APPENDIX I:
TIER 2 SCOPING REPORTS

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-275
Segment ID: 1A
From: Indiana state line
To: KY 237 in Boone County
Counties: Boone
Highway District(s): 6

CORRIDOR SEGMENT OVERVIEW

Corridor 1A on I-275 extends from the Indiana state line to the interchange with KY 237 (Bend Rd) in Boone County. The corridor is approximately 6.4 miles long and contains three interchanges.

The western portion of this corridor passes through rural and sparsely populated residential areas in Boone County. These areas are classified as rural and rural town/exurban according to KYSTMv19. The eastern portion of the corridor at the interchange with KY 237 is surrounded by a cluster of warehouses and moderate density residential areas.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire corridor	Interstate	4, 12’	10’	Depressed (60’)	65 mph

Right of Way: The existing right of way is generally 250’ – 290’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.137, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 3608 (Garrison Creek Rd)	Partial Cloverleaf
KY 237 (N Bend Rd)	Partial Cloverleaf
Graves Rd[1]	Double Crossover Diamond

1) New double crossover diamond (DCD) interchange at Graves Road is open as of 2022 (Item # 6-78).

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
008B00055R	Route On Structure	11.45	KY 20 CONNECTOR	Fair	98	No	7	7	6	59.5	N
008B00055L	Route On Structure	11.43	KY 20 CONNECTOR	Fair	97	No	7	7	6	59.5	N
008B00052N	1st Non-Card Route On	13.68	OHIO RIVER	Fair	61.4	No	7	5	5	87.6	N
	Route On Structure	13.68	OHIO RIVER	Fair	61.4	No	7	5	5	87.6	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
008B00095N	One Route Under	KY-495	16.75	29.2
008B00050L	1st Non-Card Route Under	NORTH BEND RD NC	25	62.34
	2nd Route Under	NORTH BEND RD NC	25	62.34
	1st Route Under	NORTH BEND RD NC	16.42	25.5
008B00050R	2nd Route Under	KY-237	16.08	28
	1st Non-Card Route Under	KY-237	16	62
	1st Route Under	KY-237	16	79

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	AADT[1]	AADTT[2]	Truck Percentage
From Indiana state line to KY 3608	41,000	6,000	14%
From KY 3608 to KY 237	38,000	6,000	15%

1,2) Rounded to the nearest thousand.

Mobility: There is one potential traffic bottleneck along this corridor. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details. Traffic condition is acceptable along the remainder of this corridor.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
From Graves Rd to KY 237 in Boone County	Interstate	4, 12’	4, 12’	4, 12’	38,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 29.2% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently two CCTV cameras and zero Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				EB	**WB**	**EB**	**WB**
Entire corridor (MP 6.76 to 13.68)	Traffic Incident Management extension statewide, Dynamic Message Signs and CCTV cameras at all interchanges[2]	N/A	Improve mobility and mobility management along the I-275 corridor.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

2) DMS and cameras will be in the following locations: in the WB direction after the river and before the exits at Petersburg, Graves Road, and KY 237; in the EB direction before the exits at Graves Road and Petersburg.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
008B00052N	13.68	OHIO RIVER	Bridge Rating
	13.68	OHIO RIVER	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.137). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire Corridor	Congestion, Incidents	Traffic Incident Management extension statewide, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	Near Ohio River Bridge	Wet Weather	Add warning signage, high friction surface treatment, guardrail, extend rumble strips
	Approaching Exit 11	Short Merge Lanes	Increase acceleration/deceleration lanes
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed spot improvements at interchanges (e.g. warning signage, acceleration/deceleration lanes) can be done at the same time. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Three Wellhead Protection Areas are located northwest of Idlewild. Wooded area can be found along the corridor. There is Known Summer 1 habitat for the Indiana bat. One Special Waters, Second Creek, can be found southwest of the I-275/KY-3608 interchange.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The critical red flag concern table is not included for this corridor since the proposed mobility improvements are TSMO solutions that are not likely to have impact on the existing right-of-way.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
Entire corridor	Traffic Incident Management extension statewide	No
Entire corridor	Dynamic Message Signs and CCTV cameras at all interchanges	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0 ($M)
ROW:	0 ($M)
Utility:	0 ($M)
Construction:	0 ($M)
Subtotal:	**0 ($M)**

TSMO Strategies

Dynamic Message Sign:	2.4 ($M)
Subtotal:	**2.4 ($M)**

TOTAL COST = 2.4 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-275
Segment ID: 1B
From: KY 237 in Boone County
To: I-71/75
Counties: Boone, Kenton
Highway District(s): 6

CORRIDOR SEGMENT OVERVIEW

Corridor 1B on I-275 extends from KY 237 (Bend Rd) in Boone County to the interchange with I-71/75 in Kenton County. The corridor is approximately 6.9 miles long and includes four interchanges.

The western portion of this corridor passes through industrial, commercial, and office uses in Boone County, as well as the Cincinnati/Northern Kentucky International Airport. These areas are categorized as rural town/exurban according to the KYSTMv19 data. The portion from KY 212 to I-71 transitions to suburban areas with office parks, highway commercial, and light industrial areas.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire corridor	Interstate	6, 12’	10’	Depressed (60’)	65 mph

Right of Way: The existing right of way is generally 275’ – 320’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.228, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 237 (Bend Rd)	Partial Cloverleaf
KY 212 (Terminal Dr)	Partial Cloverleaf
KY 3076 (Mineola Pike)	Diamond
I-71/75	All Directional Four Leg

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
008B00057N	Route On Structure	5.18	ELIJAH CREEK	Fair	68	No	N	N	N	30.84	6
	1st Non-Card Route On	5.17	ELIJAH CREEK	Fair	68	No	N	N	N	28	6
008B00087L	Route On Structure	5.91	ELIJAH CREEK ROAD	Fair	98	No	6	7	7	29.2	N
008B00087R	Route On Structure	5.92	ELIJAH CREEK ROAD	Good	98	No	7	7	7	29.2	N
059B00054L	3rd Route Under	0.33	I-75 N&S-RAMPS G-D	Fair	68.7	No	5	5	7	25.92	N
	Route On Structure	0.02	I-75 N&S-RAMPS G-D	Fair	68.7	No	5	5	7	29.86	N
	2nd Route Under	0.23	I-75 N&S-RAMPS G-D	Fair	68.7	No	5	5	7	25.92	N
059B00054R	2nd Route Under	0.25	I-75 N&S-RAMPS G-D	Fair	73.7	No	5	5	7	27.89	N
	3rd Route Under	0.31	I-75 N&S-RAMPS G-D	Fair	73.7	No	5	5	7	25.92	N
	Route On Structure	0.02	I-75 N&S-RAMPS G-D	Fair	73.7	No	5	5	7	27.89	N
059B00064L	Route On Structure	1.08	ERLANGER SERVICE ROAD	Fair	96	No	6	7	7	25.92	N
059B00064R	Route On Structure	1.09	ERLANGER SERVICE ROAD	Good	96	No	7	7	7	25.92	N
059B00065N	Route On Structure	0.69	DRY CREEK	Good	70	No	N	N	N	25.92	7
	1st Non-Card Route On	0.69	DRY CREEK	Good	70	No	N	N	N	38	7

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
008B00049L	1st Non-Card Route Under	AIRPORT ACCESS RD	16.3	40
	One Route Under	AIRPORT ACCESS RD	17.7	49.87
008B00049R	1st Non-Card Route Under	AIRPORT ROAD	20	23.95
	One Route Under	AIRPORT ROAD	20	23.95
008B00050L	1st Non-Card Route Under	NORTH BEND RD NC	25	62.34
	2nd Route Under	NORTH BEND RD NC	25	62.34
	1st Route Under	NORTH BEND RD NC	16.42	25.5
008B00050R	2nd Route Under	KY-237	16.08	28
	1st Non-Card Route Under	KY-237	16	62
	1st Route Under	KY-237	16	79
008B00051N	1st Non-Card Route Under	KY-20	16.58	76
	One Route Under	KY-20	16.58	62
008B00053N	One Route Under	POINT PLEASANT RD	17.25	57
	1st Non-Card Route Under	POINT PLEASANT RD	17.25	57
008B00066N	One Route Under	DOLWICK DRIVE	16.92	60
	1st Non-Card Route Under	DOLWICK DRIVE	16.92	60

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
059B00055N	Route On Structure	I-75 N RAMP	16	35
	3rd Route Under	I-75 N RAMP	16.33	19.69
059B00056N	1st Non-Card Route Under	I-75 S RAMP	15	37.73
	Route On Structure	I-75 S RAMP	15	37.73
	2nd Route Under	I-75 S RAMP	15.08	37.73
	3rd Route Under	I-75 S RAMP	15.08	37.73

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 237 to KY 212	63,000	7,000	11%
From KY 212 to KY 3076	73,000	8,000	10%
From KY 3076 to I-71/75	84,000	8,000	10%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	60’	10’	84,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 13.7% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts

Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
I-275 mainline from KY 237 to KY 212 (MP 3.74 to 7.31)	Widening to 8-lane; Ramp metering at all non-system interchanges	4, 12-foot lanes in each direction with 12-foot shoulder and 36-foot flush median with barrier	The expected v/c in 2045 exceeds the established thresholds. Improve safety and mobility along I-275.	D	D	C	C
I-275 mainline from KY 212 to KY 3076 (MP 1.72 to 3.74)				D	D	C	C
I-275 mainline from KY 212 to I-71 (MP 0.48 to 1.72)	Ramp metering at non-system interchanges	N/A	Improve safety and mobility along I-275.	D	C	D	C
Entire Corridor (MP 0.48 to 7.31)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[4]	N/A	Improve safety and mobility along I-275.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) DMS will be in the following locations: in the EB direction before KY 212 and KY 3076; in the WB direction before KY 3076, KY 212, and KY 237.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-275/KY 3076 Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
008B00057N	5.18	ELIJAH CREEK	Bridge Rating & Within Widening Section
	5.17	ELIJAH CREEK	Bridge Rating & Within Widening Section
059B00054L	0.33	I-75 N&S-RAMPS G-D	Bridge Rating
	0.02	I-75 N&S-RAMPS G-D	Bridge Rating
	0.23	I-75 N&S-RAMPS G-D	Bridge Rating
059B00054R	0.25	I-75 N&S-RAMPS G-D	Bridge Rating
	0.31	I-75 N&S-RAMPS G-D	Bridge Rating
	0.02	I-75 N&S-RAMPS G-D	Bridge Rating
008B00087L	5.91	ELIJAH CREEK ROAD	Within Widening Section
008B00087R	5.92	ELIJAH CREEK ROAD	Within Widening Section

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.228). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire corridor	High volumes of traffic entering and exiting freeway, Congestion and Incidents	Ramp Metering – Traffic Responsive – Centralized, Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	I-275 westbound, I-75/71 Merge & I-275 eastbound, I-75/71 Diverge	Short merge lanes	Increase acceleration/deceleration lanes, add auxiliary lane at the I-75/I-71 Diverge

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT3: Spot locations with history of severe crashes	I-275 MP 4.287 to MP 4.787	Roadway departures	Add guardrail

Proposed Phasing: The proposed I-275 widening can be one phase or split into two phases geographically (one for the section between KY 237 and KY 212, and another for the section between KY 212 and KY 3076), depending on funding availability. The proposed spot improvements at interchanges (e.g., interchange modification at KY 3076, ramp metering, etc.) within the corridor widening can be done at the same time the roadway is widened. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites. There are eight hazardous waste sites, most can be found around the interchanges along the corridor. Wooded area can be found along the corridor. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**I-275 mainline from KY 237 to KY 3076**
Superfunds	N
Special Waters[1]	N
Forested Areas	Y
NLEB Habitat Priority	N
IB Habitat Priority Area	N
FAA Airport Runways	Y
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	N
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	N
Area Landmarks	Y
Point Landmarks	N
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-275 mainline from KY 237 to KY 3076	Widening to 8-lane	Yes
I-275/KY 3076 Interchange	Interchange modification	Potentially
From KY 237 to I-71/75 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From KY 237 to I-71/75 (entire corridor)	Traffic Incident Management throughout	No
At all non-system interchanges	Ramp metering	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	10.1 ($M)
ROW:	2.4 ($M)
Utility:	1.3 ($M)
Construction:	146.4 ($M)
Subtotal:	**160.2 ($M)**
TSMO Strategies	
Ramp Metering - Traffic responsive centralized	1.3 ($M)
Dynamic Message Sign:	2.0 ($M)
Subtotal:	**3.3 ($M)**
TOTAL COST =	**163.5 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-275
Segment ID: 1C
From: I-71/75
To: Ohio State Line
Counties: Kenton, Campbell
Highway District(s): 6

CORRIDOR SEGMENT OVERVIEW

Corridor 1C on I-275 extends from I-71/75 in Boone County to the Ohio state line. The corridor is approximately 11.2 miles long and includes eight interchanges.

