

US 25W Widening and Access Improvements BUILD Grant Application CITY OF CORBIN



MAY 2020



US 25W Widening and Access Improvements BUILD Grant Application

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US 25W Widening and Access Improvements BUILD Grant Application

1.0 EXECUTIVE SUMMARY

The City of Corbin, Kentucky is pleased to present this BUILD grant for US 25W Widening and Access Improvements. This is a vital transportation corridor linking I-75 to tourism, as well as industrial, medical and educational assets throughout the Southeast Kentucky region and beyond.

This reconstruction project was first presented in 2012, and over the past 8 years the need has become critical. Current and planned development make this project vital as the area continues to grow rapidly while safety becomes an increasing concern.

This project reconstructs a section of US25W from KY727 to KY3041 (Corbin Bypass) as a five-lane section, with access roads and controlled left-turn spacing. The reconstruction will greatly improve peak hour congestion, gridlock that occurs during events at the Corbin Arena, and safety for all users as this road is the lone entrance to Baptist Health Corbin.

Safety is the primary merit of this project. This corridor has a Critical Rate Factor of 3.5. This means that for the volume of traffic on the road, 3.5 times as many accidents occur as would be expected. Baptist Health Corbin is the most frequented emergency department between Lexington, KY and Knoxville, TN and response times will be much improved upon this project's completion. Air Evac Rescue Service is also located on the Baptist Health Corbin campus and serves a 150-mile

radius, improving the chances for better health outcomes for our region.

Travel time savings are expected to be very significant. The increased capacity and better access management will benefit the daily user, tourists, freight traffic to the industrial park (known as the Corbin Bypass), and as stated above, emergency response.

This project is nearly shovel ready. Final design is almost complete and only a few final approvals are needed before the project can begin acquiring right-of-way and utilities. These activities are expected to proceed without delay due to the support of the affected property owners and utilities. There is overwhelming consent in the dire need for this project to move forward.

The reconstruction costs are estimated at \$28 M, including \$2.5 M spent to date for planning and design. Approximately 15% of this amount has been committed for the BUILD grant match. The project Benefit Cost Analysis described herein yields a ratio of 7.48.

The City of Corbin appreciates the consideration of our BUILD grant proposal and the opportunity to improve the lives of our constituents and visitors to our area. We are striving to become a community which leads the region into a brighter day. This reconstruction project will ensure that our goals are not only reached, but exceeded beyond all expectations.



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2.0 PROJECT DESCRIPTION

The City of Corbin, Kentucky is dedicated to providing safe roads for its citizens and visitors alike. This BUILD funding will allow for the reconstruction of US 25W in south Corbin, where increased traffic growth has far outpaced needed roadway improvements. Furthering the need to upgrade the existing roadway is the fact that US 25W provides an alternative north-south route for those travelers caught in incidents or closures on I-75.

The proposed project enhances US 25W from KY 727 to the Corbin Bypass (KY 3041). Once complete, US 25W will have four travel lanes (two in each direction), improved traffic management with turn lanes, controlled access spacing, and more suitable access roads. The proposed medians and other improvements will reduce the number of access points along US 25W. This will allow for controlled left and right turns into the many businesses along the corridor, providing for safer and more efficient entrances and exits.



Segment 3 has many entrances/exits



US 25W underpass at I-75 interchange

PURPOSE AND NEED

The purpose of the project is to address congestion, freight movement, and access on US 25W, and to improve safety by widening and implementing access management strategies along US 25W from KY 727 to KY 3041. Proposed construction will improve the safety and drivability of the corridor and encourage economic growth. Several areas along the route have been identified as high accident locations.

The proposed project is needed because US 25W from KY 727 to KY 3041 is congested during peak and event traffic periods, and rapid traffic growth is expected to continue. There are also collision patterns at intersections with KY 727, KY 3041, and the I-75 on/off ramps.



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2.1 TRANSPORTATION CHALLENGES



The intersection at KY 727 has significant congestions, especially during school drop off and pick up times

The existing route combines local traffic and interstate commercial traffic, resulting in a congested route with high accident rates. The route includes a narrow two-lane section with poor sight distance. Cars continuously slow down to make left turns, which in turn causes accidents, congestion, and stop and go traffic.

The project can be described in four segments:

Segment 1: The 3-lane section from KY 727 to Ridgepoint Lane includes two travel lanes and a center two-way left turn lane. Existing development is dense along this



Segment 2 lacks proper sight distance



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segment with homes and businesses, including a gas station and a bank.

Segment 2: This part of the route from Ridgepoint to the Corbin Bingo entrance has a 2-lane section with narrow shoulders, along with numerous residential and business entrances. This segment also has a sharp, dangerous curve.

Segment 3: From the Corbin Bingo entrance to I-75, the route remains 2-lane but shoulders are wide and commercial entrances are frequent. This segment has entrances for many commercial businesses such as restaurants, gas stations, lodging, offices, retail, and medical practices.

Segment 4: West of the I-75 entrance ramps, a 5-lane section begins that extends through the interchange to the Corbin Bypass. The 5-lane section includes left-turn lanes at I-75, and then a continuous two-way turn lane to the bypass. Beyond the I-75 ramps to the east, there are multiple commercial entrances and several existing access roads such as Vance Drive, Corbin Center Drive, and RJV Drive.



