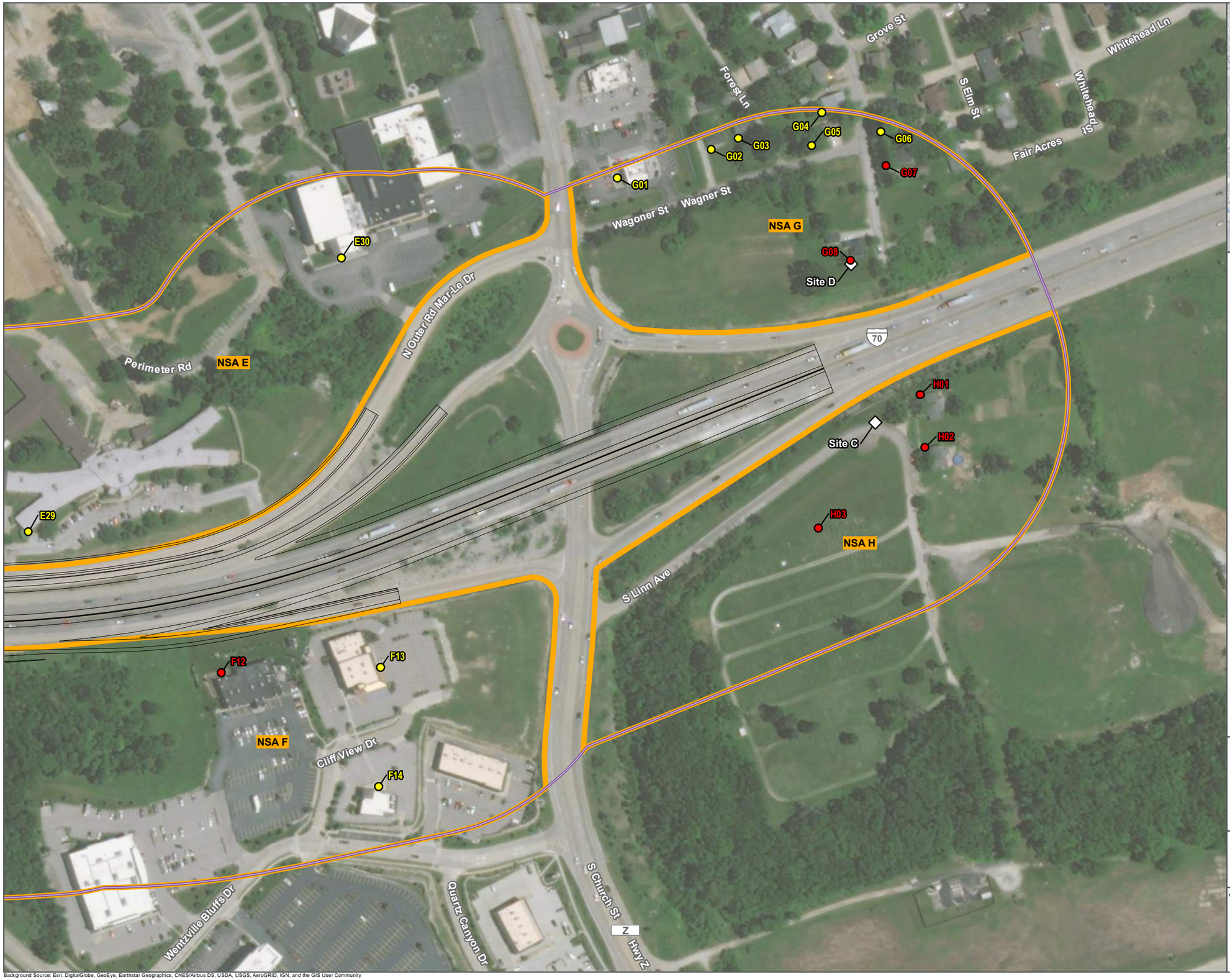
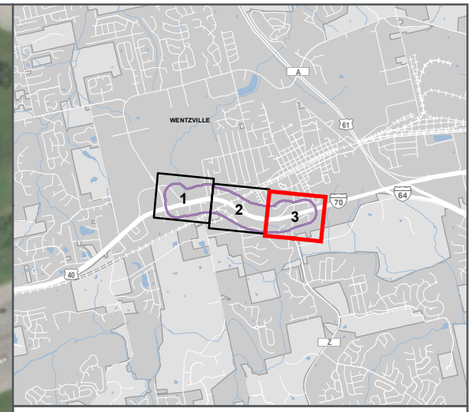
FEET

SHEET 2 OF 3





Project Study Area

Noise Study Area

Proposed Roadway Alignment

Field Noise Monitoring Location

Not Impacted and Benefited Receptor

Impacted and Not Benefited Receptor

Impacted and Benefited Receptor

Not Impacted and Not Benefited Receptor

Data for Reference Only

DETAILED STUDY AREA MAP

0 200

FEET

MoDOT

HDR

SHEET 3 OF 3

Background Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Appendix B. Ambient Noise Level Monitoring

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HDR

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

Reading: A-1

Project Description: I-70 Westerville Project

Noise Source: I-70 w+E Date: 6/23/21 Personnel: MB, MA, MB

Equipment	Type	Serial #
Sound Level Meter		
Microphone/Preamp		
Calibrator		

Pre-Calib: 113.2 dB

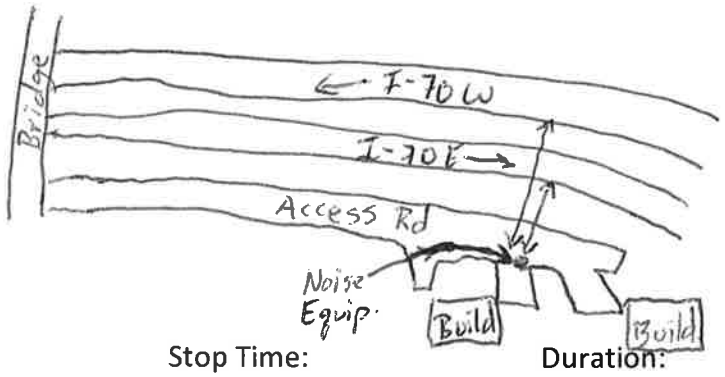
Post-Calib:

SLM SETTINGS (circle one) **FAST** (SLOW)

WEIGHTING (circle one) (A) Lin.

Location Description: S of EB I-70 w/in parking lot of Forklift City off of I-70 access

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:



Start Time: 09 : 38 (AM) PM

Stop Time: 09 : 58 AM PM

Duration: 20 min

Leq = 65.4
Min = 57.1
Max = 77.6

Wind Speed/Direction: 10mph S

Percentiles:

Temperature: 74°F

Humidity: 50%

Calibration results before: 113.2 dBA and after 113.4 dBA

Traffic Count Roadway: I-70

	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
E	652	35	106	Ø	2
W	713	25	147	2	Ø

*Note roadway direction in table

* Striper @ 9:56 slowed EB traff.
E-Brake @ 9:40 + 9:41 "
9:42 " 9:52 "
Accel @ 9:51 / 9:48 " 9:50 /
E-Brake @ 9:49 /
Horn @ 9:55

Site A
Eastbound

~ 9:40 AM

Megan Achr

Megan Achr

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
652	35	106		2

Traffic counts need to be directional

Matt Burcham Matt Burcham
West Bound

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
713	25	147		

Traffic counts need to be directional

HDR

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

Reading: B-1 (Reading #2) in equipment

Project Description: I-70 Wentzville Project

Noise Source: I-70 E & W Date: 6/23/21 Personnel: MB, MA, MBu

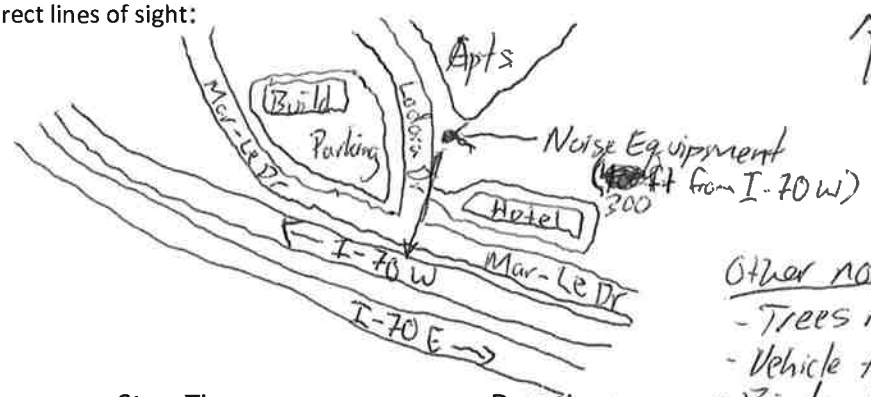
Equipment	Type	Serial #
Sound Level Meter		
Microphone/Preamp		
Calibrator		

SLM SETTINGS (circle one) **FAST** SLOW

WEIGHTING (circle one) (A) Lin.