The corridor passes through suburbs of Covington, passing by moderate density detached housing, large shopping centers and office parks in Kenton and Campbell Counties. These areas are considered as suburban (according to v8_KYSTMv19 data). Northern Kentucky University is situated on the east side of the portion from KY 9 to I-471.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-71/75 to Turkeyfoot Rd	Interstate	6, 12’	10’	Concrete Barrier (40’)	65 mph
From Turkeyfoot Rd to I-471	Interstate	6, 12’	10’	Depressed (60’)	65 mph
From I-471 to Ohio state line	Interstate	6, 12’	10’	Depressed (80’)	65 mph

Right of Way: The existing right of way is generally 240’ – 275’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.119, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-71/75	All Directional Four Leg
US 25 (Dixie Hwy)	Partial Cloverleaf
KY 1303 (Turkeyfoot Rd)	Diamond
Ky 17 (Madison Pike)	Partial Cloverleaf
Taylor Mill Rd	Partial Cloverleaf
KY 9 (AA Highway)	Partial Cloverleaf
3 Mile Rd	Half Diamond
I-471	All Directional Four Leg

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
019B00040L	Route On Structure	73.20	OHIO RIVER @ BRENT	Fair	80	No	6	5	6	29.86	N
019B00040R	Route On Structure	73.20	OHIO RIVER @ BRENT	Fair	80	No	6	5	6	29.86	N
019B00041L	Route On Structure	73.39	KY 8	Fair	80.5	No	7	5	7	72.5	N
019B00041R	Route On Structure	73.39	KY 8	Fair	91.5	No	7	7	6	72.5	N
019B00043L	Route On Structure	74.88	I-471 N.B.	Fair	75.3	No	6	6	5	60	N
019B00043R	Route On Structure	74.81	I471NB&RMP E&UNDR RMP D	Fair	86.3	No	6	6	6	60	N
019B00044L	Route On Structure	75.06	I471SB&RMP F&UNDR RMP B	Fair	87.8	No	7	6	6	60	N
019B00044R	Route On Structure	75.01	I-471 SB	Fair	85.1	No	7	6	6	60	N
019B00046L	Route On Structure	75.45	RELOCATD THREE MILE RD	Fair	94	No	6	7	6	39.7	N
019B00046R	Route On Structure	75.41	RELOC. THREE MILE RD.	Good	96	No	7	7	7	60	N
019B00048L	Route On Structure	77.10	KY 9	Fair	92	No	6	7	6	62	N
019B00048R	Route On Structure	77.10	KY 9	Fair	80.9	No	7	7	5	62	N
059B00052L	Route On Structure	77.66	CSX RR-KY 177-LICKNG RVR	Fair	92	No	6	6	6	37.73	N
059B00052R	Route On Structure	77.66	CSX RR-KY 177-LICKNG RVR	Fair	92	No	6	7	6	37.73	N
059B00059L	Route On Structure	82.50	US 25 & US 42	Fair	94	No	7	7	6	38	N
059B00059R	Route On Structure	82.51	US 25 & US 42	Fair	98	No	6	7	6	26.58	N
059B00062L	Route On Structure	80.67	HORSEBRANCH ROAD	Fair	89	No	7	6	7	38	N
059B00062R	Route On Structure	80.68	HORSEBRANCH ROAD	Fair	89	No	7	6	7	38	N
059B00063L	Route On Structure	79.97	CSX RR-KY 17-BANKLICK CR	Fair	88	No	7	6	6	37.73	N
059B00063R	Route On Structure	79.99	CSX RR-KY 17-BANKLICK CR	Fair	88	No	7	6	6	38	N

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
019B00037N	One Route Under	US 27	17.75	98.49
	1st Non-Card Route Under	US 27	99.99	63.3
019B00042N	Route On Structure	I-275 RAMP	17.5	60
	2nd Route Under	I-275 RAMP	18.7	60
	1st Route Under	I-275 RAMP	17.5	60
019B00045N	1st Route Under	I-275 RAMP	17.1	24.28
059B00050N	One Route Under	TAYLOR MILL ROAD	15.92	19
	3rd Non-Card Route On	TAYLOR MILL ROAD	15.92	19
	1st Non-Card Route Under	TAYLOR MILL ROAD	15.92	19
	2nd Non-Card Route On	TAYLOR MILL ROAD	14.83	38
059B00051N	3rd Route Under	TURKEYFOOT ROAD	15.17	38
	1st Non-Card Route Under	TURKEYFOOT ROAD	15.17	38
	1st Route Under	TURKEYFOOT ROAD	14.9	37.73
	2nd Route Under	TURKEYFOOT ROAD	14.83	38
059B00055N	Route On Structure	I-75 N RAMP	16	35
	3rd Route Under	I-75 N RAMP	16.33	19.69
059B00056N	1st Non-Card Route Under	I-75 S RAMP	15	37.73
	Route On Structure	I-75 S RAMP	15	37.73
	2nd Route Under	I-75 S RAMP	15.08	37.73
	3rd Route Under	I-75 S RAMP	15.08	37.73
059B00057N	3rd Route Under	ERLANGER-CRESCENT	16.17	38.75
	1st Non-Card Route Under	ERLANGER-CRESCENT	23.11	38
	1st Route Under	ERLANGER-CRESCENT	23.11	38.75
	2nd Route Under	ERLANGER-CRESCENT	16.17	38
059B00058N	1st Non-Card Route Under	NS (CNO&TP) SYSTEM	16.92	38
	One Route Under	NS (CNO&TP) SYSTEM	16.92	38

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-71 to US 25	100,000	5,000	5%
From US 25 to KY 1303	65,000	4,000	6%
From KY 1303 to KY 17	94,000	5,000	5%
From KY 17 to Taylor Mill Rd	85,000	5,000	6%
From Taylor Mill Rd to KY 9	101,000	5,000	5%
From KY 9 to 3 Mile Rd	84,000	4,000	5%
From 3 Mile Rd to I-471	76,000	4,000	5%
From I-471 to Ohio state line	75,000	4,000	5%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	40’-80’	10’	101,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data.

Safety: 24.1% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and four Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				EB	**WB**	**EB**	**WB**
I-275 mainline from I-71 to US 25 (MP 82.8 to 83.2)	Ramp metering at non-system interchanges	N/A	Improve safety and mobility along I-275.	D	C	D	C
I-275 mainline from US 25 to KY 1303 (MP 81.6 to 83.2)				C	C	C	C
I-275 mainline from KY 1303 to KY 17 (MP 80.2 to 81.6)				D	D	D	D
I-275 mainline from KY 17 to Taylor Mill Rd (MP 79.1 to 80.2)				C	D	C	C
I-275 mainline from Taylor Mill Rd to KY 9 (MP 77.4 to 78.4)				E	D	D	D
I-275 mainline from KY 9 to 3 Mile Rd (MP 75.8 to 77.1)				D	D	C	C
Entire Corridor (MP 73.1 to 83.2)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[2]	N/A	Improve safety and mobility along I-275.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

2) DMS will be at the following locations: in the EB direction before exits at US 25, KY 17, KY 16 and KY 9; in the WB direction before exits at KY 9, KY 16, KY 17, KY 1303, and I-71/75.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
US 25 (I-275 EB off-ramp)
I-275/KY 17 Interchange
Taylor Mill Rd (I-275 WB off-ramp)
I-275/KY 9 Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
019B00040L	73.2	OHIO RIVER @ BRENT	Bridge Rating
019B00040R	73.2	OHIO RIVER @ BRENT	Bridge Rating
019B00041L	73.39	KY 8	Bridge Rating
019B00043L	74.88	I-471 N.B.	Bridge Rating
019B00048R	77.1	KY 9	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.119). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Before and after all non-system interchanges	High volumes of traffic entering and exiting freeway, congestion, incidents	Centralized Ramp Meter system, Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	KY 9 to 3 Mile Road & Approach to Ohio River Bridge	Horizontal and Vertical Curvature, Lack of Signage, Insufficient deceleration lengths	HFST, Improve Signage, Increase deceleration lengths, Queue Warning, Comparative Travel Times
	MP 80.415-82.658 MP 77.295-78.358 MP 75.324-75.757 MP 73.061-73.558	Roadway departure crashes due to vertical/horizontal curvature and lack of guardrails/rumble strips	Install guardrail and/or rumble strips
CAT3: Spot locations with history of severe crashes	I-471 to I-275 WB, I-75/71 to Ohio River Bridge	Driver Confusion	Restripe by narrowing I-275 WB through the interchange to 2 lanes and make I-471 2 lanes, Speed Warning Signs, acceleration/ deceleration lane improvements

Proposed Phasing: The proposed interchange modification at KY 17 and KY 9 can be two separate phases. All the other spot improvements at interchanges (e.g., interchange single ramp improvement, ramp metering, DMS etc.) can be done at the same time. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of hazardous waste sites and underground storage tank sites, clusters can be found near interchanges. One National Register of Historic Place, Amos Shinkle Summer Residence (near Lakeside Park), is located within the corridor. Wooded area can be found along the corridor. One karst is located west of Highland Heights. Special Waters can be found at the east portion of the corridor, near the Ohio River.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns				
Environmental Red Flag Features	**I-275/US 25 Interchange**	**I-275/KY 17 Interchange**	**I-275/Taylor Mill Rd Interchange**	**I-275/KY 9 Interchange**
Superfunds	N	N	N	N
Special Waters[1]	N	N	N	N
Forested Areas	N	Y	Y	Y
NLEB Habitat Priority	N	N	N	N
IB Habitat Priority Area	N	N	N	N
FAA Airport Runways	N	N	N	N
Public Hunting Areas	N	N	N	N
Wildlife Management Areas	N	N	N	N
Local Parks	N	N	N	N
State/ National Parks	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N
Land and Water Conservation Fund	N	N	N	N
Area Landmarks	Y	N	N	N
Point Landmarks	Y	Y	N	N
National Register of Historic Places Location (Point)	Y	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-275/US 25 Interchange	Adding a lane on I-275 eastbound off-ramp	Likely Not
I-275/KY 17 Interchange	Interchange modification	Yes
I-275/Taylor Mill Rd Interchange	Adding a lane on I-275 westbound off-ramp	No
I-275/KY 9 Interchange	Interchange modification	Yes
From I-71/75 to Ohio State Line (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From I-71/75 to Ohio State Line (entire corridor)	Traffic Incident Management throughout	No
At all non-system interchanges	Ramp metering	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	13.1 ($M)
ROW:	4.6 ($M)
Utility:	2.6 ($M)
Construction:	125.6 ($M)
Subtotal:	**145.8 ($M)**

TSMO Strategies

Ramp Metering - Traffic responsive centralized	3.3 ($M)
Dynamic Message Sign:	3.6 ($M)
Subtotal:	**6.9 ($M)**

TOTAL COST = 152.7 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-471
Segment ID: 2
From: I-275
To: Ohio State Line
Counties: Campbell
Highway District(s): 6

CORRIDOR SEGMENT OVERVIEW

Corridor 2 on I-471 extends from I-275 to the Ohio state line in Campbell County. The corridor is approximately 5.0 miles long and contains five interchanges.