Corbin Center is a conference and training venue

PROJECTED GROWTH

In addition to the current uses, proposed development and subsequent growth within the corridor will exacerbate both accidents and congestion:

BAPTIST HEALTH HOSPITAL

3,500 sq. ft. addition, opening 2021	75,000+ sq. ft. new patient tower, opening 2023	10% patient growth, 60 to 75 new employees
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SCHOOLS

Corbin Primary School currently has 800 students; a new building may be added to the campus. Since as many as 70% of the families drive children to school, plus afterschool activities, a new school grade means additional congestion on US 25W.	Oak Grove Elementary (Whitley County School District, 550 students) on US 25W west of the project corridor is also a significant traffic generator.
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REGIONAL TOURISM

US 25W is the main route from I-75 to Boones Ridge Appalachian Wildlife Center and Cumberland Falls State Park.	The Corbin Arena is a 5,000 seat venue that hosts events almost every weekend. Corbin Center Drive is currently the only way in and out.
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INDUSTRIAL PARKS AND INDUSTRIES ALONG THE BYPASS

Southeast Kentucky Business Park has 200-plus acres available for new development. A “spec” building was recently built, and is expected to attract additional industries.

There are at least four additional industries along the bypass; all access I-75 using US 25W.

MOST DIRECT ROUTE FROM I-75 TO THE BYPASS IS EXIT 25.

Our project will reduce congestion and provide better local access, reducing delays for thru-traffic headed to the bypass.

INTERSTATE DETOUR ROUTE

US 25W, located in our project corridor, is the designated detour route for any major incident that occurs on I-75, either northbound or southbound, between exits 15 and 29. This is shown in the [I75 D11 Major Incident Detour Guide](#). Any time traffic is diverted off the interstate, congestion and accident issues are compounded.

EMERGENCY RESPONSE

The City of Corbin operates the only full-time, 24 hour, 7-days a week professional fire department between Richmond, Kentucky and Knoxville, Tennessee, a distance of 150 miles. This means that the

Corbin Fire Department is frequently asked to assist when incidents occur on I-75 and the surrounding areas. In addition, the location of the regional hospital causes congestion and traffic delays in the corridor to become a potential life and death situation when ambulances are delayed.

The Corbin Fire Department is comprised of mostly certified Emergency Medical Technicians and has three paramedics. These and other emergency responders must also travel the project corridor to reach Baptist Health Corbin – this is discussed more in the project location section.

2.2 HOW THE PROJECT WILL ADDRESS THESE CHALLENGES

- Improve driver expectations with consistent lane widths, shoulders and a center turn lane throughout the corridor.
- Improve safety and site distance by adjusting the vertical and horizontal alignment between Crawford Lane and Majak Drive, in Segment 2.
- Increase capacity, reduce congestion, and allow safe havens and conflict avoidance for turning vehicles by adding lanes.



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- Minimize traffic conflict points and improve safety with fewer access points controlled by raised median and left turn lanes
- A project map is included on the next page and a Google Earth map location file is available in our [document repository](#).

PROJECT ADDRESSES LOCAL AND REGIONAL NEEDS

<p>A third eastbound lane is added to accommodate traffic to Corbin Center Drive and a two-lane roadway is added to connect Corbin Center Drive directly to the Bypass.</p>	<p>Local access roads to relieve traffic and congestion on the main route.</p>	<p>Better access to industrial park and sites addresses rural needs for more jobs and provides a better route for those coming from Barbourville, Pineville, and other areas seeking to access the regional medical center and I-75.</p>	<p>More capacity and access management accommodates future growth.</p>
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The Cineplex is a popular destination east of I-75

ACCESS CONTROL

Access for Segments 1 and 2 will be “controlled by Permit”, meaning an encroachment permit issued by the Kentucky Transportation Cabinet (KYTC) will be required for a new individual or shared access point on the roadway. Access for Segments 3 and 4 will be “partially controlled”, giving

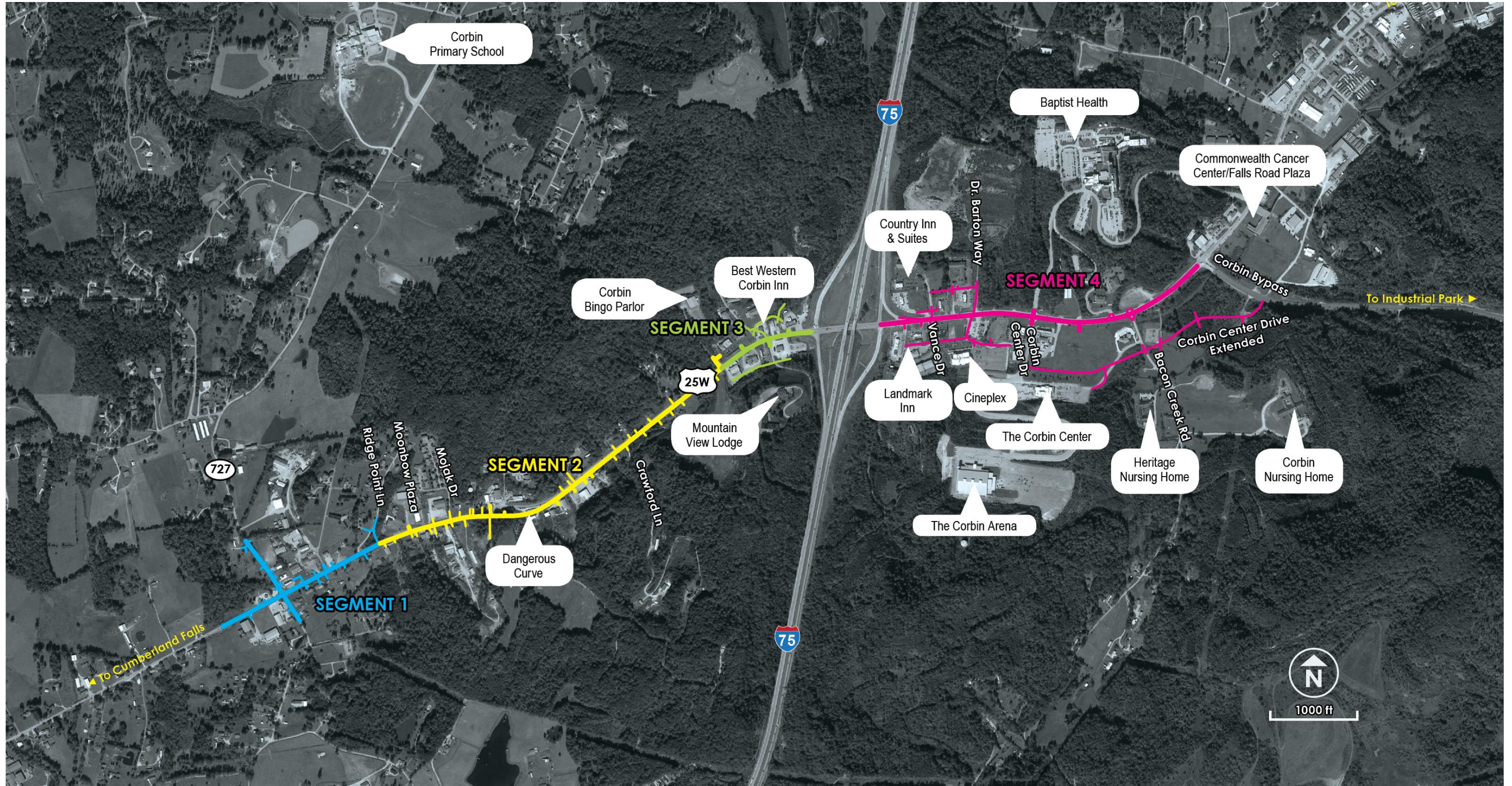
preference to through traffic with carefully placed intersections and entrances.