Location Description: Near Apt complex (Grand Central) N of I-70 along Lodora Drive

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:



Leq = 65.1 dB
Min = 57.3 dB
Max = 74.8 dB

Other noise:
- Trees rustling
- Vehicle traffic on Lodora Dr.
- Birds chirping
- Low music from nearby Sugarfire BBQ restaurant

Start Time: 10 :31 AM PM Stop Time: 10 :51 AM PM Duration: 20 min

Wind Speed/Direction: 10 mph S Percentiles:

Temperature: 76°F Humidity: 46%

Calibration results before: 113.4 dBA and after 113.8 dBA

Traffic Count Roadway: I-70 (Primary), Lodora Dr (Secondary)

Lodora Dr. → E (Not relevant) W

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
𝍸 𝍸 ||				

*Note roadway direction in table

Heavy Trucks
I-70-
E-Brake:
10:36 1
10:41 1
10:46 1
Accel:
10:49 1
Accel:
10:31 1 10:43 11
10:43 11 10:50 11
E-Brake:
10:39 1
10:47 1

I-70 East Site B

Matt Buechler

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
770	39			4
		180		

Traffic counts need to be directional

Site B
westbound

I-70 west

Megan Achor
Megan Achor

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
806	36	122		4

Traffic counts need to be directional

HDR

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

Reading: C-1 (Reading #4)

Project Description: I-70 Wentzville Project

Noise Source: I-70 W/E/on-ramp Date: 6/23/21 Personnel: MB, MA, MB

Equipment	Type	Serial #
Sound Level Meter		
Microphone/Preamp		
Calibrator		

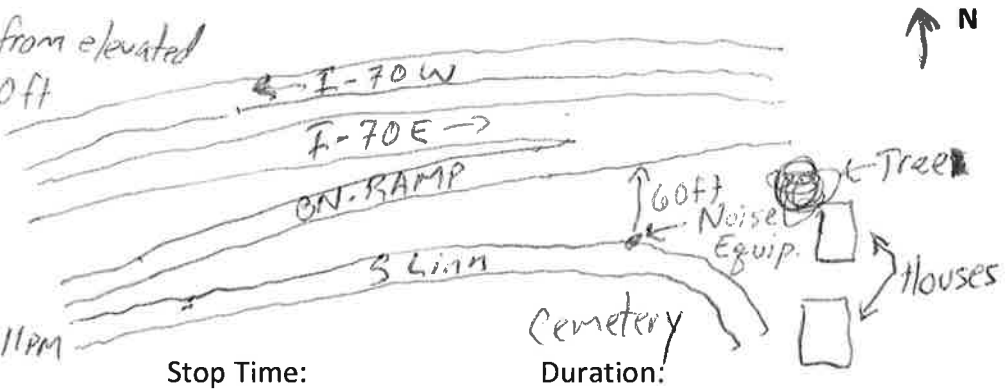
SLM SETTINGS (circle one) **FAST** (SLOW)

WEIGHTING (circle one) (A) Lin.

Location Description: Southside of I-70 immed. south of I-70 E on ramp. Next to residences (2 houses) + cemetary

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

- Readings taken from elevated position approx 30ft above on-ramp.
- E-braking + accel. of heavy trucks regularly occured
- 18 wheeler horn @ 12:11PM
- wind east @ 12:16PM



Start Time: 12:03 PM Stop Time: ___:___ AM PM Duration: 20 min

Wind Speed/Direction: 11mph S Percentiles: _____

Temperature: 79°F Humidity: 38%

Calibration results before: 114.0 dBA and after 113.8 dBA

Traffic Count Roadway: I-70 E/W/ on-ramp

On Ramp

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
(137)	III (3)	II (2)		

*Note roadway direction in table

site C Cemetary By road
I-70 East Matt Borcham

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
672	40	129	4	2

Traffic counts need to be directional

Site C I-10 Westbound thru only

Megan Ochs

Megan Ochs

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
698	29	142	2	2

Traffic counts need to be directional

HDR

SHORT-TERM TRAFFIC NOISE MONITORING LOG SHEET

Reading: D-1 (Reading #3)

Project Description: I-70 Wentzville Project

Noise Source: I-70 Date: 6/23/21 Personnel: MB, MA, MB

Equipment	Type	Serial #
Sound Level Meter		
Microphone/Preamp		
Calibrator		

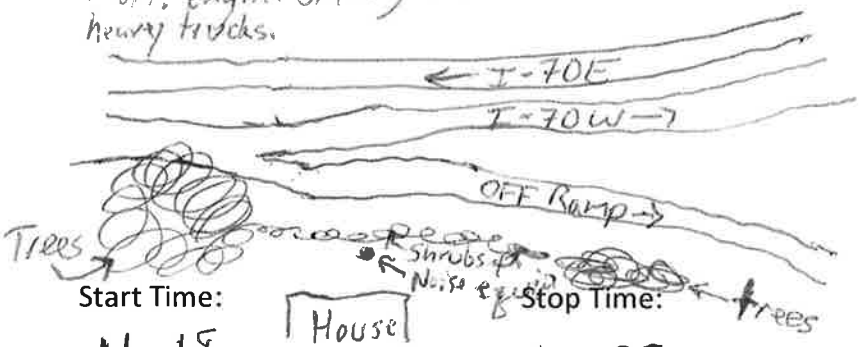
SLM SETTINGS (circle one) **FAST** (SLOW)

WEIGHTING (circle one) (A) Lin.

Location Description: Elevated residential area north of I-70 W & off ramp

SITE SKETCH: Including noise source, receptors, reference distances, North arrow, wind direction arrow, terrain and shielding, roadway profile, and direct lines of sight:

- Noise readings taken from Elevated area above I-70
- Mild, engine braking & accel from heavy trucks.



Leq = 72.5 dB
Min = 66.4 dB
Max = 78.3 dB

Start Time: 11:18 AM PM Stop Time: 11:38 AM PM Duration: 20 min

Wind Speed/Direction: 10 mph S Percentiles:

Temperature: 78°F Humidity: 42%

Calibration results before: 113.8 dBA and after 114 dBA

Traffic Count Roadway: I-70 WB / ~~EB~~ EB / off-ramp

OFF Ramp

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
(174)	𝍸 III (8)	III (3)		

*Note roadway direction in table

Site D I-70 East

Matt Bucham

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
674	36	126		3

Traffic counts need to be directional

Site D
Westbound

I-70 west
Thru traffic only

Megan Amr
Megan Amr

Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
742	32	149	1	3

Traffic counts need to be directional

Calibration Certificate

Certificate Number 2021001103

Customer:
HDR Inc
Suite 600
701 Xenia Avenue South
Minneapolis,MN 55416,United States

Model Number	824	***Procedure Number***	D0001.8442		
Serial Number	A0764	***Technician***	Sean Childs		
Test Results	**Pass**	***Calibration Date***	28 Jan 2021		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	28 Jan 2022		
		Temperature	23.4	°C	± 0.01 °C
Description	Larson Davis Model 824	***Humidity***	52.1	%RH	± 0.5 %RH
	Firmware Revision: 4.290	***Static Pressure***	86.08	kPa	± 0.03 kPa

Evaluation Method Tested electrically using Larson Davis PRM902 S/N 1207 and an ADP005 input adaptor substituted for the microphone.
Data reported in dB re 20 µPa assuming a microphone sensitivity of 44.5 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards:

IEC 61672:2002 Class 1	ANSI S1.4-1983 Type 1
IEC 61260:2001 Class 1	ANSI S1.11-1986 Type 1D
IEC 60651:2001 Type 1	IEC 60804:2000 Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with JCGM 100:2008 (ISO/IEC Guide 98-3:2008) Evaluation of measurement data - Guide to the expression of uncertainty in measurement. A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-S Humidity/Temperature Sensor	05/12/2020	05/12/2021	006943
SRS DS360 Ultra Low Distortion Generator	01/21/2021	01/21/2022	007710

Calibration Certificate

Certificate Number 2021000855

Customer:
HDR Inc
Suite 600
701 Xenia Avenue South
Minneapolis,MN 55416,United States

Model Number	2541	***Procedure Number***	D0001.8387		
Serial Number	4185	***Technician***	Abraham Ortega		
Test Results	**Pass**	***Calibration Date***	22 Jan 2021		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	22 Jan 2022		
Description	1/2 inch Microphone - FF - 200V	***Temperature***	24.8	°C	± 0.01 °C
		Humidity	31.0	%RH	± 0.5 %RH
		Static Pressure	101.34	kPa	± 0.03 kPa

Evaluation Method Tested electrically using an electrostatic actuator.

