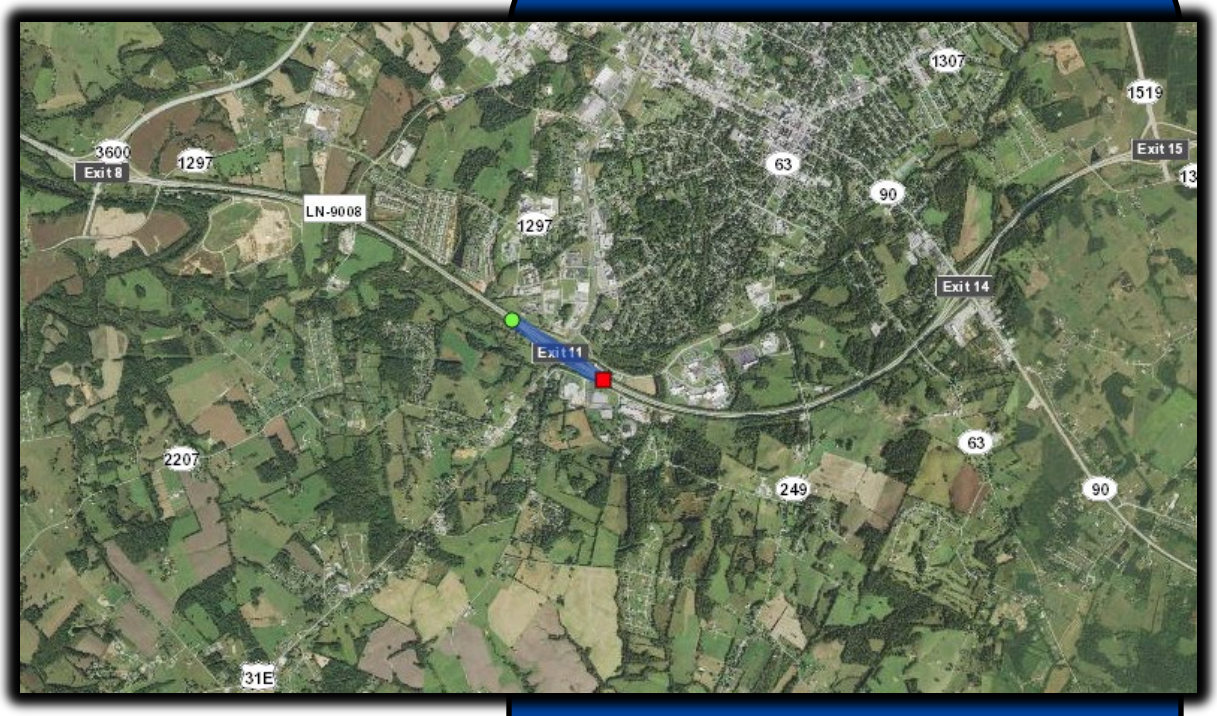
Data Needs Analysis



Scoping Study

LN 9008 / US-31E
Interchange
Barren County
Item No. 3-80300

Prepared by
KYTC District 3

March 2025

TEAM KENTUCKY
TRANSPORTATION CABINET

I. PRELIMINARY PROJECT INFORMATION

County:	Barren	**Item No.:**	3-80300
Route Number(s):*	LN 9008	**Road Name:**	Louie B. Nunn Cumberland Expre
Program No.:	1897701D	**UPN:**	FD04 005 9008 011-012
Federal Project No.:		**Type of Work:**	CONGESTION MITIGTN(O)

2024 **Highway Plan Project Description:**

REDUCE CONGESTION AND INCREASE MOBILITY ON US-31E FROM ABERDEEN DRIVE TO TROJAN TRAIL, INCLUDING RECONSTRUCTION OF THE INTERCHANGE WITH LN 9008. (2024CCN)