PROJECT HISTORY

The current project began in 2012. A Data Needs Analysis (DNA) Scoping Study was prepared by KYTC Division of Planning for District 11 in December 2012. The DNA documented the need for the roadway improvements due to the large amount of truck traffic from generators east of I-75. Earlier in 2012, KYTC Central Office completed the Corbin Small Urban Area Study, which identified several projects within the existing project limits as long- and short-term priority proposed projects. The subject project is of higher priority due to the congestion and freight movement issues around the interchange. These documents can be accessed in our [document repository](#).



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In 2013, the project was advertised for design services. Phase 1 design began that year and included an early public information meeting and advisory group meetings, all without improvements shown, in order to get unbiased community input. The comments received emphasized the importance of the corridor, as well as the traffic congestion and accidents that bog it down. Alternative improvements were presented in 2015, supported by traffic forecasts, environmental review, and design parameters. An alternative was selected and environmental documentation was completed in 2016. The notes from the preliminary line and grade review are in our [document repository](#).

Public support for the project has always been very positive. 22 residents, 8 local officials, and 4 businesses attended the first meeting. 45 people attended the second meeting. The project also had a community advisory group comprised of state and local elected officials, owners of local businesses, representatives from Baptist Health, and local landowners. The community expressed the urgent need for the project and its connection to the future long term economic growth of the corridor. Concerns mentioned included both access and parking. Information about the extensive public involvement can be found at this [link](#).

Due to funding issues, the project was pared down to address the most serious problems (the high-accident curve in Segment 2 and access conflict points in Segments 3 and 4).

Recent improvements in and near the corridor include:

- Ramp improvements at the I-75 interchange to accommodate traffic to the Corbin Arena (2014) and to minimize backup onto I-75 and US 25W. Additional improvements to the interstate are underway and planned for the interchange.
- Improvements to the intersection of US 25W at KY 727 (Segment 1), including the addition of the center two-way left turn lane, were built in 2005.
- Improvements on US 25W from I-75 to the bypass (Segment 4) were built in 2001 to accommodate traffic on the bypass and create connectivity from Whitley County to Knox and Bell Counties.



Project will improve Commercial entrances



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HIGH PRIORITY PROJECT

The project is prioritized in both the Recommended 2020-2022 Biennial Highway Plan and the 2019 Statewide Transportation Improvement Plan, and is consistent with local regional and state plans.

Earlier in 2020, the Kentucky Transportation Cabinet prioritized highway improvements with the SHIFT program. The US 25W project was ranked 3rd in the South Region and was in the top 10 for the entire state.

The project is also a high priority in the region and locally. It is mentioned in the following planning reports:

- [Corbin Small Urban Area Study \(2012\)](#).
- [Cumberland Valley Area Development Comprehensive Economic Development Strategy \(CEDS\) Plan \(2019\)](#).
- US 25W is listed as a significant regional corridor in the [Cumberland Valley Area Development District Regional Transportation Committee Goals & Objectives \(2019\)](#).
- In the [Cumberland Valley Area Development District Road Prioritization \(2019-2020\)](#) - it is a Sponsored Project.

3.0 PROJECT LOCATION

The Corbin area straddles three counties: Laurel, Knox and Whitley. The project corridor is located in southern Corbin and northern Whitley County and is halfway between Lexington, KY and Knoxville, TN. The project area is partially within the London-Corbin small urban area, and near the Census Tract 9305 opportunity zone in Knox County.

The project is located both east and west of the I-75/US 25W interchange, exit number 25. Interstate 75 is a north-south corridor that extends from

the upper peninsula of Michigan to Miami, Florida. Average daily traffic on I-75 near the project carries over 35,000 vehicles per day. Many I-75 travelers take advantage of the Corbin south exit and visit the restaurants and hotels at the exit.