Compliance Standards Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	07/01/2020	07/01/2021	001230
Microphone Calibration System	08/25/2020	08/25/2021	001233
1/2" Preamplifier	12/18/2020	12/18/2021	001274
Agilent 34401A DMM	12/08/2020	12/08/2021	001329
Larson Davis CAL250 Acoustic Calibrator	09/01/2020	09/01/2021	003030
1/2" Preamplifier	04/13/2020	04/13/2021	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006507
1/2 inch Microphone - RI - 200V	06/04/2020	06/04/2021	006510
1/2 inch Microphone - RI - 200V	07/31/2020	07/31/2021	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/24/2020	07/24/2021	006531

Calibration Certificate

Certificate Number 2020009160

Customer:
HDR Engineering Inc
Suite 600
701 Xenia Avenue South
Minneapolis, MN 55416-3636, UNITED STATES

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	4467	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	19 Aug 2020		
Initial Condition	Adjusted	***Calibration Due***	19 Aug 2021		
		Temperature	23	°C	± 0.3 °C
Description	Larson Davis CAL200 Acoustic Calibrator	***Humidity***	38	%RH	± 3 %RH
		Static Pressure	101.0	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	08/04/2020	08/04/2021	001021
Larson Davis Model 2900 Real Time Analyzer	04/02/2020	04/02/2021	001051
Microphone Calibration System	03/03/2020	03/03/2021	005446
1/2" Preamplifier	09/17/2019	09/17/2020	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/06/2020	08/06/2021	006507
1/2 inch Microphone - RI - 200V	12/06/2019	12/06/2020	006511
Pressure Transducer	10/18/2019	10/18/2020	007204

Calibration Certificate

Certificate Number 2021001102
Customer:
HDR Inc
Suite 600
701 Xenia Avenue South
Minneapolis,MN 55416,United States

Model Number	PRM902	***Procedure Number***	D0001.8383		
Serial Number	1207	***Technician***	Sean Childs		
Test Results	**Pass**	***Calibration Date***	28 Jan 2021		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	28 Jan 2022		
Description	Larson Davis 1/2" Preamplifier 7-pin LEMO	***Temperature***	23.16	°C	± 0.01 °C
		Humidity	52.7	%RH	± 0.5 %RH
		Static Pressure	86.08	kPa	± 0.03 kPa

Evaluation Method Tested electrically using an 18.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	01/11/2021	01/11/2022	003062
Hart Scientific 2626-S Humidity/Temperature Sensor	05/12/2020	05/12/2021	006943
Agilent 34401A DMM	07/07/2020	07/07/2021	007172
SRS DS360 Ultra Low Distortion Generator	01/21/2021	01/21/2022	007710

Appendix C. Traffic Data

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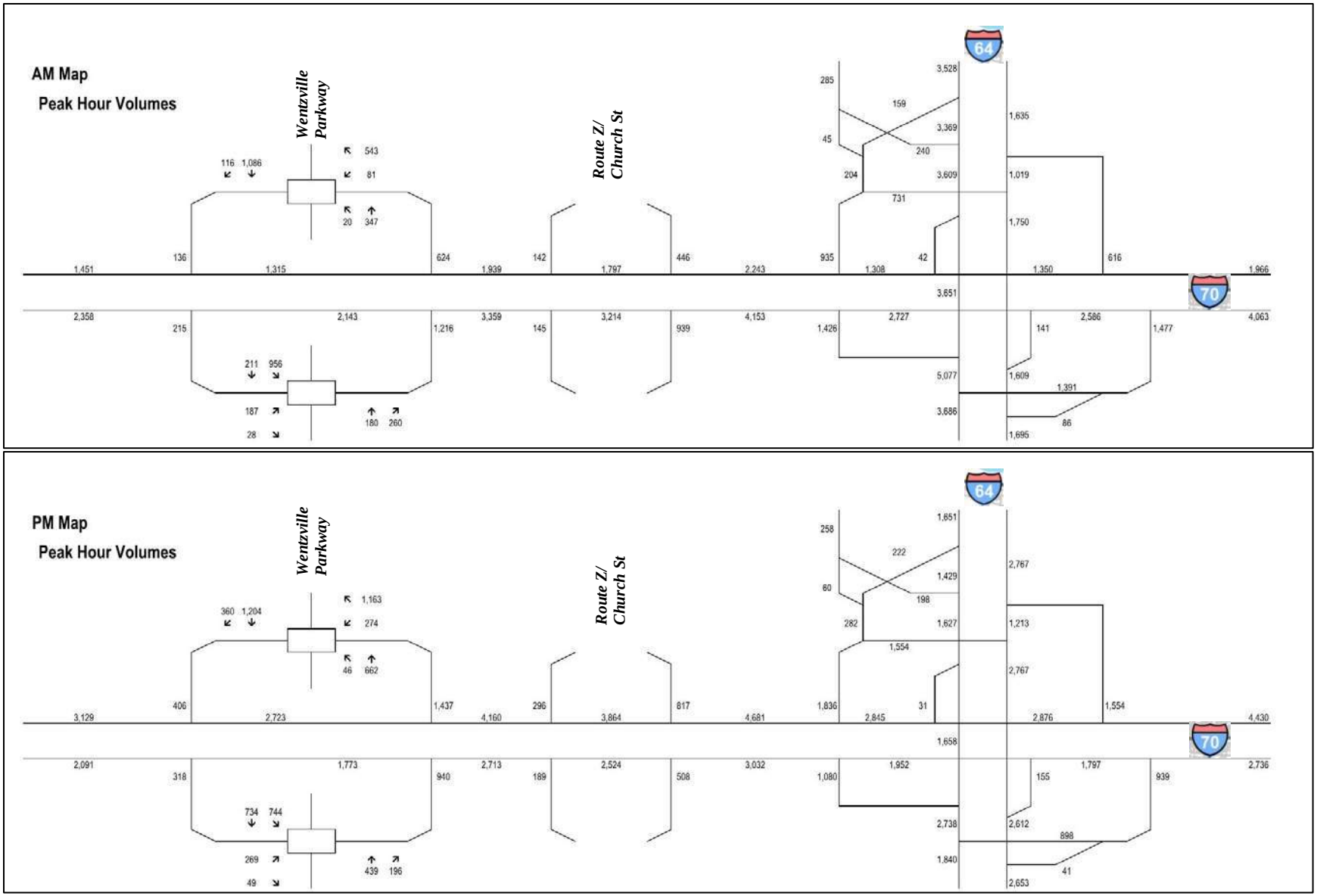


Figure 17: Existing AM and PM Peak Volumes

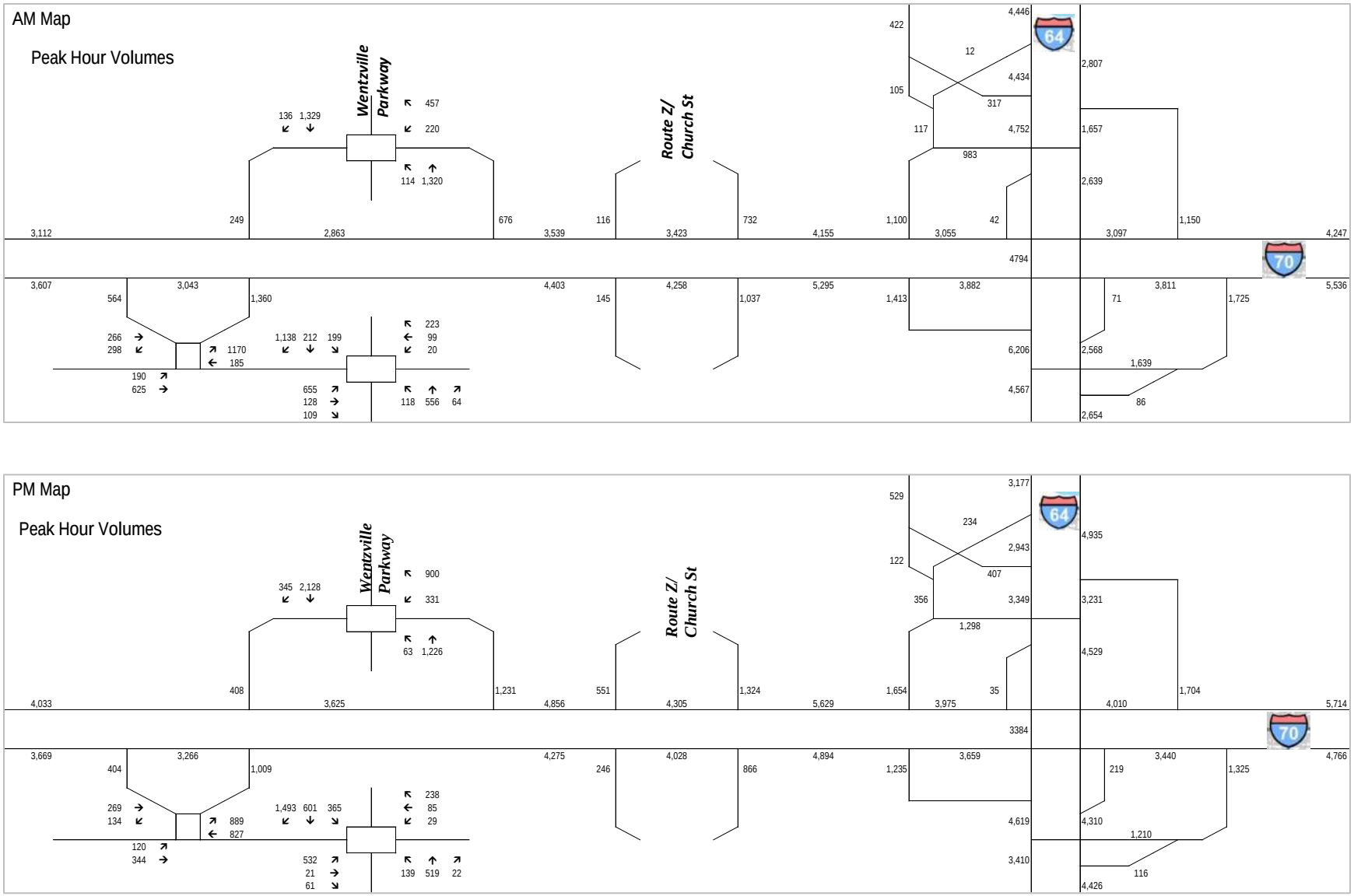
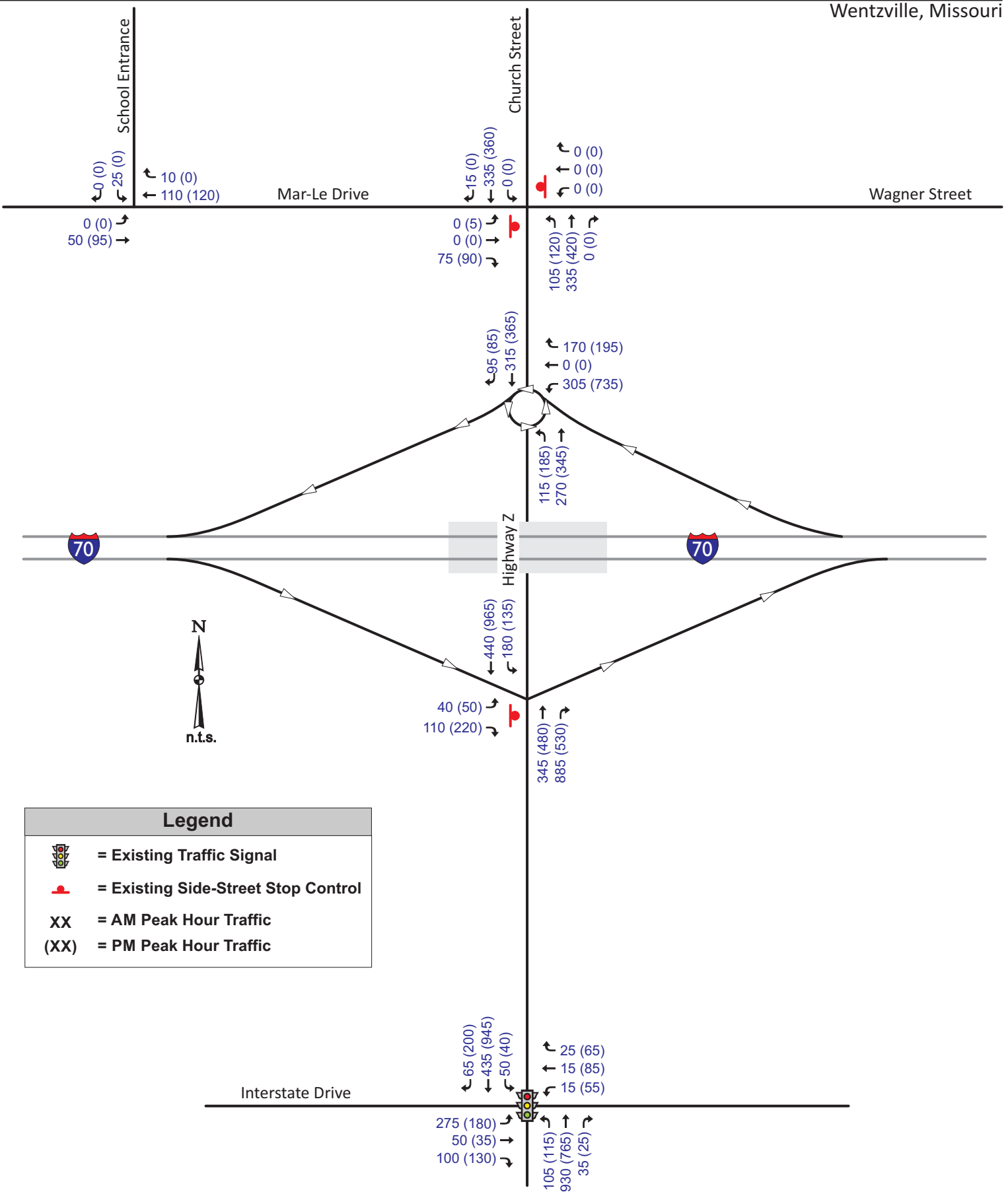