Beginning MP: 11.15 **Ending MP:** 11.75 **Project Length:** 0.6

In TIP: ☐ Yes ☑ No Use PDP/CHAF to Verify Project Data

State Class.: ☑ Primary ☐ Secondary **Route is on:** ☑ NHS ☐ NN ☐ Ext Wt

Functional Class.: ☐ Urban ☑ Rural Arterial **Truck Class.:** AAA **% Trucks:** 18.26

MPO Area: Not Applicable **Terrain:** Rolling

ADT (current): 12114/283 2023

Access Control: ☐ None ☐ Permit ☑ Fully Controlled ☐ Partial Spacing:

Median Type: ☐ Undivided ☑ Divided (Type):

Existing Bike Accommodations: None **Ped:** ☐ Sidewalk

Posted Speed: ☐ 35 mph ☐ 45 mph ☐ 55 mph ☑ Other (Specify): 70 mph/50 mp

KYTC Guidelines Preliminarily Based on : **50 Ramp Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES****
No. of Lanes	1	1
Lane Width	15'	15'
Shoulder Width	4-6'	4-6'
Max. Superelevation***	varies	8%
Minimum Radius***	763'	758'
Maximum Grade	4%	5%
Minimum Sight Dist.	425'	425'
Sidewalk Width(urban)	N/A	N/A
Clear-zone†	N/A	20-26'
Project Notes/Design Exceptions?	N/A	

Existing Rdwy. Plans available? ☑ Yes ☐ No Year of Plans: 1971

☐ Traffic Forecast Requested Date Requested:

☐ Mapping/Survey Requested Date Requested:

Type:

Bridge No.:‡	005B00071R	005B00071L
Sufficiency Rating	79	79
Total Length	203	203
Width, curb to curb	32.2	32.2
Span Lengths	50.5	50.5
Year Built	1973	1973
Posted Weight Limit	Not posted	Not posted
Structurally Deficient?	no	no
Functionally Obsolete?	No	No
Existing Bridge Type	PCI Beam	PCI Beam

Existing Geotech Data Available? ☐ Yes ☑ No

Detour Length(s):

*If more than one road is included in the project, include additional sheets.
**Based on proposed Design Speed
***AASHTO's A Policy on Geometric Design of Highways and Streets
+AASHTO's Roadside Design Guide
‡If more than two bridges are located on the project, include additional sheets.

I. PRELIMINARY PROJECT INFORMATION

County:	Barren	**Item No.:**	3-80300
Route Number(s):*	US-31E	**Road Name:**	Scottsville Rd.
Program No.:	1897701D	**UPN:**	FD04 005 9008 011-012
Federal Project No.:		**Type of Work:**	CONGESTION MITIGTN(O)

2024 **Highway Plan Project Description:**

REDUCE CONGESTION AND INCREASE MOBILITY ON US-31E FROM ABERDEEN DRIVE TO TROJAN TRAIL, INCLUDING RECONSTRUCTION OF THE INTERCHANGE WITH LN 9008. (2024CCN)

Beginning MP: 12.375 **Ending MP:** 12.6 **Project Length:** 0.225

In TIP: ☐ Yes ☑ No Use PDP/CHAF to Verify Project Data

State Class.: ☑ Primary ☐ Secondary **Route is on:** ☑ NHS ☐ NN ☐ Ext Wt

Functional Class.: ☑ Urban ☐ Rural Arterial **Truck Class.:** AAA **% Trucks:** 10.6

MPO Area: Not Applicable **Terrain:** Rolling

ADT (current): 18034 2023

Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:

Median Type: ☐ Undivided ☑ Divided (Type): Island Curb

Existing Bike Accommodations: None **Ped:** ☐ Sidewalk

Posted Speed: ☐ 35 mph ☑ 45 mph ☐ 55 mph ☐ Other (Specify):

KYTC Guidelines Preliminarily Based on : **45 MPH Proposed Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES****
No. of Lanes	4	2
Lane Width	12'	11'
Shoulder Width	2'	8'
Max. Superelevation***	varies	6%
Minimum Radius***	1348	643
Maximum Grade	3%	7%
Minimum Sight Dist.	532	532
Sidewalk Width(urban)	N/A	N/A
Clear-zone†	2'	7-10'