Whitley County and Corbin are located in south east KY



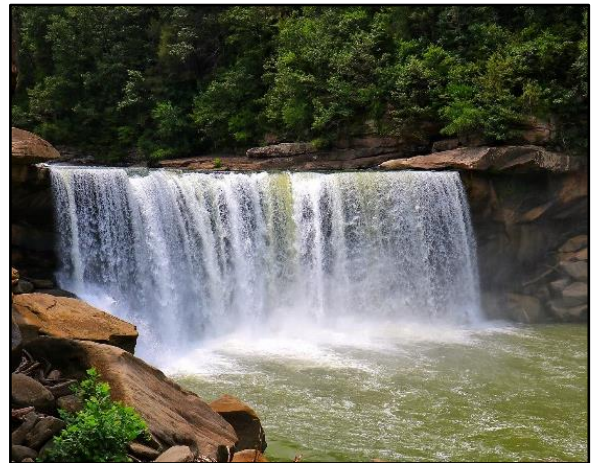
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US 25W is a major north-south route that generally follows the I-75 corridor. For most of its length, US 25W is a rural, 2-lane route. The project location is in an area where the rural character is transitioning to higher-density residential and commercial areas.



US 25W is a major north/south route

US 25W is the primary route from I-75 to Cumberland Falls State Park, located about 16 miles west on US 25W. This park attracts over 800,000 visitors throughout the year, and potentially during all hours of the day or night. The “moonbow” at the Falls is a popular tourist attraction and occurs monthly in accordance with the lunar schedule, weather permitting.



**Cumberland Falls is a popular destination
16 miles west on US 25W**

KY 727 represents an eastern boundary of the Daniel Boone National Forest. The Sheltopee Trace National Recreation Trail can be accessed from Cumberland Falls State Park. In addition, Laurel River Lake and its recreational facilities are accessible by KY 1193, which is approximately 4 miles west of the project’s western terminus. The forest and the lake offer many outdoor recreational opportunities both to the residents of Whitley County and to visitors throughout the state and beyond.



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**Looking east toward KY 727 Intersection
where US 25W transitions from a rural
route**

The Corbin Speedway is located on US 25W, west of KY 727, and attracts stock-car fans on Saturdays for races and also to watch practice on Friday nights.

Just north of US 25W on KY 727 is the Corbin Primary School where additional growth is expected. Another school, Oak Grove Elementary School, on US 25W contributes to congestion and highlights the need for a safer road.

Popular destinations on US 25W in the project corridor are the Corbin Arena, the Tri-County Cineplex, the Corbin Center, and Baptist Health Center-Corbin. The Corbin Arena is a 100,000-square foot venue that hosts business events, concerts, exhibitions, even bull riding. The Cineplex is a modern, 8

screen theater with high-back rocker stadium seating, concessions and state-of-the-art projection and sound equipment. The Corbin Center hosts conferences, meeting and training classes, as well as serving as the Corbin Tourism office.

The Baptist Health Center Corbin is a 273-bed acute and skilled care hospital that serves the region. It is the busiest emergency room between Lexington and Knoxville and serves seven counties in Kentucky, as well as Campbell County and Jellico in Tennessee. Segment 4 of the project corridor is the only route to the hospital. The hospital also operates air evacuation from on site to transfer critical patients to trauma centers when necessary. It is one of the most vital health care facility in the region.

On the east end of the project corridor is the Corbin Bypass, leading to the Southeast Kentucky Business Park. The former Corbin Tri-County Industrial Park will soon become



**Additional growth expected at Corbin
Primary School**



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Cumberland Run, a venue for quarter horse racing and gambling. The original Colonel Sanders Kentucky Fried Chicken restaurant is in Corbin, and US 25W is the primary route from the south. Further east, and accessed using US 25W, is Cumberland Gap National Park near Middlesboro, which is planning to add horseback riding for the public. The

12,000-acre Boone's Ridge is a destination that could attract upwards of 850,000 people annually and create thousands of jobs. The sprawling attraction in Bell County will be home to miles of trails, several museums, a theater, a restaurant, an artisans' exhibit hall, a gift shop, bird observatories, and a zoo. It is planned for opening in 2022.



Cumberland Gap National Park



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4.0 PROJECT FUNDING

Table 4.1: Project Costs Needed to Complete the Project

Phase	Cost
Design/Environmental	\$0.5 M
Right of Way Acquisition	\$5 M
Utility Relocation	\$5 M
Construction	\$15.05 M
Total	\$25.55 M

The project cost is divided by phases. The project lacks only a small amount of additional design and environmental work to be ready for right of way acquisition. Within the design phase, approximately \$2.5 M has been authorized to date to cover planning, public involvement, evaluation of alternatives, and final design in progress. The \$ 0.5 M remaining is needed to complete the final plan set and environmental clearance.

Right of way cost includes payment of owners for right of way and easements, as well as acquisition activity costs such as appraisals, negotiations, title transfer, etc. Utility relocation includes design and labor hours, plus the cost of relocation. Construction cost incorporates road construction labor, materials, and equipment costs. The estimate includes construction administration and inspection costs, as well as any environmental remediation costs for underground storage tanks, streams, etc.



Right of Way acquisition and utility relocation represent a significant portion of total project cost



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Match funding will be provided by a variety of sources such as the state road fund, in-kind donations of design, labor from utility companies, and the donation of right of way.

The in-kind amounts were estimated by the donors based on similar projects and recent real estate sales.