Figure 19: 2045 Volume Forecasts



Legend

= Existing Traffic Signal

= Existing Side-Street Stop Control

XX = AM Peak Hour Traffic

(XX) = PM Peak Hour Traffic

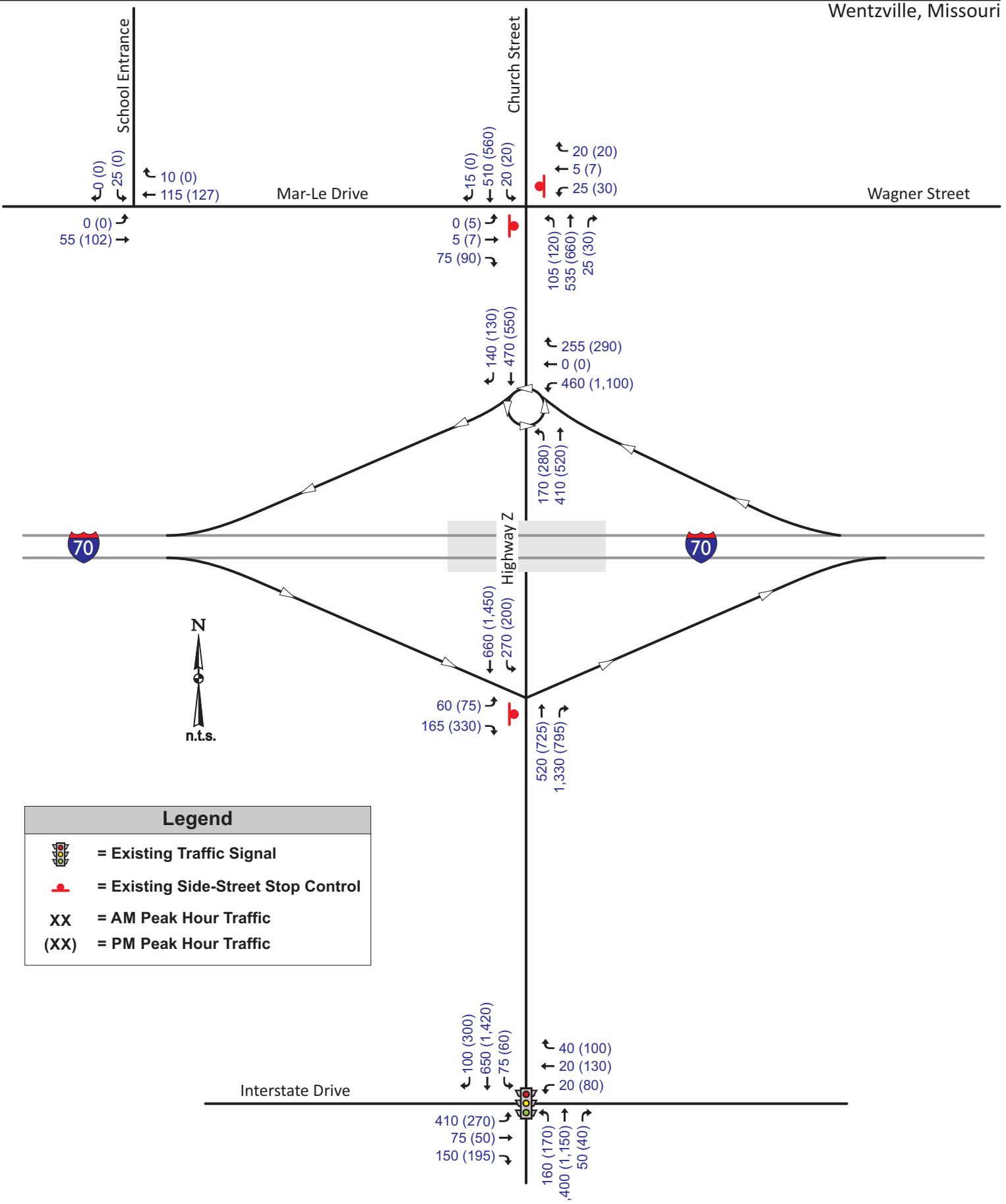


Exhibit 3: 2040 Traffic Volumes + Development

Job# 090-17
02/08/18