Existing Rdwy. Plans available? ☑ Yes ☐ No

Year of Plans: 1989

☐ Traffic Forecast Requested

Date Requested:

☐ Mapping/Survey Requested

Date Requested:

Type:

Project Notes/Design Exceptions? N/A

Bridge No.:‡	005B00024L	005B00066R
Sufficiency Rating	97	96.4
Total Length	148	148
Width, curb to curb	41.5	37.5
Span Lengths	48	48
Year Built	1956	1972
Posted Weight Limit	Not posted	Not posted
Structurally Deficient?	no	no
Functionally Obsolete?	no	no
Existing Bridge Type	RCDG	PCI Beam

Existing Geotech Data Available? ☐ Yes ☐ No

Detour Length(s):

Bridge No.:‡	005B00073N	005B00074N	
Sufficiency Rating	93	97	
Total Length	161	131	Existing Geotech Data Available?
Width, curb to curb	31	25	☐ Yes ☐ No
Span Lengths	53	43.7	
Year Built	1972	1927	
Posted Weight Limit	Not posted	Not posted	Detour Length(s):
Structurally Deficient?	no	no	
Functionally Obsolete?	no	no	
Existing Bridge Type	PCI Beam	PCI Beam	

Bridge No.:‡	005B00072R	005B00072L	
Sufficiency Rating	80.9	80.9	
Total Length	191	191	Existing Geotech Data Available?
Width, curb to curb	30	30	☐ Yes ☐ No
Span Lengths	64	63.6	
Year Built	1973	1973	
Posted Weight Limit	Not posted	Not Posted	Detour Length(s):
Structurally Deficient?	no	no	
Functionally Obsolete?	no	no	
Existing Bridge Type	PCI Beam	PCI Beam	

*If more than one road is included in the project, include additional sheets.
**Based on proposed Design Speed
***AASHTO's A Policy on Geometric Design of Highways and Streets
+AASHTO's Roadside Design Guide
‡If more than two bridges are located on the project, include additional sheets.

II. PROJECT PURPOSE AND NEED

A. Legislation

The following funding is listed in KY's FY24-FY30 Enacted Highway Plan.

Funding	*Phase*	*Year*	*Amount*
STP	D	2027	$2,480,000
SPP	R	2027	$330,000
SPP	U	2027	$1,860,000
SPP	C	2029	$24,800,000

B. Project Status

The design funding (STP2) of $500,000 was authorized on February 2, 2025.

C. System Linkage

LN 9008, the Louie B. Nunn Cumberland Expressway, is federally Functionally Classified as an Urban and Rural Expressway that connects the city of Bowling Green via I-65 to the city of Somerset and other southern central portions of the state. US-31E is federally Functionally Classified as a Urban and Rural Minor Arterial connecting the city of Scottsville to the city of Glasgow. Both highways serve as connections between the city of Glasgow and the surrounding area, including the Barren River Lake area, and the Idea Park off Aberdeen Drive. Both highways connect the city of Glasgow to residential and industrial areas, educational, recreational, and sports facilities. The interchange helps connect the commercial/economic hubs of Glasgow, Bowling Green, and Somerset.

D. Modal Interrelationships

US-31E is a urban highway (in this section) that leads directly into the Glasgow urban area. There isn't a fixed route transit service outside of the city of Glasgow in Barren County, but the Southgate Plaza/Houchens IGA #60/Public Library does serve as a stop, and is located just north of the project area. Bicycle and pedestrian facilities are not present on this route, but it is possible that they should be considered in this area. Because of the large percentage of industrial uses along the Louie B. Nunn Cumberland Parkway Corridor, the movement of large trucks (freight) needs to be considered. This segment of US-31E is part of the Kentucky Highway Freight Network.