The portion of I-471 from I-275 to US 27 passes through clustered subdivisions and pockets of multifamily housing in Campbell County. These areas are considered as suburban according to KYSTMv19. The northern portion of the corridor from US 27 to the Ohio state line traverses moderate to high density detached housing, institutional uses, and a large shopping center in Campbell County and Newport, KY. These areas are considered as dense urban according to KYSTMv19.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-275 to KY 1120	Interstate	6, 12’	10’	Concrete Barrier (40’)	65 mph
From KY 1120 to Ohio state line	Interstate	6, 12’	10’	Concrete Barrier (20’)	65 mph

Right of Way: The existing right of way is generally 175’ – 205’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.409, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-275	All Directional Four Leg
US 27 (Alexandria Pike)	Diamond
KY 1892(N Grand Ave)	Diamond and Directional
KY 1120 (E 10th St)	Diamond
Dave Cowens Dr	Partial Cloverleaf

Bridges: The tables below outline the detailed information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
019B00039L	Route On Structure	4.89	ROCK QUARRY ROAD	Fair	55	No	N	N	N	44.95	5
019B00039R	Route On Structure	4.89	OHIO RIVER	Fair	46	No	6	5	6	34.4	N
019B00049L	Route On Structure	1.77	US 27	Fair	98	No	7	6	6	23.29	N
019B00049R	Route On Structure	1.74	US 27	Fair	98	No	7	6	6	23.29	N
019B00052L	Route On Structure	3.24	KY 1892-GRAND AVE & RMP	Fair	87	No	6	6	5	74	N
019B00052R	Route On Structure	3.21	KY 1892-GRAND AVE &RAMP	Fair	87	No	7	5	5	61.7	N
019B00053L	Route On Structure	3.51	CHESAPEAKE AVE	Fair	98	No	7	7	6	61.7	N
019B00053R	Route On Structure	3.49	CHESAPEAKE AVE	Fair	98	No	7	7	6	34.78	N
019B00056L	Route On Structure	4.73	6TH ST IN NEWPORT	Fair	64.8	No	6	5	6	62.17	N
019B00056R	Route On Structure	4.28	6TH ST IN NEWPORT	Fair	92.4	No	6	6	7	62.17	N
019B00082L	Route On Structure	4.73	KY 8	Fair	62	No	7	6	6	30	N
019B00082R	Route On Structure	4.73	KY 8	Fair	62	No	7	6	6	35.1	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
019B00050N	One Route Under	HIGHLAND AVE	16.58	91.58
	1st Non-Card Route Under	HIGHLAND AVE	17.25	91.58
019B00045N	1st Route Under	I-275 RAMP	17.1	24.28
	1st Non-Card Route Under	I-275 RAMP	14	44
	Route On Structure	I-275 RAMP	17.1	24.28
	2nd Route Under	I-275 RAMP	16.5	24.28
019B00044R	Route On Structure	I-275EB	17	60
	One Route Under	I-275EB	17	60
019B00043R	1st Route Under	I-275 EB	17	60
	1st Non-Card Route On	I-275 EB	16.08	76
	Route On Structure	I-275 EB	17	60
	2nd Route Under	I-275 EB	16.08	76
019B00054N	One Route Under	KY-1120	17.33	34.78
	1st Non-Card Route Under	KY-1120	17.08	63.42

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
019B00055N	One Route Under	CSX RR	16.08	63.42
	1st Non-Card Route Under	CSX RR	16.08	60
019B00044L	One Route Under	I-275WB	15.5	60
	Route On Structure	I-275WB	15.33	60
	1st Non-Card Route Under	I-275WB	15.33	60
019B00043L	Route On Structure	I-275 WB	21.5	60
	One Route Under	I-275 WB	21.5	60
019B00042N	Route On Structure	I-275 RAMP	17.5	60
	2nd Route Under	I-275 RAMP	18.7	60
	1st Route Under	I-275 RAMP	17.5	60
	3rd Route Under	I-275 RAMP	18.7	60
	1st Non-Card Route Under	I-275 RAMP	16.5	72.5

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-275 to US 27	96,000	4,000	4%
From US 27 to KY 1892	79,000	3,000	4%
From KY 1892 to KY 1120	85,000	3,000	4%
From KY 1120 to Dave Cowens Dr	87,000	6,000	7%
From Dave Cowens Dr to Ohio state line	97,000	7,000	7%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	20’ or 40’	10’	105,000

1) The highest traffic volume within the bottleneck based on KYTC traffic count data.

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
From I-275 to US 27 (MP 0.5 to 1.5)	Ramp metering at non-system interchanges; Part time hard shoulder running in the Southbound direction (general purpose lane)	N/A	Improve safety and mobility along I-471.	D	D	D	C
From US 27 to KY 1892 (MP 2.2 to 2.7)				B	B	B	B
From KY 1892 to KY 1120 (MP 3.4 to 3.5)				B	B	B	B
From KY 1120 to Dave Cowens Dr (MP 4.0 to 4.4)				B	C	B	B
From Dave Cowens Dr to Ohio state line (MP 4.7 to 5.0)				C	C	B	C

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
019B00039L	4.89	ROCK QUARRY ROAD	Bridge Rating
019B00039R	4.89	OHIO RIVER	Bridge Rating
019B00052L	3.24	KY 1892-GRAND AVE & RMP	Bridge Rating
019B00052R	3.21	KY 1892-GRAND AVE &RAMP	Bridge Rating
019B00056L	4.73	6TH ST IN NEWPORT	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.409). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-275 to Ohio state line (entire corridor)	Close spacing of interchanges and congestion causing side-swipe and rear end crashes.	Ramp Metering at all non-system interchanges
CAT2: Other major clusters of safety issues	Ohio State Line to I-275 (entire corridor)	Close spacing of interchanges and congestion causing side-swipe and rear end crashes.	Queue warning, DMS, CCTV at each interchange, Re-assess striping along corridor to remove unnecessary bottlenecks, Traffic Incident Management
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed spot improvements at interchanges (e.g., ramp metering, Dynamic Message Signs, etc.) can be done at the same time when implementing part time hard shoulder running in the southbound direction.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites and hazardous waste sites throughout the corridor. One local park, Riddle View Park, is north of the Southgate neighborhood. A Land and Water Conservation Fund, Southgate Tennis Courts, is in the Newport neighborhood. One National Register of Historic Places Location (point), Bellevue, is in the Newport neighborhood. Four National Register of Historic Places Location (polygon), Taylor's Daughters Historic District, Mansion Hill Historic District, East Newport Historic District, Cote Brillante Historic District, are all located around the Newport neighborhood. Wooded area can be found along the corridor. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**Entire Corridor**
Superfunds	N
Special Waters[1]	N
Forested Areas	Y
NLEB Habitat Priority	N
IB Habitat Priority Area	N
FAA Airport Runways	N
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	Y
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	Y
Area Landmarks	Y
Point Landmarks	Y
National Register of Historic Places Location (Point)	Y
National Register of Historic Places Location (Polygon)	Y

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
At all non-system interchanges	Ramp metering	No
I-471 mainline Southbound	Part Time Hard Shoulder Running	Potentially

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0 ($M)
ROW:	0 ($M)
Utility:	0 ($M)
Construction:	0 ($M)
Subtotal:	**0 ($M)**

TSMO Strategies

Ramp Metering - Traffic responsive centralized	2.0 ($M)
Part-time Shoulder Use (GP):	1.5 ($M)
Subtotal:	**3.5 ($M)**

TOTAL COST = 3.5 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-75
Segment ID: 3A
From: Tennessee State Line
To: KY 21 in Berea
Counties: Whitley, Laurel, Rockcastle, Madison
Highway District(s): 7, 8, 11

CORRIDOR SEGMENT OVERVIEW

Corridor 3A on I-75 extends from the Tennessee state line to KY 21 in Berea. The corridor is approximately 75.7 miles long and passes through Whitley, Laurel, Rockcastle, and Madison Counties. The corridor includes ten interchanges.

The portion from the Tennessee state line to Corbin in Whitely County is classified as rural by the KYSTMv19 data, passing through sparsely populated areas and small towns. The portion from Corbin, in Whitely County, to northwest of London, in Laurel County, is considered as rural town/exurban by the KYSTMv19 data, traversing lightly populated areas and commercial areas on the outskirts of London. From London to just south of the Madison County line in Rockcastle County, the corridor is categorized as rural, running across the edges of Pittsburg, East Bernstadt, and Mt. Vernon. The remainder of this corridor is considered rural town/exurban as it approaches north and terminates in Berea in Madison County.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From Tennessee State Line to KY Weight Station (MP 33.0)	Interstate	4, 12’	10’	Depressed (60’)	70 mph
From KY Weight Station (MP 33.0) to KY 192 in London	Interstate	6, 12’	10’	Concrete Barrier (31’)	70 mph
From KY 192 to KY 80 (W Hal Rogers Pkwy) in London	Interstate	8, 12’	10’	Concrete Barrier (31’)	70 mph
From KY 80 (W Hal Rogers Pkwy) in London to KY 21 in Berea	Interstate	4-6, 12’	10’-14’	Concrete Barrier (31’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
Tennessee state line	US 25 W (Sukey Hollow Rd) in Williamsburg	230’ - 280'
US 25 W (Sukey Hollow Rd) in Williamsburg	KY 628 (Wolf Creek Rd) in Williamsburg	285 - 320'
KY 628 (Wolf Creek Rd) in Williamsburg	KY 21 (Chestnut St) in Berea	220 - 280'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.228, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 92	Single-point Urban Interchange (SPUI)
US 25W (Cumberland Falls Hwy (South))	Diamond
US 25W (Cumberland Falls Hwy (North))	Diamond
US 25E (W Cumberland Gap Pkwy)	Diamond
KY 192 (W Laurel Rd)	Diamond
KY 80 (W Hal Rogers Pkwy)	Diamond
KY 909 (Rockcastle River Forestry Rd)	Diamond
US 25 (S Wilderness Rd)	Diamond
US 25 (Richmond St)	Diamond
KY 21 (Chestnut St)	Diamond

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	**On_Under**	**Mile Point**	**Feature Intersect**	**NBIS Classification**	**Sufficiency Rating**	**Substandard**	**Deck Rating**	**Superstructure Rating**	**Substructure Rating**	**Horizontal Clearance (feet)**	**Culvert Rating**
063B00037L	Route On Structure	42.36	KY 2041	Fair	86	No	7	5	5	25	N
063B00037R	Route On Structure	42.36	KY 2041	Fair	86	No	6	5	5	28.22	N
063B00039L	Route On Structure	28.86	US25E	Fair	85.8	No	7	6	5	28.22	N
063B00039R	Route On Structure	28.87	US25E	Fair	85.8	No	7	6	5	28.22	N
063B00041L	Route On Structure	41.93	WOOD CREEK	Fair	84	No	5	6	5	25.92	N
063B00041R	Route On Structure	41.93	WOOD CREEK	Fair	85	No	6	5	6	25.92	N
063B00105N	1st Non-Card Route On	39.15	KY 3432(PARKER ROAD	Good	93.2	No	7	8	7	38.3	N