CBB TRANSPORTATION ENGINEERS+PLANNERS

Appendix D. Traffic Noise Models

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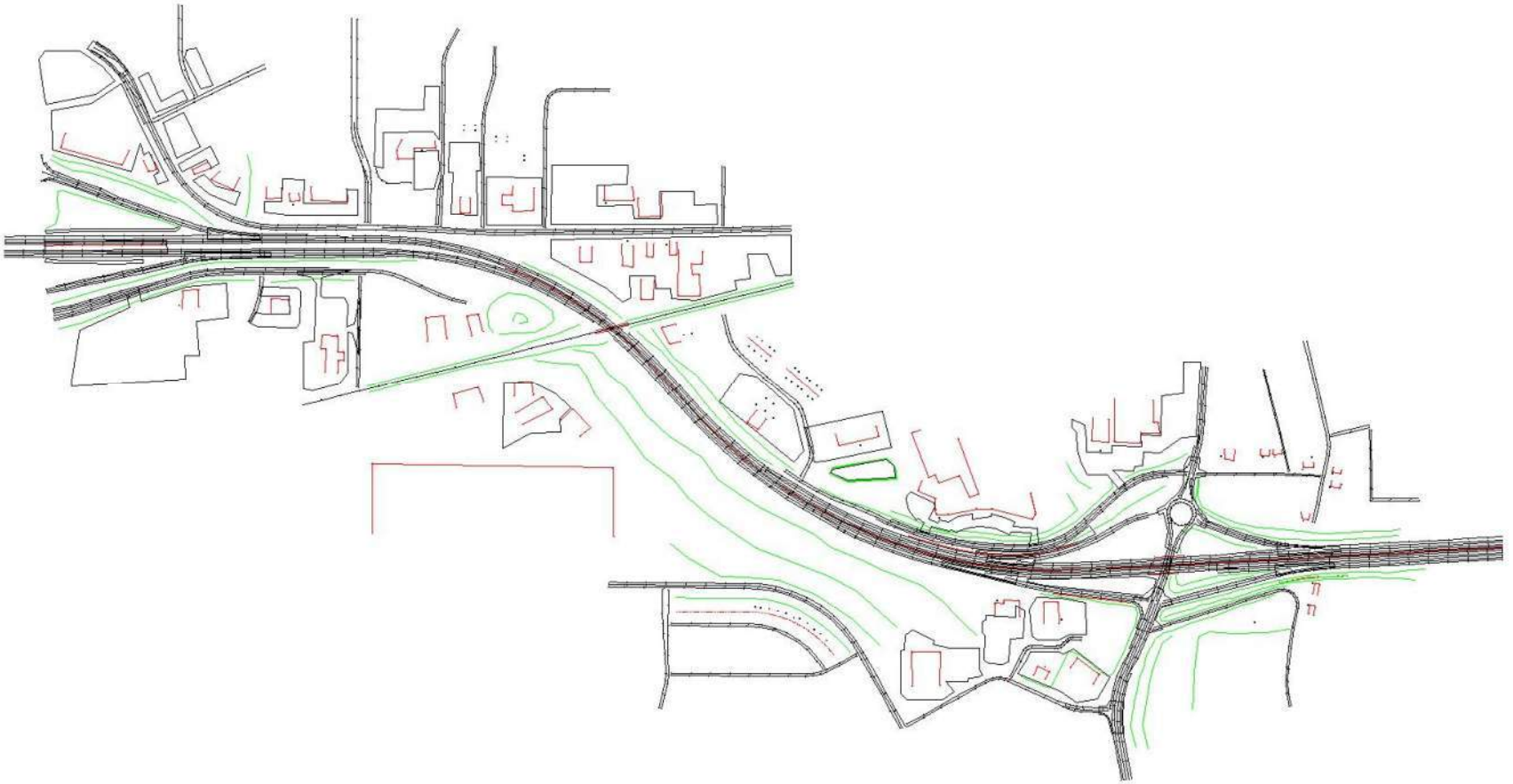
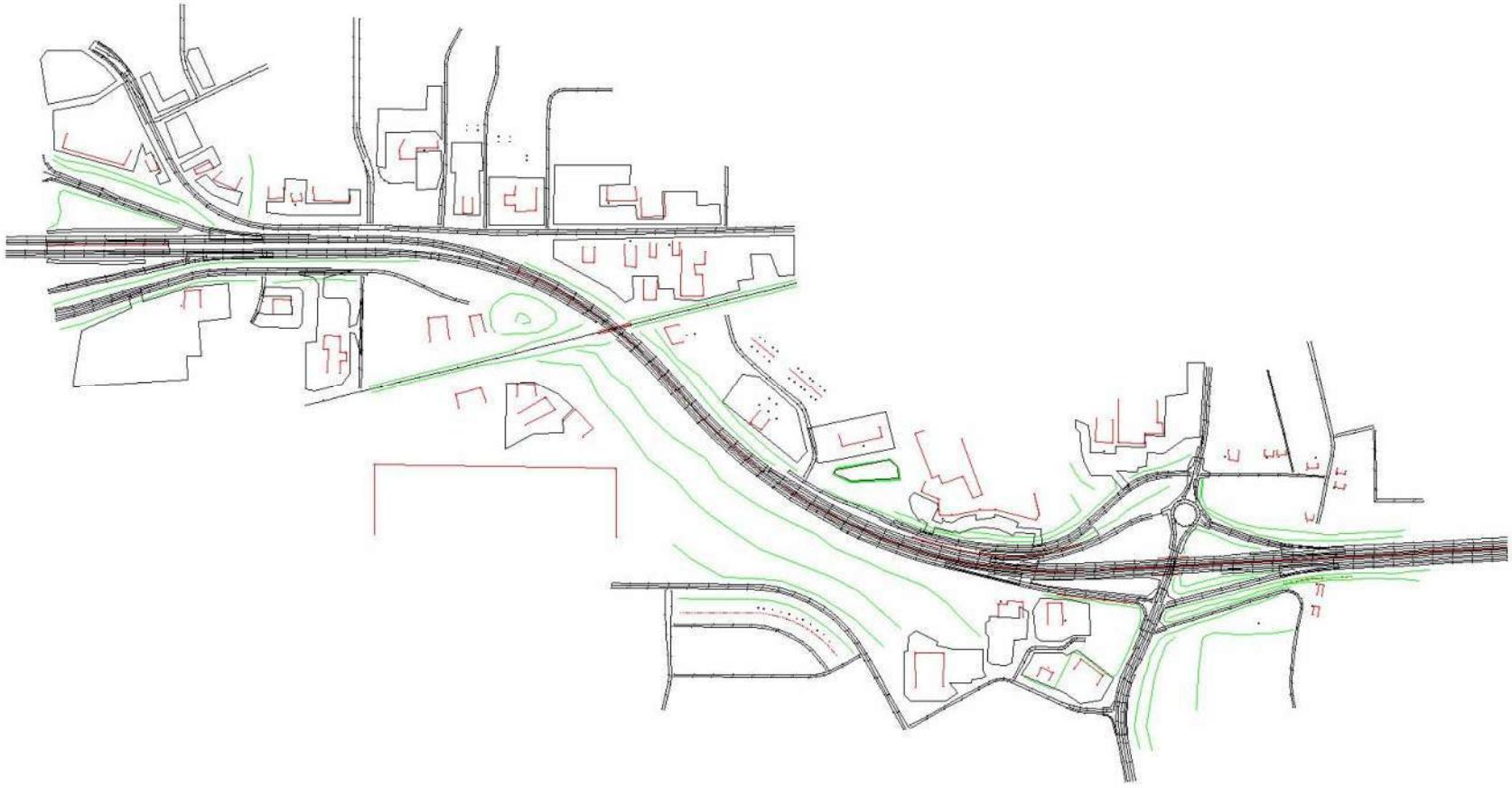
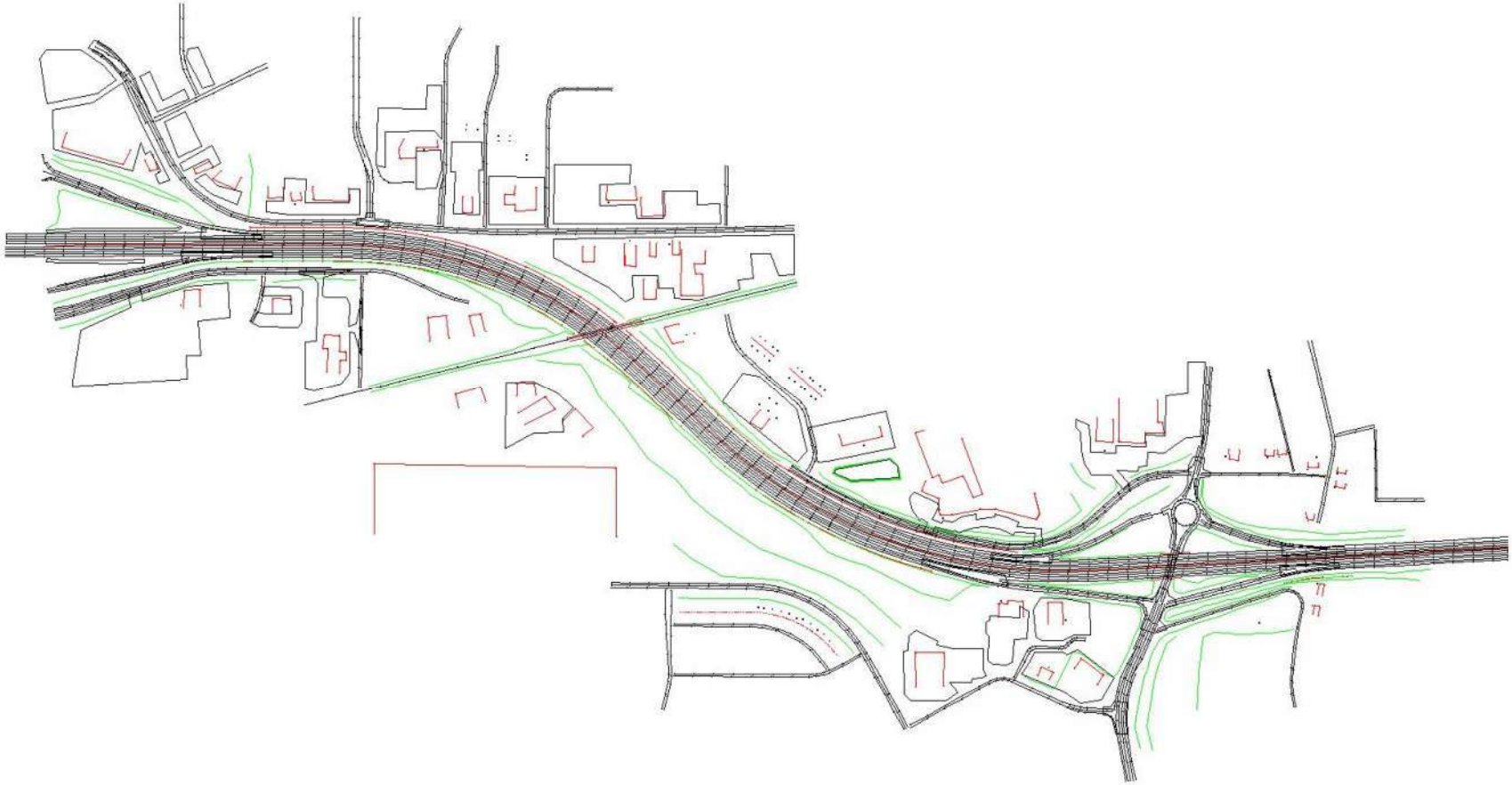
Existing (2018) Conditions TNM