E. Social Demands & Economic Development

US-31E provides the primary connection for residents of southwestern Barren County to the services - business, school, healthcare, government, and recreational activity - of Glasgow. It also serves as the primary connection to the Barren River Lake Area. This segment of US-31E also serves as the primary access point to the Idea park, located on Aberdeen Drive, which is home to a number of industries. There are also a number of learning institutions in close proximity: South Green Elementary, Barren County Middle School, Barren County High School, and WKU's Glasgow campus are all located near this area.

II. PROJECT PURPOSE AND NEED (cont.)

F. Transportation Demand

The last actual traffic count (2023) for interchange ramp station D50, between MP 11 and MP 12 was 2832 AADT. Totaling all 4 ramps at the interchange, an AADT of 10263 was counted in 2023. Future Traffic (2045 - Cumberland Expressway Upgrade Study - March 2022) identifies no issues on the ramps, with the highest ramp volume reaching 990 vehicles per hour and the LOS estimate staying in the A to C range. US-31E had 12840 vehicles counted (2022), between MP 11.921 and MP 12.461, station B34, and 18034 counted (2023) between MP 12.461 and MP 12.84, station A38. Station B34 showed 12.91 percent trucks. Both US-31E and LN 9008 are on the National Truck Network.

G. Capacity

This corridor experienced noteworthy congestion issues when the eastbound off ramp signal was in coordination with the other US-31E mainline signals - that ramp would back up. Thus that US-31 E mainline signal coordination going into Glasgow begins at the Trojan Trail intersection. The Trojan Trail intersection experiences significant congestion and delays during peak school pickup and dropoff times.

H. Safety

In the last five years (2019-2024), there have been 58 reported crashes (1 of which was A - serious injury) on US-31E from MP 12.2 to MP 12.6 in Barren County. Thirty five of those collisions were listed as being at in intersection (LN 9008, CS 1270, or CR 1235). The majority, 54, were property damage only. Twenty-three were listed as rear end collisions, which makes sense due to the traffic signals in this section. Twenty-three were also listed as angle collisions. Twenty-five of the 58 reported crashes happened at the Trojan Trail/US-31E intersection specifically. Overall, the Cumberland Expressway appears to be operating acceptably with regards to safety. This is most clearly demonstrated by the negative (-37.4) EEC (Excess Expected Crashes) using the rural freeway and parkway prediction equation. The EEC at the Trojan Trail intersection with US-31E is 2.904, indicating worst than expected safety performance and moderate potential for crash reduction. The EEC for the US-31E/Exit 11 ramp is 2.247, which again is higher than expected, and indicates worst than expected safety performance and moderate potential for crash reduction. In summary, there is potential for safety improvement on this corridor.

I. Roadway Deficiencies

No Roadway Deficiencies were noted.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Project is in: ☑ Attainment area ☐ Nonattainment or Maintenance Area ☐ PM 2.5 County

STIP Pg.#: (2025-2028) pg.4 **TIP Pg.#:**

As this is a federally-funded project, it is listed in the STIP.

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

Section 106 will apply and SHPO clearances for archeology and historic will be required. There are no known NHRP in the project corridor.

C. Threatened and Endangered Species

The Gray, Indiana, and Kentucky cave shrimp are endangered. The monarch butterfly and the tri-colored bat are proposed threatened. Anticipate seasonal tree cutting restrictions will be required to minimize potential adverse effects to Indiana Bats.

D. Hazardous Materials

☐ Potentially Contaminated Sites are present ☐ Potential Bridge or Structure Demolition

There are no UST sites in the project area.

E. Permitting

Check all that may apply: ☑ Waters of the US ☐ MS4 area ☐ Floodplain Impacts ☐ Navigable Waters of the US Impacts

Are 401/404 Permits likely to be required? ☑ Yes ☐ No Impacts to: ☐ Wetlands ☑ Stream/Lake/Pond

☑ ACE LON ☐ ACE NW ☐ ACE IP ☐ DOW IWQC ☐ Special Use Waters

A KYTC BMP Plan and KYR10 permit will be applied if disturbance is greater than 1 acre. South Fork Beaver Creek is at US 31E MP. 12.35

F. Noise

Are existing or planned noise sensitive receptors adjacent to the proposed project? ☑ Yes ☐ No

Is this considered a "Type I Project" according to KYTC Noise Analysis and Abatement Policy? ☑ Yes ☑ No

A Traffic Noise Impact Analysis must be performed in accordance with the KYTC Noise Policy.