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
	Route On Structure	39.15	KY 3432(PARKER ROAD	Good	93.2	No	7	8	7	38.3	N
063B00111L	Route On Structure	33.16	Little Laurel River	Good	98	No	8	8	8	29.86	N
063B00111R	Route On Structure	33.16	LITTLE LAUREL RIVER	Good	91.9	No	7	7	7	29.86	N
063B00114N	Route On Structure	50.74	OVER ROCKCASTLE RIVER	Good	64	No	7	7	7	27.89	N
	1st Non-Card Route On	50.74	OVER ROCKCASTLE RIVER	Good	64	No	7	7	7	27.89	N
063B00125N	Route On Structure	30.60	Laurel River	Good	79	No	8	8	8	27.89	N
102B00040R	Route On Structure	72.33	FLAT GAP ROAD	Fair	61	No	N	N	N	43	6
102B00041L	Route On Structure	72.37	FLAT GAP ROAD	Fair	61	No	N	N	N	43	6
102B00042N	1st Non-Card Route On	71.20	LAMBERT ROAD	Fair	50	No	N	N	N	41.99	5
	Route On Structure	71.19	LAMBERT ROAD	Fair	50	No	N	N	N	41.99	5
102B00043N	1st Non-Card Route On	68.94	CLAY LICK BRANCH	Fair	50.5	No	N	N	N	23.95	6
	Route On Structure	68.94	CLAY LICK BRANCH	Fair	50.5	No	N	N	N	23.95	6
102B00076N	1st Non-Card Route On	62.67	Green Hill Road	Good	83	No	8	7	7	37.73	N
	Route On Structure	62.67	Green Hill Road	Good	83	No	8	7	7	37.73	N
102B00077N	Route On Structure	62.03	US-25	Good	84	No	8	7	7	30.25	N
	1st Non-Card Route On	62.02	US-25	Good	84	No	8	7	7	30.25	N
102B00078N	Route On Structure	58.98	US-25	Good	85.4	No	8	8	8	38.16	N
118B00045L	Route On Structure	14.56	CUMBERLAND R.& CROLEY RD	Fair	64.8	No	6	5	6	29.86	N
118B00045R	Route On Structure	14.56	CUMBERLAND R -- CROLEY R	Fair	63.6	No	5	5	5	29.86	N
118B00046L	Route On Structure	17.33	KY 836	Fair	95.2	No	6	6	6	38	N
118B00046R	Route On Structure	17.34	KY 836	Fair	95.2	No	6	6	6	38	N
118B00047N	1st Non-Card Route On	20.31	KY 3000-TIDAL WAVE RD	Fair	55	No	N	N	N	42	5
	Route On Structure	20.31	KY 3000-TIDAL WAVE RD	Fair	55	No	N	N	N	38	5
118B00049N	Route On Structure	23.55	BACON CRK-CORINTH RD	Fair	55	No	N	N	N	42	5
	1st Non-Card Route On	23.56	BACON CRK-CORINTH RD	Fair	55	No	N	N	N	29.86	5
118B00050L	Route On Structure	24.67	US 25W	Fair	93.1	No	6	6	6	29.86	N
118B00050R	Route On Structure	24.67	US 25W	Fair	96.1	No	6	6	6	29.86	N
118B00051L	Route On Structure	25.91	KY727-BARTON RD-WCL CORB	Fair	97.1	No	7	7	6	29.86	N
118B00051R	Route On Structure	25.93	KY 727-BARTON RD-WCL C	Fair	97.1	No	7	7	6	47.9	N
118B00053L	Route On Structure	1.01	KY 1804	Fair	66	No	5	5	5	29.86	N
118B00053R	Route On Structure	1.01	KY 1804	Fair	66	No	5	6	5	29.86	N
118B00054L	Route On Structure	1.88	SANDY FLAT ROAD	Fair	85.3	No	6	6	5	27.89	N
118B00054R	Route On Structure	1.87	SANDY FLAT ROAD	Fair	85.3	No	6	6	5	27.89	N
118B00055L	Route On Structure	3.18	US 25W	Fair	68	No	5	5	7	29.86	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
118B00055R	Route On Structure	3.18	US 25W	Fair	68	No	5	6	5	29.86	N
118B00056L	Route On Structure	7.89	KY 2986-CANE CREEK RD	Fair	84.3	No	6	6	5	25.92	N
118B00056R	Route On Structure	7.88	KY 2986-CANE CREEK RD	Fair	84.3	No	6	6	5	25.92	N
118B00057L	Route On Structure	0.80	CSX RAILROAD	Fair	61.9	No	6	6	5	26	N
118B00057R	Route On Structure	0.80	CSX RAILROAD	Fair	62.9	No	6	6	5	26	N
118B00058L	Route On Structure	1.34	CLEAR FORK RIVER	Fair	79.2	No	6	6	6	25.92	N
118B00058R	Route On Structure	1.33	CLEAR FORK RIVER	Fair	79.2	No	5	6	6	25.92	N
118B00059L	Route On Structure	2.49	CLEAR FORK RIVER	Fair	79.2	No	5	6	6	25.92	N
118B00059R	Route On Structure	2.50	CLEAR FORK RIVER	Fair	79.2	No	5	6	6	25.92	N
118B00060L	Route On Structure	5.59	WOLF CREEK	Fair	69	No	6	5	6	41.99	N
118B00060R	Route On Structure	5.57	WOLF CREEK	Fair	80.2	No	6	6	6	41.99	N
118B00061N	1st Non-Card Route On	10.96	BRIER CREEK	Fair	79.3	No	N	N	N	38.06	6
	Route On Structure	10.96	BRIER CREEK	Fair	79.3	No	N	N	N	40	6
118B00062N	1st Non-Card Route On	17.16	BLAKE FORK CREEK	Fair	71.5	No	N	N	N	32.33	6
	Route On Structure	17.17	BLAKE FORK CREEK	Fair	71.5	No	N	N	N	32.17	6
118B00063L	Route On Structure	27.92	LYNN CAMP CREEK	Fair	68.7	No	6	5	6	30.18	N
118B00063R	Route On Structure	27.92	LYNN CAMP CREEK	Fair	68.7	No	6	5	6	30.18	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
063B00029N	One Route Under	KY-552	17	64.96
	1st Non-Card Route Under	KY-552	17	64.96
063B00032N	One Route Under	KY-363	17.58	64.9
	1st Non-Card Route Under	KY-363	17.58	64.9
063B00036N	1st Non-Card Route Under	KY-909	17	25
	One Route Under	KY-909	17	25
063B00048N	1st Non-Card Route Under	US-25	16.08	26.25
	One Route Under	US-25	16.08	26.25
063B00049N	One Route Under	US-25	16.11	38.3
	1st Non-Card Route Under	US-25	16.08	26.25
063B00106N	1st Non-Card Route Under	KY-192	16.08	29.86
	One Route Under	KY-192	16.08	29.86
063B00107N	1st Non-Card Route Under	KY-80	16.08	29.86
	One Route Under	KY-80	16.08	29.86
	1st Non-Card Route Under	KY-21	24.45	33.79

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	One Route Under	KY-21	16.16	29.86
102B00061N	1st Non-Card Route Under	CUT GAP RD	15.75	25.92
	One Route Under	CUT GAP RD	15.75	25.92
102B00071N	One Route Under	KY-3275	13.82	38
102B00072N	One Route Under	KY-1505	15.6	38.05
118B00010N	1st Non-Card Route Under	KY-511	18.33	42
	One Route Under	KY-511	18.33	30
118B00015N	1st Non-Card Route Under	OLD BARTON MILL RO	17.08	42
	One Route Under	OLD BARTON MILL RO	17.08	58
118B00030N	1st Non-Card Route Under	US-25W	17.4	30.18
	One Route Under	US-25W	18.02	30.18
118B00048N	1st Non-Card Route Under	EATONTOWN SCHOOL R	17	24
	One Route Under	EATONTOWN SCHOOL R	17	38
118B00085N	1st Non-Card Route Under	KY-628	17.58	30
	One Route Under	KY-628	17.58	30
118B00089N	1st Non-Card Route Under	KY 296	15.83	26
	One Route Under	KY 296	15.83	26
118B00091N	1st Non-Card Route Under	GORDON HILL PKE /	16.17	29.86
	One Route Under	GORDON HILL PKE /	16.17	29.86
118B00123N	1st Non-Card Route Under	KY-92	16.5	26
	One Route Under	KY-92	16.5	26

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From Tennessee state line to KY 92	30,000	8,000	27%
From KY 92 to US 25W (South)	37,000	9,000	23%
From US 25W (South) to US 25W (North)	37,000	8,000	22%
From US 25W (North) to US 25E	38,000	9,000	23%
From US 25E to KY 192	39,000	10,000	26%

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 192 to KY 80	49,000	11,000	23%
From KY 80 to KY 909	41,000	10,000	24%
From KY 909 to US 25 (S Wilderness Rd)	40,000	10,000	24%
From US 25 (S Wilderness Rd) to US 25 (Richmond St)	35,000	9,000	26%
From US 25 (Richmond St) to KY 21 in Berea	39,000	9,000	24%

1,2) Rounded to the nearest thousand.

Mobility: There's no major potential traffic bottleneck sections along this corridor segment. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.)

Safety: 14.2% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently four CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
Entire Corridor (MP 0 to 75.7)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[2]	N/A	Improve safety and mobility along I-75.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

2) DMS will be at the following locations: in the NB direction before exits at KY 92, US 25W Williamsburg, US 25E, rest area/weigh station, KY 80, KY 909, US 25/US 150, US 25/KY 461, KY 21 and at MP 68.4; in the SB direction before exits at US 25/KY 461, US 25/US 150, KY 909, KY 80, KY 192, rest area/weigh station, US 25E, US 25W Corbin, US 25W Williamsburg, KY 92, and at MP 68.4 and before the Tennessee State Line.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
KY 80 (I-75 NB off-ramp)
KY 21 (I-75 SB off-ramp)

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
063B00037L	42.36	KY 2041	Bridge Rating
063B00037R	42.36	KY 2041	Bridge Rating
063B00039L	28.86	US25E	Bridge Rating
063B00039R	28.87	US25E	Bridge Rating
063B00041L	41.93	WOOD CREEK	Bridge Rating
063B00041R	41.93	WOOD CREEK	Bridge Rating
102B00040R	72.33	FLAT GAP ROAD	Bridge Rating
102B00041L	72.37	FLAT GAP ROAD	Bridge Rating
102B00042N	71.2	LAMBERT ROAD	Bridge Rating
	71.19	LAMBERT ROAD	Bridge Rating
102B00043N	68.94	CLAY LICK BRANCH	Bridge Rating
	68.94	CLAY LICK BRANCH	Bridge Rating
118B00045L	14.56	CUMBERLAND R.& CROLEY RD	Bridge Rating
118B00045R	14.56	CUMBERLAND R --CROLEY R	Bridge Rating
118B00047N	20.31	KY 3000-TIDAL WAVE RD	Bridge Rating
	20.31	KY 3000-TIDAL WAVE RD	Bridge Rating
118B00049N	23.55	BACON CRK-CORINTH RD	Bridge Rating
	23.56	BACON CRK-CORINTH RD	Bridge Rating
118B00053L	1.01	KY 1804	Bridge Rating
118B00053R	1.01	KY 1804	Bridge Rating
118B00054L	1.88	SANDY FLAT ROAD	Bridge Rating
118B00054R	1.87	SANDY FLAT ROAD	Bridge Rating
118B00055L	3.18	US 25W	Bridge Rating
118B00055R	3.18	US 25W	Bridge Rating
118B00056L	7.89	KY 2986-CANE CREEK RD	Bridge Rating
118B00056R	7.88	KY 2986-CANE CREEK RD	Bridge Rating
118B00057L	0.8	CSX RAILROAD	Bridge Rating
118B00057R	0.8	CSX RAILROAD	Bridge Rating
118B00058R	1.33	CLEAR FORK RIVER	Bridge Rating
118B00059L	2.49	CLEAR FORK RIVER	Bridge Rating
118B00059R	2.5	CLEAR FORK RIVER	Bridge Rating
118B00060L	5.59	WOLF CREEK	Bridge Rating
118B00061N	10.96	BRIER CREEK	Bridge Rating
	10.96	BRIER CREEK	Bridge Rating
118B00062N	17.16	BLAKE FORK CREEK	Bridge Rating
	17.17	BLAKE FORK CREEK	Bridge Rating
118B00063L	27.92	LYNN CAMP CREEK	Bridge Rating
118B00063R	27.92	LYNN CAMP CREEK	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.228). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire corridor	Congestion, incidents	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	Entire corridor	Short merging sections, long sections without interchanges and parallel route management	Queue Warning, Incident Management, Increase Acceleration/Deceleration lanes
	Tennessee State Line to MP 24.373	Truck route and vehicle weaving	Add a lane to make a 3-lane cross section in each direction
CAT3: Spot locations with history of severe crashes	MP 1.966-2.500	Roadway departure due to vertical/horizontal curvature	Install Guardrail