No-Build (2045) Alternative TNM



Build (2045) Alternative



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Appendix E. TNM Predicted Noise Levels – Existing (2018), No-Build (2045), and Build (2045)

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Table E-1. TNM Predicted Noise Levels

Receivers					Predicted Noise Levels, $L_{eq(h)}$ (dBA)				
Receptor	Use	NAC[1]	Represents	Address	2018 Existing	2045 No-Build	Change Existing/ No-Build	2045 Build	Change Existing/ Build
A01	Veterinary	C	1	1120 W Pearce Blvd	65.3	**66.1**	0.8	**66.1**	0.8
B01	Restaurant	E	1	1105 W Pearce Blvd	**72.6**	**73.8**	1.2	**72.1**	-0.5
B02	School	D	1	1 Campus Dr	37.2	38.1	0.9	35.5	-1.7
B03A	Residential	B	1	103 St Charles St	60.8	61.7	0.9	59.0	-1.8
B03B	Residential	B	1	103 St Charles St	61.0	62.0	1.0	59.9	-1.1
B04A	Residential	B	1	103 St Charles St	60.0	60.9	0.9	58.0	-2.0
B04B	Residential	B	1	103 St Charles St	60.3	61.2	0.9	59.0	-1.3
B05A	Residential	B	1	103 St Charles St	60.1	61.0	0.9	58.0	-2.1
B05B	Residential	B	1	103 St Charles St	59.9	60.8	0.9	59.0	-0.9
B06A	Residential	B	1	103 St Charles St	60.6	61.5	0.9	58.9	-1.7
B06B	Residential	B	1	103 St Charles St	60.3	61.2	0.9	59.4	-0.9
B07A	Residential	B	1	104 St Charles St	60.1	61.0	0.9	58.6	-1.5
B07B	Residential	B	1	104 St Charles St	60.3	61.3	1.0	59.6	-0.7
B08A	Residential	B	1	104 St Charles St	59.5	60.4	0.9	57.9	-1.6
B08B	Residential	B	1	104 St Charles St	59.7	60.7	1.0	58.9	-0.8
B09A	Residential	B	1	104 St Charles St	58.5	59.4	0.9	57.1	-1.4
B09B	Residential	B	1	104 St Charles St	59.1	60.1	1.0	58.7	-0.4
B10A	Residential	B	1	104 St Charles St	59.0	60.0	1.0	57.2	-1.8
B10B	Residential	B	1	104 St Charles St	59.4	60.4	1.0	58.9	-0.5
B11	Residential	B	1	708 Patricia Ct	58.8	59.8	1.0	57.3	-1.5
B12	Residential	B	1	708 Patricia Ct	57.5	58.5	1.0	56.3	-1.2
B13	School	D	1	719 W Pearce Blvd	37.0	37.9	0.9	33.2	-3.8

Receivers					Predicted Noise Levels, $L_{eq(h)}$ (dBA)				
Receptor	Use	NAC[1]	Represents	Address	2018 Existing	2045 No-Build	Change Existing/ No-Build	2045 Build	Change Existing/ Build
C01	Restaurant	E	1	15150 Veterans Memorial Pkwy	64.7	66.0	1.3	66.6	1.9
D01	Restaurant	E	1	762 W Pearce Blvd	59.4	60.3	0.9	58.7	-0.7
D02	Restaurant	E	1	714 W Pearce Blvd	55.9	56.8	0.9	56.0	0.1
E01	Restaurant	E	1	1311 Lodora Dr	68.5	69.3	0.8	69.3	0.8
E02	Restaurant	E	1	1311 Lodora Dr	63.4	64.3	0.9	67.5	4.1
E03	Restaurant	E	1	1101 Lodora Dr	66.7	67.6	0.9	69.0	2.3
E04	Restaurant	E	1	1101 Lodora Dr	67.1	67.9	0.8	68.7	1.6
E05	Restaurant	E	1	1101 Lodora Dr	68.4	69.2	0.8	70.9	2.5
E06	Recreation	C	1	1101 Lodora Dr	**67.3**	**68.2**	0.9	**69.7**	2.4
E07	Recreation	C	1	1101 Lodora Dr	**67.1**	**68.0**	0.9	**69.3**	2.2
E08A	Residential	B	1	6101 Grand Central Avenue	62.0	62.9	0.9	64.4	2.4
E08B	Residential	B	1	6101 Grand Central Avenue	64.9	65.8	0.9	**67.6**	2.7
E08C	Residential	B	1	6101 Grand Central Avenue	**67.3**	**68.2**	0.9	**69.1**	1.8
E09A	Residential	B	1	6101 Grand Central Avenue	62.2	63.1	0.9	64.7	2.5
E09B	Residential	B	1	6101 Grand Central Avenue	64.7	65.6	0.9	**67.5**	2.8
E09C	Residential	B	1	6101 Grand Central Avenue	**67.1**	**68.0**	0.9	**69.1**	2.0
E10A	Residential	B	1	6101 Grand Central Avenue	62.7	63.7	1.0	65.0	2.3
E10B	Residential	B	1	6101 Grand Central Avenue	64.4	65.3	0.9	**67.2**	2.8
E10C	Residential	B	1	6101 Grand Central Avenue	**66.8**	**67.6**	0.8	**68.9**	2.1
E11A	Residential	B	1	6101 Grand Central Avenue	63.0	63.9	0.9	65.4	2.4
E11B	Residential	B	1	6101 Grand Central Avenue	64.5	65.4	0.9	**67.2**	2.7
E11C	Residential	B	1	6101 Grand Central Avenue	**66.8**	**67.6**	0.8	**68.9**	2.1

Receivers					Predicted Noise Levels, $L_{eq(h)}$ (dBA)				
Receptor	Use	NAC[1]	Represents	Address	2018 Existing	2045 No-Build	Change Existing/ No-Build	2045 Build	Change Existing/ Build
E12A	Residential	B	1	6101 Grand Central Avenue	56.2	57.1	0.9	57.2	1.0
E12B	Residential	B	1	6101 Grand Central Avenue	59.1	60.1	1.0	59.7	0.6
E12C	Residential	B	1	6101 Grand Central Avenue	60.8	61.8	1.0	61.4	0.6
E13A	Residential	B	1	6101 Grand Central Avenue	55.8	56.7	0.9	56.9	1.1
E13B	Residential	B	1	6101 Grand Central Avenue	58.2	59.1	0.9	58.7	0.5
E13C	Residential	B	1	6101 Grand Central Avenue	59.8	60.6	0.8	60.1	0.3
E14A	Residential	B	1	6101 Grand Central Avenue	56.8	57.6	0.8	59.0	2.2
E14B	Residential	B	1	6101 Grand Central Avenue	58.6	59.5	0.9	60.6	2.0
E14C	Residential	B	1	6101 Grand Central Avenue	59.6	60.4	0.8	61.4	1.8
E15A	Residential	B	1	6101 Grand Central Avenue	59.1	59.9	0.8	61.2	2.1
E15B	Residential	B	1	6101 Grand Central Avenue	61.1	62.0	0.9	63.4	2.3
E15C	Residential	B	1	6101 Grand Central Avenue	62.0	62.9	0.9	64.1	2.1
E16A	Residential	B	1	6101 Grand Central Avenue	61.1	62.0	0.9	62.9	1.8
E16B	Residential	B	1	6101 Grand Central Avenue	64.4	65.2	0.8	**66.7**	2.3
E16C	Residential	B	1	6101 Grand Central Avenue	65.3	**66.2**	0.9	**67.6**	2.3
E17A	Residential	B	1	6101 Grand Central Avenue	60.8	61.7	0.9	62.5	1.7
E17B	Residential	B	1	6101 Grand Central Avenue	64.4	65.3	0.9	**66.6**	2.2
E17C	Residential	B	1	6101 Grand Central Avenue	65.4	**66.2**	0.8	**67.5**	2.1
E18A	Residential	B	1	6101 Grand Central Avenue	62.0	62.9	0.9	63.6	1.6
E18B	Residential	B	1	6101 Grand Central Avenue	64.5	65.3	0.8	**66.7**	2.2
E18C	Residential	B	1	6101 Grand Central Avenue	65.6	**66.4**	0.8	**67.7**	2.1
E19A	Residential	B	1	6101 Grand Central Avenue	61.6	62.4	0.8	63.1	1.5
E19B	Residential	B	1	6101 Grand Central Avenue	64.5	65.4	0.9	**66.7**	2.2