G. Socioeconomic

Check all that may apply: ☐ Low Income/Minority Populations ☐ Relocations ☐ Local Land Use Plan available

There are no relocations.

H. Section 4(f) or 6(f) Resources

The following are present on the project: ☐ Section 4(f) Resources ☐ Section 6(f) Resources

There are none present.

Anticipated Environmental Document: CE Level 1

IV. PROJECT NEED, PURPOSE & SCOPE

A. Need:

The existing LN 9008/US-31E interchange and the US-31E/Trojan Trail intersection have congestion and mobility issues. Current ramp configurations prevents signal coordination on the mainline of US-31E. Numerous crashes (58) are cause for safety concerns (23 crashes being rear end). Both LN 9008 and US-31E are AAA truck routes that are used for the transportation of freight.

B. Purpose:

The purpose of this project is to reduce congestion, improve safety, and increase mobility on US-31E from Aberdeen Drive to Trojan Trail by reconstructing the intersections, including the reconstruction of the interchange with LN 9008.

C. Scope:

This project will reconstruct three existing intersections on US-31E between Aberdeen Drive and Trojan Trail. The estimated improvements are based on the Highway Plan description for reducing congestion and increasing mobility on US-31E. Impacts to the US-31E corridor can potentially be improved with innovative intersection concepts. Existing structures should not be disturbed. Significant impacts to utilities should be expected.

V. PROJECT ESTIMATE & METHODOLOGY

Estimate Methodology:

The following estimate is based on the 2024 Highway Plan, Design, Right-of-Way, and Utility costs. The Contruction is based removing the two signals in the corridor and installing three roundabouts - one on the south ramps,one on the north ramps, and one at the US-31E/Trojan Trail intersection. Existing structures should not be disturbed.

Current Estimate

Phase	Estimate
Planning	
Design	$2,480,000
R/W	$330,000
Utilities	$1,860,000
Const	$24,800,000
Total	**$29,470,000**

VI. UTILITIES POTENTIALLY AFFECTED - CONTACT INFORMATION

Company - Glasgow Water Company
Contact - Joe Watson, Manager
Address - 301 West Main Street, Glasgow, KY
Phone No. - 270-634-0741

Company - Atmos Engery
Contact - Ryne White, Sr. Engineer
Address - 2850 Russellville Rd, Bowling Green, KY
Phone No. - 270-685-8140

Company - Farmers RECC
Contact - Chuck Bishop, Vice-President of Engineering
Address - 504 South Broadway St, PO Box 1298, Glasgow, KY
Phone No. - 270-670-4736

Company - Glasgow Electric Plant Board
Contact - Chris Childress, Engineering Manager
Address - 100 Mallory Drive, PO Box 1809, Glasgow, KY
Phone No. - 270-670-8569

Company - South Central Rural Telephone Coop., Corp.
Contact - Daniel Glass, OSP Engineer
Address - 1399 Happy Valley Road, PO Box 159, Glasgow, KY
Phone No. - 270-678-8473

Company - Windstream Communications
Contact - Steve Johnson, Sr Engineer OSP
Address - 111 South Main St, Elizabethtown, KY 42701
Phone No. - 859-357-6209

VII. TABLES AND EXHIBITS

Photo 1: Beginning of the project near the Aberdeen Dr. intersection facing north toward Glasgow

Photo 2: Southern ramps intersection facing north toward Glasgow

Photo 3: Southern ramps intersection facing south toward Scottsville

Photo 4: Northern ramps intersection facing north toward Glasgow

Photo 5: Northern ramps intersection facing south toward Scottsville

Photo 6: US 31E/Trojan Trail intersection facing north toward Glasgow

Photo 7: US 31E/Trojan Trail intersection facing south toward Scottsville