Table 4.2: Project Funding

Project Phase	Total Future Project Cost (in \$M)	BUILD Grant		Other Federal		20% Non-Federal Match			
		BUILD Grant Funding	% of Total Cost	KYTC Traditional Federal Funds	% of Total Cost	KYTC State Funds	% of Total Cost	Private Funds	% of Total Cost
Design	\$0.5	\$0	0%	\$0.400	80%	\$0.100	20%	\$0	0%
Right of Way	\$5	\$0	0%	\$0.400	80%	\$0.351	7%	\$0.649	13%
Utilities	\$5	\$0	0%	\$2.120	42%	\$0.530	11%	\$2.350	47%
Construction	\$15.05	\$15.05	100%	\$0	0%	\$0	0%	\$0	0%
Total	\$25.55	\$15.05	58.90%	\$6.520	25.52%	\$0.981	3.84%	\$2.999	11.74%

PROJECT FUNDING DETAILS:

- The project is high priority according to statewide, regional, and local rankings.
- The project has been part of the Statewide Implementation Plan and the Cumberland Valley Area Development District plan (see project history section)
- \$2,495,000 has been authorized by KYTC so far on the project (a combination of federal and state funds).
- Federal funds have been allocated for right of way and utilities in the 2020/2022 Biennial Highway Plan.
- Annual Operations and Maintenance costs for the existing road average about \$120,000 per year, based on the past 10 years.



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5.0 SELECTION CRITERIA

5.1 SAFETY

Crashes: US 25W in the project corridor has a history of repeated crashes. Crash data was obtained from the Kentucky Transportation Center at the University of Kentucky and analyzed for the 5-year period between January 1, 2014 and December 31, 2018.

Injury crashes occur on this stretch of US 25W at a rate 11% higher than the statewide crash rate and 3% higher than all other roads in Whitley County (Data taken from [Analysis of Traffic Crash Data in Kentucky \(2014-2018\)](#)). This data was compiled using the actual number of crashes from each county in Kentucky.

This section of US 25W was analyzed by the Kentucky Transportation Center at the University of Kentucky against similar roads across the state of Kentucky in order to determine if the Crash Critical Rate Factor (CRF) was greater than 1. Any rate greater

than 1 indicates that a particular road has an above average number of crashes when compared with similar roads. US 25W has a **CRF of 3.5**, which means that there are 3.5 times the number of crashes on this road than what would be expected on a typical road of this type. A CRF of 3.5 means that US 25W is a very dangerous road that is in dire need of improvements for the sake of driver safety.



Project will rebuild entrances like this one to improve safety

Table 5.1: Crash Severity

Crash Severity Total	Jan. 1 2014 - Dec. 31, 2018	
	#	%
O - Property Damage Only	206	71.0%
C - Possible Injury	54	18.6%
B - Non-Incapacitating	22	7.6%
A - Incapacitating	8	2.8%
Total	290	



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Table 5.2: Crash Type

Crash Type Total	Jan. 1 2014 - Dec. 31, 2018	
	#	%
Rear End	87	30.0%
Vehicle Entering/ Leaving Entrance	65	22.4%
Angle	41	14.1%
Sideswipe - Same Direction	17	5.9%
Ran off Roadway	14	4.8%
Collision w/ Fixed Object	9	3.1%
Collision w/ Animal	8	2.8%
Head on Collision	6	2.1%
Sideswipe - Opposite Direction	4	1.4%
Collision w/ Pedestrian	3	1.0%
Other	36	12.4%
Total Crashes	290	

As stated in the project description, this existing section of US 25W can be broken up into 4 segments based on typical section.

- Segment 1 - KY 727 to Ridge Point Lane – 3 lanes (2 travel, 1 turn)
- Segment 2 - Ridge Point Lane to Corbin Bingo Drive - 2 lanes (narrow shoulder)
- Segment 3 - Corbin Bingo Drive to I-75 – 2 lanes (wider shoulder, frequent entrances)
- Segment 4 - I-75 to Corbin Bypass – 5 lanes (frequent entrances)

Looking at the second most common crash type in each section is where things became more interesting. In segments 1 and 2 it was

a vehicle running off the roadway, which would be a common occurrence on narrow roads with narrow shoulders. 11 of the 14 instances of a car running off the roadway happened in these 2 segments. More and wider lanes and shoulders will greatly improve the safety in this section.

In segments 3 and 4 it was *vehicles entering or leaving an entrance*, as there are a total of 27 entrances just west and just east of the I-75 interchange. 57 of the 65 occurrences of this type of accident occurred in these 2 segments.

At the I-75 interchange there was a large concentration of rear end accidents, possibly due to driver inattention when leaving or entering the interstate.



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PROPOSED IMPROVEMENTS

The proposed improvements to US 25W are:

- Right turn lane onto KY 727 from US 25W heading west.
- 5 lanes from KY 727 to Corbin Bingo Drive, with 2 travel lanes each direction and one center turn lane.
- Improved horizontal curve starting at Majak Drive.
- 4 lanes with a raised median and left turn lanes from Corbin Bingo Drive to the Corbin Bypass.
- The number of entrances off of US 25W will be reduced from 27 to 14 in the area just to the east and to the west of the I-75 interchange
- A new signalized intersection at proposed Dr. Barton Way.

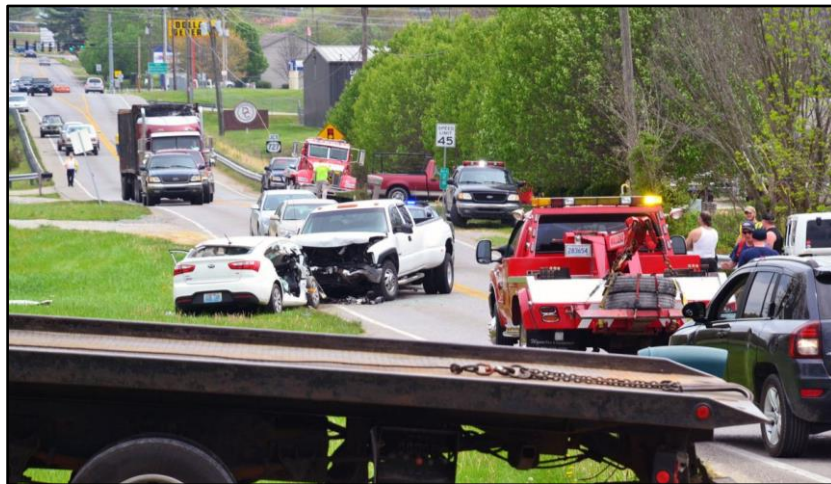
With all of these important improvements the proposed project has the opportunity to drastically improve driver safety along a major corridor in this region.