Proposed Phasing: The proposed spot improvements at interchanges (e.g., interchange modification, Dynamic Message Signs, increasing acceleration/deceleration lanes, etc.) could be phased geographically (e.g., by KYTC District). A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Several underground storage tank sites, oil/gas wells, and five hazardous waste sites, mostly found around interchanges, towns and cities are located along the corridor. Four Karsts are located west of Mount Vernon and two are located northeast of Lake Linville. Permitted Mine Boundaries can be found throughout the corridor; several can be found from Mount Vernon to the southernmost portion of the corridor. Two local parks are located along the corridor, Miller Park is located west of Corbin and Hal Rodgers Waterpark is located southwest of Williamsburg. Four Land and Water Conservation Fund sites, White Plains Park (northeast of I-169/US 62 interchange, Trail of Tears Park (east of Hopkinsville), Trail of Tears (east of Hopkinsville), Lafayette Community Park (southeast of Hopkinsville), are located along the corridor. A local trail, Shelltowee Trace Walking Trail is located near I-75/KY-909 interchange. Multiple Frontier Trails are located along the corridor; Wilderness Road passes through the corridor north of London and again south of Mount Vernon, Skaggs Trace crosses the corridor north of Woods Creek Lake, and Boones Trace runs along the corridor south of Berea. A Blue Water Trail, Rockcastle River, is located northwest of Woods Creek Lake/south of Livingston. Forested areas are located throughout the corridor. A National Register of Historic Places Location (point), Bennett Hiatt Long House, is located east of Lake Linville. There is Known Summer 1 habitat for the Northern Long-eared Bat (NLEB) in Madison, Laurel, and Whitley Counties. There is Known Summer 2 habitat and Known Summer 1 + Swarming 2 habitat for the NLEB in Rockcastle County. There is Known Summer 1 + Swarming 2 habitat and Known Swarming 2 habitat for the NLEB in Whitley County. There is Known Swarming 1 habitat for the Indiana bat in Madison, Rockcastle, and Laurel Counties. There is Known Swarming 2 habitat for the Indiana bat in Whitley County. Maternity/Reproductive Records of the Gray bat can be found in Madison County and Other Records can be found in Rockcastle and Laurel Counties. There are seven census tracts with greater than 25% of the population living at or below the poverty level. There are Special Waters located throughout the corridor (one west of London, one north of Woods Creek Lake, two northwest of Woods Creek Lake, one east of I-75/1505, four near Cairview Loop Road (located south of Berea)).

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns		
Environmental Red Flag Features	**I-75/KY 80 Interchange**	**I-75/KY 21 Interchange**
Superfunds	N	N
Special Waters[1]	N	N
Forested Areas	N	N
NLEB Habitat Priority	N	N
IB Habitat Priority Area	N	Y
FAA Airport Runways	N	N
Public Hunting Areas	N	N
Wildlife Management Areas	N	N
Local Parks	N	N
State/ National Parks	N	N
Kentucky Heritage Land Conservation Fund	N	N
Land and Water Conservation Fund	N	N
Area Landmarks	N	N
Point Landmarks	N	N
National Register of Historic Places Location (Point)	N	N
National Register of Historic Places Location (Polygon)	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-75/KY 80 interchange	Adding a lane on I-75 northbound off-ramp	Yes
I-75/KY 21 interchange	Adding a lane on I-75 southbound off-ramp	No
From Tennessee State Line to KY 21 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From Tennessee State Line to KY 21 (entire corridor)	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	0.4 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	3.9 ($M)
Subtotal:	**4.3 ($M)**
TSMO Strategies	
Dynamic Message Sign:	8.8 ($M)
Subtotal:	**8.8 ($M)**
TOTAL COST =	**13.1 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-75
Segment ID: 3C
From: KY 876 in Richmond
To: Man O War Blvd
Counties: Madison, Fayette
Highway District(s): 7

CORRIDOR SEGMENT OVERVIEW

Corridor 3C on I-75 extends from KY 876 in Richmond (Madison County) to Man O War Blvd in Lexington (Fayette County). The corridor is approximately 21.2 miles long and contains seven interchanges.

The southern portion of the corridor in Madison County passes through residential and commercial areas of Richmond and lightly populated residential areas of the county. These areas are considered as rural or rural town/exurban (according to KYSTMv19 data). The northern portion in Fayette County is largely categorized as rural town/exurban, passing through large-lot agricultural residential areas until reaching Lexington. The stretch from the interchange with KY 418/Athens Boonesboro Rd to the northern terminus passes through commercial and industrial uses on the outskirts of Lexington and moderate to high density detached housing residential areas in Lexington.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From KY 876 in Richmond to Lexington Access Rd (MP 92)	Interstate	6, 12’	10’-14’	Concrete Barrier (31’)	70 mph
From Lexington Access Rd (MP 92) to Igo Rd	Interstate	6, 12’	12’-14’	Depressed (50-100’)[1]	70 mph
From Igo Rd to Man O War Blvd	Interstate	6, 12’	12’-14’	Concrete Barrier (31’)	70 mph

1) Median type and width at the KY 627 (Boonesboro Rd) exit are Concrete Barrier (31’)

Right of Way: The existing right of way is generally 250’ – 300’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.546, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 876	Diamond
US 25 (Lexington Rd)	Partial Cloverleaf
KY 627 (Boonesboro Rd)	Diamond
US 25 (Igo Rd)	Diamond
US 25 (Old Richmond Rd)	Partial Cloverleaf
KY 418 (Athens Boonesboro Rd)	Diamond
KY 1425 (Man O War Blvd)	Partial Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
034B00075N	Route On Structure	100.51	ROCK QUARRY ROAD	Fair	55	No	N	N	N	44.95	5
	1st Non-Card Route On	100.52	ROCK QUARRY ROAD	Fair	55	No	N	N	N	24.93	5
076B00096L	Route On Structure	88.90	KY 169	Good	96.5	No	7	7	7	37.73	N
076B00096R	Route On Structure	88.89	KY 169	Good	96.5	No	7	7	7	29.86	N
034B00153N	Route On Structure	97.78	KY 2328 & KY RIVER	Fair	76	No	6	7	7	29.86	N
	1st Non-Card Route On	97.78	KY 2328 & KY RIVER	Fair	76	No	6	7	7	29.86	N
034B00149L	Route On Structure	107.45	ABANDONED C&O RR	Fair	96.8	No	6	7	6	37.8	N
034B00149R	Route On Structure	107.43	ABANDONED C&O RR	Fair	96.8	No	7	7	6	37.8	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
034B00142N	1st Non-Card Route Under	KY-1425	43.5	40
	1st Route Under	KY-1425	45	40
	2nd Route Under	KY-1425	45	40
076B00123N	One Route Under	KY-627	16.16	33.79
076B00039N	One Route Under	US-25	15.77	23.13
	1st Non-Card Route Under	US-25	17.33	39.11
076B00093N	1st Non-Card Route Under	RICHMOND BYPASS	14.87	37.73
	One Route Under	RICHMOND BYPASS	14.87	37.73
034B00009N	One Route Under	RICHMOND ROAD	14.14	37.74
	1st Non-Card Route Under	RICHMOND ROAD	18	50
034B00008N	One Route Under	RICHMOND ROAD	19.67	45

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	1st Non-Card Route Under	RICHMOND ROAD	18	50
034B00081N	1st Non-Card Route Under	ATHENS WALNUT HILL	20	48
	One Route Under	ATHENS WALNUT HILL	18	24
034B00151N	One Route Under	KY-418	14.84	34.87
	1st Non-Card Route Under	KY-418	14.84	34.87
076B00099N	1st Non-Card Route Under	KY-876	22.87	33.34
	One Route Under	KY-876	16.17	29.86

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 876 in Richmond to US 25 (Lexington Rd)	70,000	10,000	14%
From US 25 (Lexington Rd) to KY 627	69,000	11,000	16%
From KY 627 to US 25 (Igo Rd)	63,000	11,000	17%
From US 25 (Igo Rd) to US 25 (Old Richmond Rd)	66,000	11,000	16%
From US 25 (Old Richmond Rd) to KY 418	64,000	11,000	17%
From KY 418 to Man O War Blvd	53,000	10,000	20%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	31’-100’	10’-14’	70,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 16.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
Entire Corridor (MP 87.4 to 108.6)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[2]	N/A	Improve safety and mobility along I-75.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

2) DMS are at the following locations: in the NB direction before the exits at US 25/US 421 Richmond/Irvine, US 25/US 421 Clays Ferry Exit 97, US 25/US 421 Clays Ferry Exit 99, and KY 418; in the SB direction before the exits at US 24/US 421 Clays Ferry Exit 99, US 25/US 421 Clays Ferry Exit 97, KY 627, and KY 876.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
KY 876/I-75 Interchange
US 25/I-75 Interchange
KY 418 (I-75 SB off-ramp)
Man O War Blvd (I-75 SB off-ramp)

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
034B00075N	100.51	ROCK QUARRY ROAD	Bridge Rating
	100.52	ROCK QUARRY ROAD	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.546). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire Corridor	Congestion	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	Entire Corridor	Congestion, Roadway departure due to roadway curvature	Queue Warning, Comparative Travel Times, Install guardrail (MP 97-98)
CAT3: Spot locations with history of severe crashes	Clays Ferry Bridge, US 25 Entrance to I-75 SB	High Speeds, Roadway Curvature, Insufficient Merge Distance	High Friction Surface Treatments (HFST) & Speed Warning Signs, Restripe US 25 Entrance to I-75 southbound

Proposed Phasing: The proposed spot improvements at interchanges (e.g., interchange modification, DMS, etc.) can be done at the same. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated between two cities, Lexington and Richmond. There are three hazardous waste sites located in the northern portion of the corridor, near Lexington. There are underground storage tank sites located throughout the corridor. Two National Register of Historic Places (polygon) are located near I-75/Old Richmond Road interchange: Boone Creek Rural Historic District and Cleveland-Rogers House. Three National Register of Historic Places (point) are located along the corridor. Mt. Pleasant Christian Church and Homeland are located south of I-75/KY 627 interchange and Arlington is located near Richmond. One local trail, Brighton East Trail, is located south of I-75/Man O War Blvd. interchange. One Blue Water Trail, Kentucky River, Pool 9, is located south of I-75/Old Richmond Road interchange. Karsts are common throughout the corridor. One quarry is located north of I-75/Kentucky River. Wooded area can be found along the corridor; most can be found around the Kentucky River. Other Records can be found for the Gray bat in Fayette County. There is one census tract with greater than 25% of the population living at or below the poverty level, and two census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns				
Environmental Red Flag Features	**I-75/KY 876 Interchange**	**I-75/US 25 Interchange**	**I-75/KY 418 Interchange**	**I-75/Man O War Interchange**
Superfunds	N	N	N	N
Special Waters[1]	N	N	N	N
Forested Areas	N	N	N	N
NLEB Habitat Priority	N	N	N	N
IB Habitat Priority Area	N	N	N	N
FAA Airport Runways	N	N	N	N
Public Hunting Areas	N	N	N	N
Wildlife Management Areas	N	N	N	N
Local Parks	N	N	N	N
State/ National Parks	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N
Land and Water Conservation Fund	N	N	N	N
Area Landmarks	N	N	N	N
Point Landmarks	N	N	N	N
National Register of Historic Places Location (Point)	N	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-75/KY 876 interchange	Interchange modification	Yes
I-75/US 25 interchange	Interchange modification	Potentially
I-75/KY 418 interchange	Adding a lane on I-75 southbound off-ramp	No
I-75/Man O War interchange	Adding a lane on I-75 southbound off-ramp	Potentially
From KY 876 to Man O War Blvd (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From KY 876 to Man O War Blvd (entire corridor)	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	13.0 ($M)
ROW:	4.6 ($M)
Utility:	2.6 ($M)
Construction:	124.7 ($M)
Subtotal:	**144.8 ($M)**

TSMO Strategies

Dynamic Message Sign:	3.2 ($M)
Subtotal:	**3.2 ($M)**

TOTAL COST = 148.0 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-75
Segment ID: 3E
From: I-64/I-75 Southern Split
To: I-64/I-75 Northern Split
Counties: Fayette
Highway District(s): 7

CORRIDOR SEGMENT OVERVIEW

Corridor 3E on I-75 extends from the I-64/I-75 south split to the I-64/I-75 north split in Lexington (Fayette County). The corridor is approximately 6.0 miles long and includes four interchanges.