Receivers					Predicted Noise Levels, $L_{eq(h)}$ (dBA)				
Receptor	Use	NAC[1]	Represents	Address	2018 Existing	2045 No-Build	Change Existing/ No-Build	2045 Build	Change Existing/ Build
E19C	Residential	B	1	6101 Grand Central Avenue	65.6	**66.4**	0.8	**67.7**	2.1
E20A	Residential	B	1	6101 Grand Central Avenue	63.1	63.9	0.8	64.4	1.3
E20B	Residential	B	1	6101 Grand Central Avenue	65.0	65.8	0.8	**67.0**	2.0
E20C	Residential	B	1	6101 Grand Central Avenue	**66.1**	**66.9**	0.8	**68.1**	2.0
E21A	Residential	B	1	6101 Grand Central Avenue	63.4	64.2	0.8	64.5	1.1
E21B	Residential	B	1	6101 Grand Central Avenue	65.1	65.9	0.8	**66.9**	1.8
E21C	Residential	B	1	6101 Grand Central Avenue	**66.2**	**67.0**	0.8	**67.9**	1.7
E22A	Residential	B	1	6101 Grand Central Avenue	50.1	51.0	0.9	51.2	1.1
E22B	Residential	B	1	6101 Grand Central Avenue	53.8	54.7	0.9	54.7	0.9
E22C	Residential	B	1	6101 Grand Central Avenue	56.5	57.4	0.9	57.8	1.3
E23A	Residential	B	1	6101 Grand Central Avenue	49.5	50.4	0.9	50.6	1.1
E23B	Residential	B	1	6101 Grand Central Avenue	51.8	52.7	0.9	52.9	1.1
E23C	Residential	B	1	6101 Grand Central Avenue	54.6	55.5	0.9	55.9	1.3
E24A	Residential	B	1	6101 Grand Central Avenue	49.0	49.9	0.9	50.3	1.3
E24B	Residential	B	1	6101 Grand Central Avenue	50.5	51.4	0.9	51.9	1.4
E24C	Residential	B	1	6101 Grand Central Avenue	53.0	53.9	0.9	54.5	1.5
E25A	Residential	B	1	6101 Grand Central Avenue	49.2	50.1	0.9	50.4	1.2
E25B	Residential	B	1	6101 Grand Central Avenue	50.6	51.5	0.9	52.0	1.4
E25C	Residential	B	1	6101 Grand Central Avenue	53.0	53.9	0.9	54.5	1.5
E26A	Residential	B	1	6101 Grand Central Avenue	54.1	54.9	0.8	55.5	1.4
E26B	Residential	B	1	6101 Grand Central Avenue	55.9	56.8	0.9	57.2	1.3
E26C	Residential	B	1	6101 Grand Central Avenue	57.2	58.0	0.8	58.8	1.6
E27A	Residential	B	1	6101 Grand Central Avenue	59.7	60.5	0.8	61.2	1.5

Receivers					Predicted Noise Levels, $L_{eq(h)}$ (dBA)				
Receptor	Use	NAC[1]	Represents	Address	2018 Existing	2045 No-Build	Change Existing/ No-Build	2045 Build	Change Existing/ Build
E27B	Residential	B	1	6101 Grand Central Avenue	61.2	62.0	0.8	62.7	1.5
E27C	Residential	B	1	6101 Grand Central Avenue	62.0	62.8	0.8	63.7	1.7
E28	Hotel	E	1	1100 Lodora Dr	67.2	68.0	0.8	69.0	1.8
E29	Senior Living	D	1	401 Mar-Le Dr	47.5	48.3	0.8	49.7	2.2
E30	Place of Worship	D	1	405 S Church St	37.1	38.1	1.0	38.4	1.3
F01	Residential	B	1	115 Cimarron Summit Way	58.8	59.8	1.0	57.2	-1.6
F02	Residential	B	1	119 Cimarron Summit Way	58.3	59.3	1.0	57.1	-1.2
F03	Residential	B	1	123 Cimarron Summit Way	58.1	59.1	1.0	57.1	-1.0
F04	Residential	B	1	127 Cimarron Summit Way	58.0	59.0	1.0	57.1	-0.9
F05	Residential	B	1	131 Cimarron Summit Way	58.4	59.4	1.0	57.4	-1.0
F06	Residential	B	1	135 Cimarron Summit Way	58.9	59.8	0.9	57.9	-1.0
F07	Residential	B	1	139 Cimarron Summit Way	59.1	60.1	1.0	58.3	-0.8
F08	Residential	B	1	143 Cimarron Summit Way	59.3	60.3	1.0	58.3	-1.0
F09	Residential	B	1	147 Cimarron Summit Way	58.1	59.0	0.9	57.3	-0.8
F10	Residential	B	1	151 Cimarron Summit Way	57.0	57.9	0.9	56.3	-0.7
F11	Residential	B	1	155 Cimarron Summit Way	56.3	57.3	1.0	55.5	-0.8
F12	Restaurant	E	1	49 Wentzville Bluffs Dr	**73.1**	**74.3**	1.2	**74.4**	1.3
F13	Restaurant	E	1	17 Cliff View Dr	68.7	69.9	1.2	69.8	1.1
F14	Restaurant	E	1	10 Cliff View Dr	64.9	66.0	1.1	65.4	0.5
G01	Restaurant	E	1	708 S Church St	62.2	63.4	1.2	64.3	2.1
G02	Residential	B	1	105 Wagner St	62.1	63.2	1.1	64.1	2.0
G03	Residential	B	1	103 Wagner St	62.0	63.0	1.0	63.9	1.9
G04	Residential	B	1	705 S Linn Ave	59.2	60.2	1.0	60.7	1.5

Receivers					Predicted Noise Levels, $L_{eq(h)}$ (dBA)				
Receptor	Use	NAC[1]	Represents	Address	2018 Existing	2045 No-Build	Change Existing/ No-Build	2045 Build	Change Existing/ Build
G05	Residential	B	1	7 Wagner St	63.1	64.1	1.0	64.8	1.7
G06	Residential	B	1	710 S Linn Ave	62.8	63.7	0.9	64.2	1.4
G07	Residential	B	1	802 S Linn Ave	65.3	**66.2**	0.9	**66.6**	1.3
G08	Residential	B	1	813 S Linn Ave	**72.7**	**73.7**	1.0	**74.1**	1.4
H01	Residential	B	1	1008 S Linn Ave	**76.4**	**77.9**	1.5	**78.0**	1.6
H02	Residential	B	1	1010 S Linn Ave	**66.3**	**67.5**	1.2	**67.9**	1.6
H03	Cemetery	C	1	S Linn Ave	**68.6**	**70.1**	1.5	**70.4**	1.8
Predicted NSA Design Year 2045 Traffic Noise Impacts[2,3]						**20**		**30**	

Noise Level Impact[4] **Substantial Increase Impact[5]**

[1] NAC D noise levels are shown as exterior/interior based on FHWA Build Noise Reduction Factors in Table 5 and assumed masonry building construction with closed single-glazed windows for an outdoor to indoor noise reduction of 25 dB.

[2] Total number of predicted traffic noise impacts under the No-Build Alternative = (20 receivers representing 20 receptors). The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g., if a receptor is impacted by NAC criteria and also by Substantial Increase criteria, it is counted as only one impact).

[3] Total number of predicted traffic noise impacts under the Build Alternative = (30 receivers representing 30 receptors). The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g., if a receptor is impacted by NAC criteria and also by Substantial Increase criteria, it is counted as only one impact).

[4] Predicted traffic noise impact due to approaching or exceeding NAC (refer to Table 4).

[5] Predicted substantial increase noise impact (refer to Section 3.2 and Section 8.0).

Appendix C

Agency Correspondence

Miami Tribe of Oklahoma

U.S. Fish and Wildlife Service

Missouri Department of Natural Resources

Miami Tribe of Oklahoma

3410 P St. NW, Miami, OK 74354 ● P.O. Box 1326, Miami, OK 74355
Ph: (918) 541-1300 ● Fax: (918) 542-7260
www.miamination.com

Via email: Michael.Meinkoth@modot.mo.gov

January 24, 2022

Mike Meinkoth
Historic Preservation Manager
Missouri Department of Transportation
601A West Main Street
Jefferson City, MO 65101

Re: J6I0624, I-70 Re-evaluation, St. Charles County, Missouri – Comments of the Miami Tribe of Oklahoma

Dear Mr. Meinkoth:

Aya, kikwehsitoole – I show you respect. The Miami Tribe of Oklahoma, a federally recognized Indian tribe with a Constitution ratified in 1939 under the Oklahoma Indian Welfare Act of 1936, respectfully submits the following comments regarding J6I0624, I-70 Re-evaluation in St. Charles County, Missouri.

The Miami Tribe offers no objection to the above-referenced project at this time, as we are not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the project site. However, given the Miami Tribe's deep and enduring relationship to its historic lands and cultural property within present-day Missouri, if any human remains or Native American cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or archaeological evidence is discovered during any phase of this project, the Miami Tribe requests immediate consultation with the entity of jurisdiction for the location of discovery. In such a case, please contact me at 918-541-8966 or by email at dhunter@miamination.com to initiate consultation.

The Miami Tribe accepts the invitation to serve as a consulting party to the proposed project. In my capacity as Tribal Historic Preservation Officer I am the point of contact for consultation.