Adding turn lanes, medians, reducing entrances and improving a horizontal curve are each predicted to reduce overall crashes along the corridor. Crash modification Factors were obtained from the [FHWA Crash Modification Factor Clearinghouse](#) for the countermeasures listed in Table 3.

Each countermeasure was applied only to the section of road that it will affect.

- The two-way left turn lanes for rural roads were only applied to Segments 1 and 2, from KY 727 to the Corbin Bingo.
- The change in entrance density and raised median were applied to Segments 3 & 4, from I-75 to the Corbin Bypass.

According to the Highway Safety Manual, engineering judgement is critical when using combined CMFs along the same sections of roadway. The predictive method allows us to multiply the CMFs together and then multiply that number by the number of yearly



Crashes will be reduced with proposed improvements



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crashes to get the expected number of crashes. While this method is an acceptable way to estimate crash reduction, it is important to understand the possibility of an overestimation of the number of reduced crashes due to the limited understanding of interrelationships between the various countermeasures, and because some of the countermeasures may affect the same type of crash. In an attempt to reduce the possibility of an overestimation of reduced crashes, we carefully selected the countermeasures that were applied to this project.

The calculations for expected number of crashes, using the CMFs in Table 3 are as follows:

- Introduce Two Way Left Turn Lane (Segments 1 -2): $13 \text{ crashes/yr} * 0.64 = \mathbf{8 \text{ crashes/yr}}$
- Change in Driveway Density & Provide a Raised Median (Segments 3 & 4): $45 \text{ crashes/yr} * .81 * 0.70 = \mathbf{26 \text{ crashes/yr}}$

Crash data points were plotted on a map of the road segments to determine the yearly crashes that took place in the area of each countermeasure.

There are also other countermeasures that are being utilized on US 25W to improve safety (right turn lane at KY727 and added signalization at an intersection). However, they were not included in the calculations as there seemed to be too much of an overlap with the other countermeasures that could create an overestimation of crash reduction.

The section of US 25W from KY 727 to the Corbin Bypass has averaged 58 crashes per year over the time period of 2014 to 2018. Utilizing the countermeasures as stated above we can expect the crashes per year to be reduced to approximately 34 crashes per year, a decrease of 41%.

Table 3: Crash Modification Factors

Countermeasure	Crash Modification Factor (CMF)	Crash Reduction Factor	Star Rating	Crash Type
Introduce Two-Way Left Turn Lanes on Two Lane Rural Roads	0.64	36%	5	All
Change in Driveway Density from X to Y Driveways Per Mile	0.81	19%	3	All
Provide a Raised Median	0.70	30%	3	All



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SAFETY – CAPACITY IMPROVEMENTS:

Additional lanes will add roadway capacity. Coupled with the proposed access management, the level of service of the road is forecast to improve. When looking at the forecast for the peak time level of service (LOS) in 2040 the greatest improvements can be seen at the KY 727 intersection and at the I-75 northbound and southbound ramps. The 2040 PM peak level of service at KY 727 is an F if no improvements are implemented (no build) while the intersection improves to a LOS C if the proposed improvements are implemented (build). The 2040 AM and PM peak no build LOS for the I-75 north bound and south bound ramps is F (worst condition). The LOS for the build scenario at the I-75 southbound ramps improves to B in the AM peak and C in the PM peak while the I-75 northbound ramps improve to B during both AM and PM peaks. Implementing the proposed improvements will improve severe congestion and long delays to create a safer and more easily navigated roadway.

SAFETY – FINANCIAL ASPECTS:

Improving US 25W will provide a safe route for the citizens who travel this stretch of road, whether it be for work or just passing through. These improvements will have a significant safety impact and a cost savings benefit of \$8.2 million for its users over the 20 year period from 2025 to 2044. (See Benefit Cost Analysis)

SAFETY – SUMMARY:

This existing stretch of US25W has a crash rate 3.5 times higher than other similar roads in the state of Kentucky. That alone should warrant funding for this project due to the dangerous conditions that the citizens who frequent this road face every single day. The improvements discussed in this section will not only drastically improve the safety of the road, but it will provide a benefit of over \$8 million dollars for the 20 year analysis period. Along with the other benefits from these improvements, the project is proven to more than pay for itself in the long run.



Level of Service will be greatly improved



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5.2 STATE OF GOOD REPAIR

The reconstruction of US 25W will contribute to the “state of good repair” in south Corbin by addressing clear transportation needs. Additional lanes and access control will reduce congestion and crashes. In Segment 2, where there are currently two lanes, the project will reduce road departures and provide space to allow for driver error, where none exists now.

5.3 ECONOMIC COMPETIVENESS

The project enhances the economic competitiveness by upgrading a crucial link in the transportation infrastructure that the existing and future Corbin industries use every day. Furthermore, regional enterprises such as the Corbin Arena, Cumberland Falls State Park, and the Appalachian Wildlife

Center rely on the corridor. By reducing congestion and improving safety, the project improves the movement of people and goods within the corridor and far beyond.

5.4 ENVIRONMENTAL SUSTAINABILITY

The project promotes environmental sustainability by reducing congestion, which will reduce emissions from vehicle idling while waiting in traffic.

5.5 QUALITY OF LIFE

The project will improve the quality of life for local residents taking their children to school, visiting the hospital, or dining at the corridor restaurants. It will also improve the quality of life for tourists travelling to the many destinations accessible via US 25W. It will improve quality of life for interstate travelers seeking gas, lodging, and food, and



View from Corbin Arena



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will reduce frustration for those coming to Corbin for events at The Corbin Area and the Corbin Speedway.