The corridor passes through moderate-dense detached housing and farmland on the northeastern edge of Lexington, with pockets of multifamily housing and office parks between the KY 922 and I-64/I-75 north split interchanges. These areas are considered as suburban according to the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	6, 12’	12’	Concrete Barrier (31’)	70 mph

Right of Way: The existing right of way is generally 215’ – 255’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.078, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-64 (I-75 South Split)	Three Leg Directional
KY 922 (Newtown Pike)	Partial Cloverleaf
US 68 (N Broadway)	Partial Cloverleaf
I-64/I-75 North Split	Trumpet

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
034B00083L	Route On Structure	112.89	N BROADWAY & N LIMESTONE	Fair	84.6	No	6	6	5	63	N
034B00083R	Route On Structure	112.88	CSX RR-N BWAY-N LIMESTON	Fair	83.6	No	6	5	6	63	N
034B00089L	Route On Structure	115.24	NEWTOWN ROAD(KY 922)	Fair	86	No	6	5	5	40	N
034B00089R	Route On Structure	115.23	NEWTOWN ROAD KY 922	Fair	86	No	6	5	5	40	N
034B00094L	Route On Structure	116.11	CANE RUN CREEK	Fair	84.9	No	6	7	5	36	N
034B00094R	Route On Structure	116.14	CANE RUN CREEK	Fair	84.9	No	6	7	5	36	N
034B00127N	Route On Structure	110.90	WB-I64 RMP TO I75-SB	Fair	64.6	No	6	7	6	46	N
034B00126N	Route On Structure	110.89	EB I64 & RMP B-(B-128)	Fair	63	No	5	7	7	30	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
034B00051N	One Route Under	RUSSELL CAVE PIKE	14.82	39.18
	1st Non-Card Route Under	RUSSELL CAVE PIKE	14.82	39.18
034B00048N	1st Non-Card Route Under	BRYAN AVENUE	14.14	37.74
	One Route Under	BRYAN AVENUE	17.33	29.86
034B00002N	2nd Route Under	US-25	16.26	27.89
	1st Non-Card Route Under	US-25	16.33	25.92
	1st Route Under	US-25	16.33	25.92
034B00085N	Route On Structure	S 75 NC	17.08	28
	One Route Under	S 75 NC	16.08	41
	1st Non-Card Route Under	S 75 NC	16.08	41
034B00084N	Route On Structure	N 75 RAMP	16.42	25.5
	One Route Under	N 75 RAMP	17.08	25.5

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-64/I-75 South Split to US 68	92,000	16,000	18%
From US 68 to KY 922	94,000	17,000	18%
From KY 922 to I-64/I-75 North Split	89,000	21,000	24%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	31’	12’	94,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently five CCTV cameras along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
Mainline from I-64/I-75 South Split to US 68 (MP 111.2 to 113.1)	Managed Lanes through Elongated Pavement Markings and Enhanced Signage. Ramp Metering at non-system interchanges	N/A	Improve safety and mobility along I-75.	E	D	F	E
Mainline from US 68 to KY 922 (MP 113.3 to 115.0)	Managed Lanes through Elongated Pavement Markings and Enhanced Signage. Ramp Metering at non-system interchanges. Increase acceleration and deceleration lane lengths			D	E	E	F
Mainline from KY 922 to I-64/I-75 North Split (MP 115.6 to 117.4)	Managed Lanes through Elongated Pavement Markings and Enhanced Signage. Ramp Metering at non-system interchanges			D	D	D	F
Managed lanes throughout (MP 111.2 to 117.4)	Managed Lanes through Elongated Pavement Markings and Enhanced Signage	N/A	Improve safety and mobility along I-75.	N/A	N/A	C	C

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
034B00083L	112.89	N BROADWAY & N LIMESTONE	Bridge Rating
034B00083R	112.88	CSX RR-N BWAY-N LIMESTON	Bridge Rating
034B00089L	115.24	NEWTOWN ROAD (KY 922)	Bridge Rating
034B00089R	115.23	NEWTOWN ROAD KY 922	Bridge Rating
034B00094L	116.11	CANE RUN CREEK	Bridge Rating
034B00094R	116.14	CANE RUN CREEK	Bridge Rating
034B00126N	110.89	EB I64 & RMP B-(B-128)	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.078). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations

with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-64/I-75 South Split to I-64/I-75 North Split (entire corridor)	Congestion and weaving from the merge of two interstates.	Ramp Metering at all non-system interchanges. Extend acceleration and deceleration lane lengths at interchanges. Managed lane.
CAT2: Other major clusters of safety issues	I-64/I-75 South Split to I-64/I-75 North Split (entire corridor)	Congestion and weaving from the merge of two interstates.	DMS and CCTVs between each interchange, Incident Management
CAT3: Spot locations with history of severe crashes	I-75 NB exit ramp to Broadway	25 mph curve on exit ramp	Add curve warning sign.

Proposed Phasing: The proposed managed lanes through elongated pavement markings and enhanced signage and spot improvements at interchanges (e.g., ramp metering, increase acceleration/deceleration lanes, etc.) can be done at the same time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency underground storage tank sites throughout the corridor. One hazardous waste site is located northwest of Cane Run. Two oil/gas wells are located in the southern ¼ portion of the corridor. Karsts can be found throughout the corridor; many can be found near the railroad tracks. The majority of the corridor is located within a wellhead protection area. One local park, Coldstream Park, is located in the southwest quadrant of I-64/I-75 and Newtown Pike interchange. A local trail can be found at this park. One Land and Water Conservation Fund, Winburn Park, is located west of Radcliff neighborhood. Other Records can be found for the Gray bat in Fayette County. Wooded area can be found along the corridor; most can be found at the I-64/I-75 and US 68 interchange and northwest of the interchange. There is one census tract with greater than 25% of the population living at or below the poverty level, and seven census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural

resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**Entire Corridor**
Superfunds	N
Special Waters[1]	N
Forested Areas	N
NLEB Habitat Priority	N
IB Habitat Priority Area	N
FAA Airport Runways	N
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	N
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	N
Area Landmarks	N
Point Landmarks	Y
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
Broadway Interchange and northbound Newtown Pike	Increase acceleration and deceleration lanes	Likely Not
At all non-system interchanges	Ramp metering	No
From I-64/I-75 Southern Split to I-64/I-75 Northern Split	Managed Lanes through Elongated Pavement Markings and Enhanced Signage	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0.0 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	0.0 ($M)
Subtotal:	**0.0 ($M)**

TSMO Strategies

Ramp Metering - Traffic Responsive Centralized:	1.3 ($M)
Increase Acceleration Lane Length:	3.0 ($M)
Increase Deceleration Lane Length:	1.8 ($M)
Elongated Pavement Markings:	0.6 ($M)
Improved Signage:	1.6 ($M)
Subtotal:	**8.3 ($M)**

TOTAL COST = 8.3 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-75
Segment ID: 3F
From: I-64/I-75 Northern Split
To: I-71
Counties: Fayette, Scott, Grant, Kenton, Boone
Highway District(s): 6, 7

CORRIDOR SEGMENT OVERVIEW

Corridor 3F on I-75 extends from I-64/I-75 north split in Lexington (Fayette County) to I-71 in Boone County, passing through Scott, Grant, and Kenton Counties along the way. The corridor is approximately 55.1 miles long and contains 14 interchanges.

The corridor passes through residential and commercial areas of Georgetown in Scott County, Dry Ridge and Crittenden in Grant County, and Walton in Boone County. These areas are considered rural town/exurban (according to the KYSTMv19 data) with clusters of homes and commercial buildings adjacent to I-75. The remainder of this corridor passes through rural agricultural areas with homes interspersed along I-75.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-64/I-75 north split in Lexington to Autumn Ln (MP 132.3)	Interstate	6, 12’	12’-14’	Concrete Barrier (31’)	70 mph
From Autumn Ln (MP 132.3) to Barnes Rd (MP 156.2)	Interstate	6, 12’	10’-14’	Depressed (>31’)	70 mph
From Barnes Rd (MP 156.2) to I-71	Interstate	6, 12’	10’-14’	Concrete Barrier (31’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I/64/I-75 north split	US 62 (Cherry Blossom Way) in Georgetown	240’ - 275'
US 62 (Cherry Blossom Way) in Georgetown	Eagle Springs Rd in Sadieville	290’ - 320'
Eagle Springs Rd in Sadieville	Hickory Rd in Williamstown	375’ - 475'
Hickory Rd in Williamstown	I-71	275’ - 325'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.429, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-64/I-75 north split	Trumpet
KY 1973 (Iron Works Pike)	Diamond
US 460 (Paris Pike)	Half Diamond
US 62 (Cherry Blossom Way)	Diamond
Lexus Wy	Partial Cloverleaf
KY 620 (Cherry Blossom Way)	Diamond
KY 32 (Porter Rd)	Diamond
KY 330 (Owenton Rd)	Diamond
KY 36 (Stewartsville Rd)	Diamond
KY 1560 (Barnes Rd)	Diamond
KY 467 (Broadway St)	Diamond
KY 491	Diamond
KY 16 (Mary Grubbs Hwy)	Diamond
I-71	Trumpet

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	**On_Under**	**Mile Point**	**Feature Intersect**	**NBIS Classification**	**Sufficiency Rating**	**Substandard**	**Deck Rating**	**Superstructure Rating**	**Substructure Rating**	**Horizontal Clearance (feet)**	**Culvert Rating**
034B00078L	Route On Structure	117.98	RELOCATED KEARNEY ROAD	Fair	80.5	No	5	5	5	24.93	N
034B00078R	Route On Structure	117.97	RELOCATED KEARNEY ROAD	Fair	78.4	No	5	5	5	48	N
034B00085N	Route On Structure	117.72	I 64	Fair	46.5	No	5	5	5	28	N
041B00024N	Route On Structure	145.54	THREE FORK CREEK	Fair	78.8	No	N	N	N	99.9	6
	1st Non-Card Route On	145.58	THREE FORK CREEK	Fair	78.8	No	N	N	N	37.73	6
041B00068L	Route On Structure	145.70	RAGTOWN ROAD	Good	96	No	7	8	8	69.55	N