Respectfully,

Diane Hunter

Diane Hunter
Tribal Historic Preservation Officer

Cc: Christopher.Kelly@modot.mo.gov

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To: April 14, 2022
Project Code: 2022-0031987
Project Name: I-70 Wentzville (Wide Corridor)

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).
New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. **Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days.** The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects:

projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features – particularly within stream corridors, riparian areas, or associated upland woodlots –gray bats could be affected.
Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bat, and ≥3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.
Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see #3 below) – then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the S7 Technical Assistance website.
3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:
    a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
    b. Any activity in or near the entrance to a cave or mine;
    c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
    d. Construction of one or more wind turbines; or
    e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.
If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles **-** Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds **-** The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA

to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.
We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Karen Herrington

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

Project Summary

Project Code: 2022-0031987
Event Code: None
Project Name: I-70 Wentzville (Wide Corridor)
Project Type: Road/Hwy - Maintenance/Modification
Project Description: Improvements to I-70 near Wentzville
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.80776103089306,-90.8628455977553,14z

Counties: St. Charles County, Missouri

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/YHUB3BGOABDLBGDJ4PLQAE7TGY/documents/generated/6868.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/YHUB3BGOABDLBGDJ4PLQAE7TGY/documents/generated/6868.pdf	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Decurrent False Aster *Boltonia decurrens*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7705

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER POND

- PUBFh

RIVERINE

- R4SBC

IPaC User Contact Information

Agency:	Missouri Department of Transportation
Name:	Jennifer Schwaller
Address:	10450 Holmes Rd
Address Line 2:	Suite 600
City:	Kansas City
State:	MO
Zip:	64131
Email	jennifer.schwaller@hdrinc.com
Phone:	8164121310

Lead Agency Contact Information

Lead Agency: Federal Highway Administration

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, Missouri 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

March 22, 2022

Taylor Peters
Federal Highway Administration
3220 W. Edgewood, Suite H
Jefferson City, MO 65109

ECOSphere Project #: 2022-0004263

RE: St. Charles County I-70 Realignment Project (6I0624)

Dear Mr. Peters:

The U.S. Fish and Wildlife Service (Service) is responding to your request dated March 14, 2022 to verify that the proposed St. Charles County I-70 Realignment Project (the Project) may rely on the February 5, 2018, Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the federally listed endangered Indiana bat (*Myotis sodalis*) and/or federally listed threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*). We received your request and the associated LAA Verification Letter on March 14, 2022.

This letter provides the Service's response as to whether the Federal Highway Administration (FHWA) may rely on the BO to comply with Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) for the Project's effects to the Indiana bat and/or NLEB.

The FHWA has determined that the Project is *likely to adversely affect* the Indiana bat and the NLEB.

Conclusion

The Service has reviewed the effects of the proposed Project, which includes the FHWA commitment to implement any applicable mitigation measures as indicated on the LAA Consistency Letter. We confirm that the proposed Project's effects are consistent with those analyzed in the BO. The Service has determined that projects consistent with the conservation measures and scope of the program analyzed in the BO are not likely to jeopardize the continued existence of the [Indiana bat and/or the NLEB]. In coordination with your agency and the other sponsoring Federal Transportation Agencies, the Service will reevaluate this conclusion annually in light of any new pertinent information under the adaptive management provisions of the BO.

Incidental Take

Indiana Bat

The Service anticipates that tree removal associated with the proposed Project will cause incidental take of Indiana bats. As described in the Incidental Take Statement (ITS) of the BO, such taking will be difficult to detect. The Service determined that it is appropriate to measure the amount or extent of incidental taking resulting from BO projects using the proposed acreage of tree removal from Indiana bat suitable habitat as a surrogate for the numbers of individuals taken.

The proposed Project will remove 6.83 acres of trees from habitat that is suitable for the Indiana bat. All tree removal will occur in winter and comply with all other conservation measures in the BO. Based on the BO, 1.96 acres of the removal are not anticipated to result in any adverse effects, and 4.87 acres are anticipated to result in adverse effects.

The FHWA will use the mitigation ratio of 1 to 1.75 from Table 3 of the BO[1] to calculate the compensatory mitigation required to offset these adverse impacts for a total of 8.52 acres[2] of trees that is suitable for the Indiana bat.

In order to comply with the mitigation requirements of the BO, the FHWA will contribute $53,811.07 dollars to TCF, the Program Sponsor, within 1 year of this letter or prior to the start of construction, whichever is earliest. These calculations are based on the mitigation identified above[2] and the November 2020 – November 2021 Land Use Values in Table 2 of Exhibit E in TCF's ILF Instrument[3]. If payment is made later than 1 year from the date of this letter, the mitigation cost may change as a result of updated land use values in Table 2 of Exhibit E. The FHWA or Missouri Department of Transportation must notify TCF at least five days prior to payment so that TCF can verify that the appropriate land value has been used. At the time of payment, the FHWA or Missouri Department of Transportation shall notify the Service of compliance with the compensatory mitigation requirements as described above.

The purchase of species conservation credits and/or in-lieu fee contributions shall occur prior to construction of a transportation project covered under this programmatic BO. Exceptions to this program stipulation include emergency projects that do not require a letting prior to construction. In these cases, purchase of credits and/or in-lieu fee contributions shall occur within three months of completion of the project. This timeframe allows for measuring the acres of habitat affected by the emergency project and for financial processing.

The Service will add the acreage of Project-related tree removal to the annual total acreage attributed to the BO as a surrogate measure of Indiana bat incidental take and exempted from the prohibitions of Section 9 of the ESA. Such exemption is effective as long as your agency implements the reasonable and prudent measure (RPM) and accompanying terms and conditions

[1] https://www.fws.gov/media/compensatory-mitigation-ratios-indiana-bat-table-3-biological-opinion
[2] XX acres * XX ratio
[3] https://www.fws.gov/media/exhibit-e-fee-schedule-range-wide-indiana-bat-lieu-fee-program

of the BO's ITS.

The sole RPM of the BO's ITS requires the Federal Transportation Agencies to ensure that State/Local transportation agencies, who choose to include eligible projects under the programmatic action, incorporate all applicable conservation measures in the project proposals submitted to the Service for ESA Section 7 compliance using the BO. The implementing terms and conditions for this RPM require the Federal Transportation Agencies to offer training to appropriate personnel about using the BO, and promptly report sick, injured, or dead bats (regardless of species) or any other federally listed species located at the project site.

Northern Long-eared Bat

The Service anticipates that tree removal associated with the Project will cause incidental take of NLEBs. However, the Project is consistent with the BO, and such projects will not cause take of NLEB that is prohibited under the ESA Section 4(d) rule for this species (50 CFR §17.40(o)). Therefore, the incidental take of NLEBs resulting from the Project does not require exemption from the Service.

Reporting Dead or Injured Bats

The FHWA, its State/Local cooperators, and any contractors must take care when handling dead or injured Indiana bats and/or NLEBs, or any other federally listed species that are found at the project site to preserve biological material in the best possible condition and to protect the handler from exposure to diseases, such as rabies. Project personnel are responsible for ensuring that any evidence about determining the cause of death or injury is not unnecessarily disturbed. Reporting the discovery of dead or injured listed species is required in all cases to enable the Service to determine whether the level of incidental take exempted by this BO is exceeded, and to ensure that the terms and conditions are appropriate and effective. Parties finding a dead, injured, or sick specimen of any endangered or threatened species must promptly notify this Service Office.

Reinitiation Notice

This letter concludes consultation for the Project, which qualifies for inclusion in the BO issued to the Federal Transportation Agencies. To maintain this inclusion, a reinitiation of this Project-level consultation is required where the FHWA discretionary involvement or control over the Project has been retained (or is authorized by law) and if:

1. the amount or extent of incidental take of Indiana bat is exceeded;
2. new information reveals that the Project may affect listed species or critical habitat in a manner or to an extent not considered in the BO;
3. the Project is subsequently modified in a manner that causes an effect to listed species or designated critical habitat not considered in the BO; or
4. a new species is listed or critical habitat designated that the Project may affect.

Per condition #1 above, the anticipated incidental take is exceeded when the Project removes trees of more than 4.87 acres of habitat suitable for the Indiana bat. In instances where the

amount or extent of incidental take is exceeded, the FHWA is required to immediately request a reinitiation of this Project-level consultation.

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response or if you need additional information, please contact Josh Hundley at 573-234-5037.

Sincerely,

KAREN HERRINGTON

Digitally signed by KAREN HERRINGTON
Date: 2022.03.22 13:49:12 -05'00'

Field Office Supervisor

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Dru Buntin, Director

December 13, 2021

Michael Meinkoth
Historic Preservation Manager
Missouri Department of Transportation
P.O. Box 270
Jefferson City, MO 65102

Re: **SHPO Project No. 022-SC-22** –Cultural Resources Survey of the Proposed I-70 Improvements in Wentzville, St. Charles County, Missouri (FHWA)

Dear Michael Meinkoth:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which requires identification and evaluation of cultural resources.

We have reviewed the report entitled, *Archival Review, Architectural Survey, and Archaeological Survey of Cultural Resources Associated with the Proposed Interstate 70 Improvements in Wentzville, St. Charles County, Missouri* by Robin Jorcke and Abigail Dairaghi of Archaeological Research Center of St. Louis, Inc. Based on this review it is evident that an adequate cultural resources survey has been conducted of the project area. We concur that archaeological site 23SC2150 and the assessed bridges are **not eligible** for inclusion in the National Register of Historic Places. We also concur with the recommendation that there will be **no historic properties affected** by the proposed undertaking and have no objection to the initiation of project activities.

Please be advised that, should project plans change, information documenting the revisions should be submitted to this office for further review. In the event that cultural materials are encountered during project activities, all construction should be halted, and this office notified as soon as possible in order to determine the appropriate course of action.

If you have any questions, please write the State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 attention Review and Compliance, or call Jeffrey Alvey at 573/751-7862. Please be sure to include the **SHPO Log Number (022-SC-22)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Toni M. Prawl

Toni M. Prawl, Ph.D.
Director and Deputy State
Historic Preservation Officer

c.: Raegan Ball, FHWA
Michael Meyer, MoDOT
Taylor Peters, FHWA