5.6 INNOVATION

Many businesses along US 25W such as the Tri-County Cineplex, the Corbin Center, and the Corbin Arena are difficult to access safely. As the area developed, numerous access points were added to US 25W creating many traffic conflict points, particularly for drivers making left turns. The project has implemented creative solutions to help businesses address these access and safety issues. The congested areas on both sides of the I-75 interchange will be improved with the following access management strategies including partially controlled access, U-turns, entrance elimination/combination, backage roads and traffic signal coordination:

Partially controlled access: Urban access minimum spacing of 600 feet will be used with a raised mainline median (curb and gutter). This feature will eliminate left turns except at major intersections, thereby reducing traffic conflicts and improving safety.

Entrance elimination/combination: smaller volume entrances along the corridor will be combined where possible and/or converted to right-in, right-out (RI/RO) access, further eliminating left turn conflicts.

U-turns: Passenger vehicles can access RI/RO access locations by making safe and legal u-turns at the major intersections, which

will be signed and signalized to accommodate this movement.

Backage Roads: Like frontage roads in many commercial areas, a backage road provides access off of main entrance roads via major intersections; in this case, behind and in between business destinations. This strategy has been used extensively in project design by combining existing access with defined two-lane roadways taking the travelling public to their desired stop much more efficiently and with improved safety.

Traffic signal coordination: Five controlled access intersections (two existing and three additional) through the corridor from Summit Drive to the Corbin Bypass will be coordinated and optimized. This planned signal timing is critical to maximize through travel on US 25W, while allowing efficient movement to and from the numerous commercial locations along the project.

Another important improvement is the added eastbound through lane from the I-75 northbound off-ramp to Corbin Center Drive. This was a critical design element included to address the often crippling event traffic congestion associated with frequent popular attractions held at the 5,000 seat Corbin Arena.

Also, in order to minimize disruption to businesses during construction, a detailed traffic control and construction phasing plan has been prepared for this project. This plan is closely coordinated with the Contractor and KYTC staff.



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5.7 PARTNERSHIPS

This project has been a partnership since its inception. The Cumberland Valley Area Development District and KYTC District 11 have worked together to secure funding for planning and design.

The city of Corbin's proposed project has received backing from organizations at the local, regional, and state level with over 20 letters of support. Not only have these public and private organizations publicly shared their support but many have also made commitments to go above and beyond. Some of these commitments include:

- The Superintendent of the Corbin Independent School District, David Cox, commits to provide collaboration and work with all community members affected by this project. His team also pledges their resources to help with any planning and implementation processes.
- Delta Natural Gas Company pledges to invest over \$2.2 million to re-design and move its facilities from the state right-of-way. Also included is a commitment to serve qualified new businesses that locate in close proximity to the improved highway.
- Bretara, LLC commits to donate land to build an access road that is planned to go through their property.

We are proud of the positive impact the proposed project will make on our local organizations and even more so, on the collaboration this will entail. Refer to our letters of support in the appendix from the following:

- Southeast Kentucky Industrial Development Authority
- Hometown Bank
- Southern Kentucky Chamber of Commerce and the Corbin Industrial Development Commission
- Corbin Police Department
- Bretara LLC
- Delta Natural Gas Company
- Cumberland Valley RECC
- Corbin Arena
- Corbin Tourism and Convention Commission
- Whitley County Judge Executive
- Corbin Independent School District
- Baptist Health Hospital
- Knox County Judge Executive
- Appalachian Wildlife Center
- AT&T
- Cumberland Valley Area Development District



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PARTNERSHIPS:

- Southeast Kentucky Industrial Development Authority
- Hometown Bank
- Southern Kentucky Chamber of Commerce and the Corbin Industrial Development Commission
- Corbin Police Department
- Bretara LLC: Donating part of their property to build an access road
- Delta Natural Gas Company: Investing over \$2.2 million to re-design and move its facilities in order for the project to have the property needed to build the improvements
- Cumberland Valley RECC
- Corbin Arena
- Corbin Tourism and Convention Commission
- Whitley County Judge Executive
- Corbin Independent School District
- Superintendent commits to providing resources for planning and implementation of this project
- Director of Support Services, Mark Daniels, pledges to collaborate and assist in implementation within the Corbin Community, to serve on the advisory panel that will meet to oversee project goals and objectives, and to promote the project within the community
- Baptist Health Hospital
- Knox County Judge Executive
- Appalachian Wildlife Center
- AT&T



Baptist Health is one of many important partners for this project



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6.0 ENVIRONMENTAL RISK REVIEW

6.1 PROJECT SCHEDULE

The project is on track for construction to begin in 2022.

Phase	2020	2021	2022	2023	2024	2025
Design/Environmental						
Right of Way Acquisition						
Utility Relocation						
Construction						

Project planning and design has essentially been completed for 90% of the project. The remaining portion was considered during planning and only lacks a small amount of effort to have design plans ready for right of way acquisition to begin.

Right of way acquisition is anticipated to go quickly; most owners have been contacted and are willing to work with the project team to advance the project. Furthermore, the utilities which will be impacted have been notified and are standing by, ready to begin the design to relocate where necessary. See the letters of support for the willingness of utility owners to ensure timely assistance.

Level 2 was completed, approved, and signed in 2016. Minor adjustments to the descriptions of impacts may be needed due to changes over time and design tweaks; but the area of potential effect has not changed since completion of the baseline studies.

A re-evaluation of the environmental clearances are currently underway and will be complete before funds are obligated for construction.