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
041B00068R	Route On Structure	145.66	RAGTOWN ROAD	Good	96	No	7	8	8	90.6	N
105B00066N	Route On Structure	128.28	FK OF DRY RUN	Fair	77.1	No	N	N	N	25.92	6
	1st Non-Card Route On	128.28	FK OF DRY RUN	Fair	77.1	No	N	N	N	25.92	6
105B00067N	Route On Structure	133.90	WOLF BRANCH	Fair	78.6	No	N	N	N	29.86	6
105B00070L	Route On Structure	141.56	SOUTH RAYS FORK	Good	82	No	N	N	N	29.86	7
105B00070R	Route On Structure	141.57	SOUTH RAYS FORK	Good	82	No	N	N	N	24.93	7
105B00071L	Route On Structure	142.80	NORTH RAYS FORK	Fair	82	No	N	N	N	24.93	6
105B00118L	Route On Structure	121.13	CANE RUN	Fair	96.6	No	6	6	6	25.92	N
105B00118R	Route On Structure	121.12	CANE RUN	Fair	96.6	No	6	6	6	25.92	N
105B00119L	Route On Structure	123.90	E MAIN ST EXT	Good	95.6	No	7	7	7	30.51	N
105B00119R	Route On Structure	123.89	E MAIN ST EXT	Fair	95.6	No	7	7	6	30.69	N
105B00120L	Route On Structure	124.36	ELKHORN CREEK	Fair	96.6	No	6	7	6	30.84	N
105B00120R	Route On Structure	124.35	ELKHORN CREEK	Fair	96.6	No	6	6	6	30.84	N
105B00121L	Route On Structure	128.36	NS (CNO&TP) SYSTEM	Fair	85.5	No	6	6	5	30.84	N
105B00121R	Route On Structure	128.37	NS (CNO&TP) SYSTEM	Fair	85.5	No	6	6	5	25.92	N
105B00122L	Route On Structure	131.01	KY 620	Fair	93.1	No	6	7	6	25.92	N
105B00122R	Route On Structure	130.99	KY 620	Fair	93.1	No	6	7	7	23.95	N
105B00123L	Route On Structure	134.37	US 25 & EAGLE CREEK	Fair	96.1	No	6	7	7	23.95	N
105B00123R	Route On Structure	134.37	US 25 & EAGLE CREEK	Fair	96.1	No	6	8	7	30.35	N
105B00124L	Route On Structure	135.16	KY 620 & LITTLE EAGLE CK	Fair	96.1	No	6	7	7	30.35	N
105B00124R	Route On Structure	135.14	KY 620 & LITTLE EAGLE CK	Fair	96.1	No	6	7	7	25.92	N
105B00135L	Route On Structure	138.06	KY 2907 & EAGLE CREEK	Fair	84	No	7	7	5	25.92	N
105B00135R	Route On Structure	138.08	KY 2907 & EAGLE CREEK	Fair	78	No	6	7	6	25.92	N
105B00144L	Route On Structure	142.84	KY 2915 (N. RAYS FK RD)	Good	94.7	No	8	8	7	41.99	N
105B00144R	Route On Structure	142.84	N. RAYS FORK & KY 2915	Fair	97.1	No	7	6	7	30.35	N
105B00145L	Route On Structure	138.78	POKEBERRY ROAD	Good	97.1	No	7	8	7	30.35	N
105B00145R	Route On Structure	138.78	POKEBERRY ROAD	Fair	97.1	No	6	8	8	39.7	N
034B00084N	Route On Structure	117.68	I 64	Fair	84	No	6	7	6	25.5	N
008B00041N	Route On Structure	173.50	CHAMBERS LANE	Fair	55	No	N	N	N	29.86	5
	1st Non-Card Route On	173.46	CHAMBERS LANE	Fair	55	No	N	N	N	30.18	5

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
008R00603N	1st Non-Card Route Under	CR-1128	16.75	29.2
	2nd Route Under	CR-1128	16.67	35.1
	One Route Under	KY-14	18	41.34
	1st Non-Card Route Under	KY-14	18	41.34
008B00042L	1st Non-Card Route Under	I-71 NC	18.5	34
	One Route Under	I-71 NC	18.5	34
	Route On Structure	I-71 NC	17.33	60
008B00042R	1st Non-Card Route Under	I-71	17.33	60
	One Route Under	I-71	15.92	30.25
	Route On Structure	I-71	15.92	30.25
059B00098N	1st Non-Card Route Under	EADS RD	16.08	38.06
	One Route Under	EADS RD	16.08	37.73
041B00048N	One Route Under	KY-491	18	42
	1st Non-Card Route Under	KY-491	18	41.99
041B00051N	One Route Under	KY-2942	17.75	29.86
	1st Non-Card Route Under	KY-2942	15.91	53
041B00050N	1st Non-Card Route Under	KY-1994	16.08	41.99
	One Route Under	KY-1994	17.75	29.86
041B00049N	1st Non-Card Route Under	BANNISTER PIKE	16.29	41.99
	One Route Under	BANNISTER PIKE	16.29	41.99
041B00047N	One Route Under	KY-22	16.16	37.73
	1st Non-Card Route Under	KY-22	16.16	42
041B00070N	1st Non-Card Route Under	BATON ROUGE RD.	16.92	83.5
	One Route Under	BATON ROUGE RD.	16.92	83.5
041B00053N	One Route Under	BARNES PIKE	18.83	56.43
041B00052N	One Route Under	BARNES PIKE	16.08	55.77
041B00007N	1st Non-Card Route Under	KY-36	17.3	27.5
	One Route Under	KY-36	16.35	99.9
041B00060N	One Route Under	EIBECK LANE	17	55.77
	1st Non-Card Route Under	EIBECK LANE	16.67	80.9
041B00061N	One Route Under	KY 2937, HEEKIN RD	16.67	80.9
	1st Non-Card Route Under	KY 2937, HEEKIN RD	17.17	99.9
041B00063N	One Route Under	MASON SIPPLE ROAD	22.08	93.83
041B00062N	One Route Under	MASON-SIPPLE ROAD	29.57	99.9
041B00065N	One Route Under	KY-1993	22	32.13
041B00064N	One Route Under	KY-1993	22.08	93.83
041B00066N	One Route Under	KY-2936	22	24.14
041B00067N	One Route Under	KY-2936	22	69.55
041B00069N	1st Non-Card Route Under	KY-330	16.5	90.6

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	One Route Under	KY-330	16.92	83.5
105B00147N	One Route Under	KY 608	17.25	25.92
105B00146N	One Route Under	KY 608	17.9	39.7
105B00074N	1st Non-Card Route Under	KY-32	14.35	24
	One Route Under	KY-32	14.35	24
105B00077L	1st Non-Card Route Under	KY-620	17.75	29.86
	One Route Under	KY-620	17.75	29.86
105B00107R	1st Non-Card Route Under	KY-620	16.48	25.92
	One Route Under	KY-620	16.48	25.92
105B00152N	1st Route Under	KY 3552 (EAST)	16.92	25.92
	2nd Route Under	KY 3552 (EAST)	16.92	25.92
105B00010L	1st Non-Card Route Under	US 62	17.33	30.51
	One Route Under	US 62	17.33	29.86
105B00108R	1st Non-Card Route Under	CYNTHIANA ROAD	15.54	25.92
	One Route Under	CYNTHIANA ROAD	15.54	25.92
105B00143N	1st Non-Card Route Under	US 460	16.27	25.92
	One Route Under	US 460	17.25	41.99
105B00072N	1st Non-Card Route Under	KY-1962	15.42	25.92
	One Route Under	KY-1962	15.42	25.92
034B00111N	One Route Under	KY-1973	16.25	40
	1st Non-Card Route Under	KY-1973	16.25	40
	1st Non-Card Route Under	US-25	16.11	52.12
	One Route Under	US-25	16.26	27.89

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-64/I-75 north split to KY 1973	54,000	11,000	20%
From KY 1973 to US 460 (Paris Pike)	58,000	11,000	19%
From US 460 (Paris Pike) to US 62	48,000	10,000	21%
From US 62 to Lexus Wy	50,000	11,000	22%
From Lexus Wy to KY 620	49,000	12,000	24%
From KY 620 to KY 32	44,000	11,000	24%
From KY 32 to KY 330	42,000	10,000	24%
From KY 330 to KY 36	38,000	10,000	27%
From KY 36 to Barnes Rd	38,000	10,000	25%
From Barnes Rd to Broadway St	42,000	10,000	23%
From Broadway St to Violet Rd	48,000	9,000	19%
From Violet Rd to KY 16	56,000	9,000	16%
From KY 16 to I-71	67,000	11,000	17%

1,2) Rounded to the nearest thousand.

Mobility: There are two potential traffic bottleneck sections along this corridor. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) Typical roadway attributes of the potential bottleneck area can be found in the table below.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
From I-64/I-75 north split to US 460	Interstate	6, 12’	31’	12’	58,000
From KY 16 in Walton to I-71	Interstate	6, 12’	31’	14’	67,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 5.9% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently three CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
I-75 mainline from KY 16 in Walton to I-71 (MP 171.6 to 172.8)	Adding continuous auxiliary lanes on both directions	4, 12-foot lanes in each direction with 12-foot shoulder and 30.67-foot Flush median	Close spacing between two interchanges may be challenging for weaving; The expected v/c in 2045 is close to the established thresholds.	C	D	C	C
Entire Corridor (MP 117.9 to 172.8)	Traffic incident management, Dynamic Message Signs[4] and CCTV cameras at all interchanges	N/A	Improve mobility and safety along I-75.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) DMS are at the following locations: in the NB direction before the exits at KY 1973, US 460, KY 620, KY 32, KY 330, KY 36, KY 22, KY 491, KY 16, and I-71; in the SB direction before the exits at KY 16, KY 491, KY 22, Barnes Road, KY 330, KY 32, US 62, KY 1973, I-64 WB.

Potential New Interchanges: KYTC Planning Study (Item # 6-80213) recommends a new interchange at I-75/KY 14.

Potential New Interchanges
KY 14

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-64/I-75 north split (SB to EB & WB to NB ramps)
KY 620 (I-75 NB off-ramp)
KY 16/I-75 Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
034B00078L	117.98	RELOCATED KEARNEY ROAD	Bridge Rating
034B00078R	117.97	RELOCATED KEARNEY ROAD	Bridge Rating
034B00085N	117.72	I 64	Bridge Rating & Within Widening Section
041B00024N	145.54	THREE FORK CREEK	Bridge Rating
	145.58	THREE FORK CREEK	Bridge Rating
105B00066N	128.28	FK OF DRY RUN	Bridge Rating
	128.28	FK OF DRY RUN	Bridge Rating
105B00067N	133.9	WOLF BRANCH	Bridge Rating
105B00071L	142.8	NORTH RAYS FORK	Bridge Rating
105B00121L	128.36	NS (CNO&TP) SYSTEM	Bridge Rating
105B00121R	128.37	NS (CNO&TP) SYSTEM	Bridge Rating
105B00135L	138.06	KY 2907 & EAGLE CREEK	Bridge Rating
008B00041N	173.5	CHAMBERS LANE	Bridge Rating
	173.46	CHAMBERS LANE	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.429). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire corridor	Congestion, incidents	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	I-64/I-75 Split to Georgetown, Vertical Curve north of Exit 136, Crittenden Weigh Station to I-71	Congestion, Poor lighting, Roadway curvature	Queue Warning, Incident Management, HFST north of Exit 136 for LOSS 4 areas and Crittenden Weigh Station to I-71
CAT3: Spot locations with history of severe crashes	Sadieville Interchange	Poor Lighting	Improve Lighting at Sadieville interchange (exit 136)