The project will require coordination with the US Army Corps of Engineers and the Kentucky Division of Water due to impacts to the waters of the US, where culvert extensions and a small stream relocation is needed. The streams affected are in previously disturbed areas and do not represent pristine aquatic resources.

6.2 REQUIRED APPROVALS

ENVIRONMENTAL PERMITS AND REVIEWS

The project has been underway since 2013 and has had **full environmental baseline studies completed**. A [Categorical Exclusion](#)

LOCAL AND STATE

KYTC District 11 office will oversee the environmental review process and approve the design and construction plans. District 11 will also oversee right of way acquisition in



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accordance with the Uniform Relocation Act provisions. Furthermore, all utility owners within the corridor have been apprised of the project and are prepared to assist in utility relocation. Cumberland Valley Rural Electric owns most of the poles to be moved and are willing to facilitate coordination of aerial relocations.

The Commonwealth of Kentucky uses a project review clearinghouse process. This agency comment opportunity is underway currently.

6.3 ASSESSMENT OF PROJECT RISKS AND MITIGATION STRATEGIES

Due to extensive planning, community acceptance, and the regional importance of

the project, there is little risk of the project not moving forward according to the schedule outlined above. This project has strong state and local support. The extensive public involvement revealed no project opposition. The environmental studies show there are minimal ecosystem impacts. The positive impacts of the project such as the improved mobility, increased safety, and reduced congestion outweigh the minor construction impacts which would be expected on any project.

Additional risks exist with any large-scale construction project. Those relating to legislative and public support are minimal due to the high priority of the project and its history. Other risks and mitigation strategies are outlined in the table below:

Table 6.1: Mitigation Strategies

Risk	Mitigation
Disruption during construction	Construction phasing and traffic control plan (already complete)
Utility Relocation	See letters of support
Right-of-Way Acquisition	Discussion with property owners are ongoing Accommodations made for parking needs
Unknown Environmental Issues	A re-evaluation of the project is currently underway. Since the baseline studies covered an adequate corridor, only changes in the area of potential effect must be documented.
Project Cost Overruns	Well-developed construction documents Environmental studies already completed Planning and public involvement since 2013 Generous contingency in project cost estimate



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7.0 BENEFIT COST ANALYSIS

A [benefit cost analysis](#) was conducted in accordance with the USDOT *Benefit-Cost Analysis Guidance for Discretionary Grant Programs* (2020) and included monetized benefits of safety, travel time savings, vehicle operations savings, and emergency response time. “Build” and “No-Build” alternatives

were compared. All amounts were discounted 7%, with a base year of 2018. No benefit of the project was considered until 2025 when construction is scheduled to be completed. The analysis is continued through 2044, a period of 20 years of operation.

Table 7.1: Project Benefits

Benefit Type	Benefit Amount in Millions
Safety	\$8.2 M
Travel Time Savings	\$119 M
Vehicle Operations	\$26.3 M
Emergency Response	\$6.4 M
Total	\$160 M

Safety benefits were based on the monetized value of crash severity type developed by the National Safety Council, called KABCO, because crashes are classified by the letters K: fatal, A: incapacitating injury, B: non-incapacitating, C: possible injury, and O: no injury. Benefits were calculated by segments, due to differing traffic conditions and crash rates.

Travel time savings were based on vehicle hours travelled during for peak hours, and scaled for non-peak and weekend savings. The values of time savings were computed by

a traffic simulation model, originally created in 2014 to advise roadway design elements and updated in 2020. This benefit is sensitive to the traffic simulation model parameters, vehicle occupancy assumed, and the value of an hour saved. The latter two parameters were general, nationwide numbers from the guidance document. Because of school traffic and tourism in the area, the occupancy values utilized seem appropriate.

Vehicle operating costs were also calculated based on vehicle hours travelled savings computed from the traffic simulation model.



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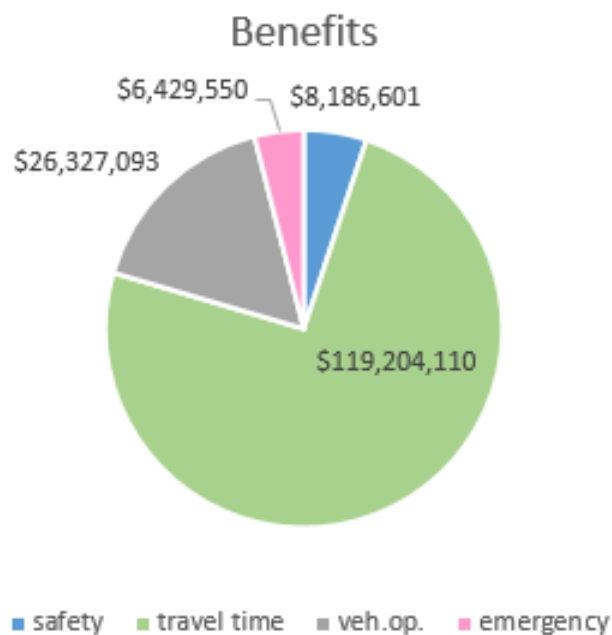
Vehicle hours traveled were converted to operating hours based on traffic speed during peak hours, determined in the traffic simulation model, and non-peak hours, assumed to be the speed limit, 45 miles per hour.

Emergency Response benefits were computed using the Federal Emergency Management Agency [Benefit-Cost Analysis Re-engineering](#) (December 2011).

Additional benefits of the project include:

- Increased reliability
- Benefits to movements of freight to industrial park
- Reduced emissions due to reduced vehicle hours travel, less idling, more free flow traffic

Benefit Cost Ratio is calculated by dividing the total project benefits by the total cost, including the amount already spent. All values are discounted to 2018 dollars.



Benefit Cost Ratio for this project is $\$160 \text{ M} / \$21.4 \text{ M} = 7.48$



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Appendix