Proposed Phasing: The proposed auxiliary lanes in Boone County can be one phase. The proposed spot improvements at interchanges within the corridor widening (e.g., interchange modification at KY 16, DMS, etc.) in Boone County can be done at the same time the roadway is widened. The proposed new interchange at KY 14 in Boone County can be another phase. Other proposed spot improvements at interchanges (e.g., DMS, lighting, etc.) could be phased geographically (e.g., by KYTC District). A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Several underground storage tank sites are located along the corridor and five hazardous waste sites, one is located west of Dry Ridge and the others are near Georgetown. Oil/gas wells can be found near Dry Ridge, southwest of Williamstown, northwest and southwest of Corinth, southwest of Sadieville, adjacent and many surrounding interchanges leading into and around Georgetown. South Main Street Historic District, a National Register of Historic Places location (polygon), is located at I-75/Mary Grubbs Highway interchange. T.D. Basye House, a National Register of Historic Place (point), is located north of I-75/I-64 interchange. Kentucky Horse Park is located east of the I-75/KY-1973 interchange. The Curtis Gates Lloyd Wildlife Management Area is located south of Crittenden and Mullins Wildlife Management Area is located northwest of Crittenden. Multiple parks can be found near towns and cities along the corridor, several can be found in Georgetown. Two local recreational trails are along the corridor; Walton Community Park is south of Walton and Grant County Park is northeast of the I-75/KY-2942 interchange. Forested area can be found throughout the corridor. One quarry can be found east of Georgetown. Several karst features can be found along the corridor, most are east of Georgetown. The portion of this corridor from Georgetown to the southern part is located in a Wellhead Protection Area. Musselman Creek is located north of I-75/KY-2936 and is Special Waters. Three Land and Water Conservation Fund sites are along the corridor, Walton City Park, Scott County Park & Exposition Center, State Horse Park (Kentucky Horse Park). Wooded area can be found along the corridor. There is Known Summer 1 habitat for the Northern Long-eared Bat (NLEB) in Grant and Gallatin Counties. There is Known Summer 1 habitat for the Indiana bat in Boone, Kenton, Grant and Scott Counties and Known Summer 2 habitat in Grant and Owen Counties. There is Maternity and Reproductive Records for the Gray bat in Scott County. There are three census tracts along the corridor where the minority population is more than 28%.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns					
Environmental Red Flag Features	**I-75 Mainline from KY 16 in Walton to I-71**	**I-64/ I-75 North Split Interchange**	**I-75/KY 620 Interchange**	**I-75/KY 14 New Interchange**	**I-75/KY 16 Interchange**
Superfunds	N	N	N	N	N
Special Waters[1]	N	N	N	N	N
Forested Areas	N	N	N	Y	N
NLEB Habitat Priority	N	Y	Y	N	N
IB Habitat Priority Area	N	N	N	Y	Y
FAA Airport Runways	N	N	N	N	N
Public Hunting Areas	N	N	N	Y	N
Wildlife Management Areas	N	N	N	Y	N
Local Parks	Y	N	N	N	Y
State/ National Parks	N	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N	N
Land and Water Conservation Fund	N	N	N	N	N
Area Landmarks	N	Y	N	N	N
Point Landmarks	Y	Y	Y	N	Y
National Register of Historic Places Location (Point)	N	N	N	N	N
National Register of Historic Places Location (Polygon)	Y	N	N	N	Y

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-75 mainline from KY 16 in Walton to I-71	Adding continuous aux lanes in both directions	Yes
I-64/I-75 north split interchange	Adding a lane on southbound to eastbound and westbound to northbound ramps	Yes
I-75/KY 620 interchange	Adding a lane on northbound off-ramp	Likely Not
At KY 14 south of KY 16	New interchange	Yes
I-75/KY 16 interchange	Interchange modification	Potentially
From I-64/I-75 Northern Split to I-71	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From I-64/I-75 Northern Split to I-71	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	12.5 ($M)
ROW:	3.6 ($M)
Utility:	3.0 ($M)
Construction:	118.8 ($M)
Subtotal:	**137.8 ($M)**
TSMO Strategies	
Dynamic Message Sign:	7.6 ($M)
Subtotal:	**7.6 ($M)**
TOTAL COST =	**145.4 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-75
Segment ID: 3H
From: KY 536 in Boone County
To: I-275
Counties: Boone, Kenton
Highway District(s): 6

CORRIDOR SEGMENT OVERVIEW

Corridor 3H on I-75 extends from KY 536 in Boone County to I-275 in Kenton County. The corridor is approximately 6.9 miles long and contains 7 interchanges.

The southern portion from KY 536 to US 42 passes moderate density detached housing subdivisions, and a light industrial/warehousing area on the outskirts of Florence in Boone County. These areas are considered suburban according to the KYSTMv19 data. The portion from US 42 to northeast of the interchange with Turfway Rd traverses office parks, commercial, shopping centers, and higher-density residential areas of Florence in Boone County. These areas are considered urban according to the KYSTMv19 data. The remainder of the corridor passes through suburban areas with moderately dense residential and commercial uses.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From KY 536 to US 42	Interstate	10, 12’	12’-14’	Concrete Barrier (31’)	70 mph
From US 42 to KY 18	Interstate	8, 12’	10’	Concrete Barrier (31’)	65 mph
From KY 18 to Commonwealth Ave	Interstate	10, 12’	12’-14’	Concrete Barrier (31’)	65 mph
From Commonwealth Ave to I-275	Interstate	7, 12’	10’	Concrete Barrier (31’)	55 mph

Right of Way: The existing right of way is generally 275’ – 305’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.076, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 536 (Mt Zion Rd)	Diverging Diamond
US 42 (US 127)	Partial Cloverleaf
Mall Road	Three Leg Directional
KY 18 (Burlington Pike)	Diamond
KY 1017 (Turfway Rd)	Partial Diamond
KY 236 (Commonwealth Ave)	Partial Cloverleaf
I-275	All Directional Four Leg

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
008B00040L	Route On Structure	182.40	TURFWAY ROAD (KY 1017)	Fair	88.9	No	6	6	7	31.82	N
008B00040R	Route On Structure	182.39	TURFWAY ROAD (KY 1017)	Fair	95.9	No	6	6	7	30.5	N
008B00080L	Route On Structure	178.05	KY 536 (MT ZION RD)	Fair	94	No	6	7	7	65.29	N
008B00080R	Route On Structure	178.04	KY 536 (MT ZION RD)	Good	94	No	7	7	7	65.29	N
059B00053L	Route On Structure	184.67	I275 E&W-RAMPS D-G	Fair	96.3	No	6	7	7	30	N
059B00053R	Route On Structure	184.70	I275 E&W-RAMPS D-G	Fair	96.9	No	6	7	7	37.4	N
059B00102L	Route On Structure	183.69	DONALDSON RD (KY 236)	Good	98	No	7	8	7	38.06	N
059B00102R	Route On Structure	183.70	DONALDSON ROAD (KY 236)	Good	98	No	7	8	7	35	N
059B00103N	Route On Structure	183.69	DONALDSON RD (KY 236)	Good	66	No	7	8	7	35	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
008B00005L	1st Route Under	US-42 NC	18.17	25.92
	3rd Route Under	US-42 NC	16.91	25.92
	1st Non-Card Route Under	US-42 NC	16.91	25.92
	2nd Route Under	US-42 NC	16.58	25.92
008B00005R	1st Non-Card Route Under	US-42	16.58	25.92
	3rd Route Under	US-42	18.3	72.51
	1st Route Under	US-42	17.28	72.51
	2nd Route Under	US-42	16.11	72.51

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
008B00009N	1st Non-Card Route Under	KY-18	18.02	72.51
	1st Route Under	KY-18	18.56	72.51
	2nd Route Under	KY-18	14.65	72.51
008B00071N	One Route Under	WEAVER ROAD	16.92	60
	1st Non-Card Route Under	WEAVER ROAD	15.16	27
008B00073N	1st Non-Card Route Under	I-75 RAMP	18.17	62
	2nd Route Under	I-75 RAMP	18.17	61.5
	1st Route Under	I-75 RAMP	18.17	73.25
	Route On Structure	I-75 RAMP	18.17	61.5
	3rd Route Under	I-75 RAMP	16.83	46
059B00053L	2nd Route Under	I-75 NC	23.16	30.18
059B00054L	1st Non-Card Route Under	I-275 WB	16.17	29.86
	3rd Route Under	I-275 WB	16.17	25.92
	Route On Structure	I-275 WB	16.17	29.86
	2nd Route Under	I-275 WB	16.17	25.92
059B00054R	3rd Route Under	I-275 EB	16.17	25.92
	Route On Structure	I-275 EB	15.92	27.89
	2nd Route Under	I-275 EB	15.92	27.89
	1st Non-Card Route Under	I-275 EB	16.17	25.92
059B00055N	3rd Route Under	I-75 N RAMP	16.33	19.69
	Route On Structure	I-75 N RAMP	16	35
059B00056N	3rd Route Under	I-75 S RAMP	15.08	37.73
	Route On Structure	I-75 S RAMP	15	37.73
	2nd Route Under	I-75 S RAMP	15.08	37.73
	1st Non-Card Route Under	I-75 S RAMP	15	37.73

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 536 to US 42	131,000	21,000	16%
From US 42 to Mall Rd	124,000	21,000	17%
From Mall Rd to KY 18	131,000	23,000	17%
From KY 18 to KY 1017	154,000	24,000	16%
From KY 1017 to KY 236	168,000	24,000	15%
From KY 236 to I-275	134,000	18,000	13%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	7-10, 12’	31’	10’-14’	168,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and three Dynamic Message Signs (DMS) along this section of I-75. There is currently a queue warning pilot project along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
Mainline from KY 536 to US 42 (MP 178.4 to 179.6)	Ramp Metering at all non-system interchanges. Managed lanes through Elongated Pavement Markings and Enhanced Signage. Queue Warning and/or Comparative Travel Time.	N/A	Improve safety and mobility along I-75.	F	E	F	F
Mainline from US 42 to Mall Rd (MP 180.2 to 180.7)				F	D	F	D
Mainline from Mall Rd to KY 18 (MP 180.7 to 181.0)				F	E	F	F
Mainline from KY 18 to KY 1017 (MP 181.6 to 182.1)				E	E	E	E
Mainline from KY 1017 to KY 236 (MP 182.6 to 183.4)				D	E	D	E
Mainline from KY 236 to I-275 (MP 184.0 to 184.2)				D	E	D	F
Managed lanes throughout (MP 178.4 to 184.2)	Managed lanes through Elongated Pavement Markings and Enhanced Signage	N/A	Improve safety and mobility along I-75.	N/A	N/A	C	D

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** No bridge rehab is recommended for the corridor. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
None			

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.076). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	KY 536 to I-275 (entire corridor)	Congestion, high truck volumes, weaving	Ramp Metering at all non-system interchanges, managed lanes, queue warning and/or comparative travel times.
CAT2: Other major clusters of safety issues	KY 536 to I-275 (entire corridor)	Congestion	Incident Management
CAT3: Spot locations with history of severe crashes	US 42 Entrance Ramp to I-75 NB; KY 236 Entrance to I-75 SB	Speed differential	Reassess striping and merge condition, Increase acceleration lane length

Proposed Phasing: The proposed managed lanes and spot improvements at interchanges (e.g., ramp metering, increase acceleration lanes, etc.) can be done at the same time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency underground storage tank sites and hazardous waste sites throughout the corridor. There are two local trails, Ewing Boulevard Bike Lane and Woodspoint Drive Bike Lane, in Florence. One park, World of Sports, is located north of the I-75 and Burlington Pike interchange. There is one census tract with greater than 25% of the population living at or below the poverty level. Wooded area can be found along the corridor. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**Entire Corridor**
Superfunds	N
Special Waters[1]	N
Forested Areas	Y
NLEB Habitat Priority	N
IB Habitat Priority Area	N
FAA Airport Runways	N
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	Y
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	N
Area Landmarks	Y
Point Landmarks	Y
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
At all non-system interchanges	Ramp metering	No
From KY 536 to I-275 (entire corridor)	Managed Lanes through Elongated Pavement Markings and Enhanced Signage	No
From KY 536 to I-275 (entire corridor)	Queue warning and/or comparative travel time	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	0.0 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	0.0 ($M)
Subtotal:	**0.0 ($M)**
TSMO Strategies	
Ramp Metering - Traffic Responsive Centralized:	2.8 ($M)
Queue Warning:	3.3 ($M)
Elongated Pavement Markings:	1.0 ($M)
Improved Signage:	1.6 ($M)
Subtotal:	**8.6 ($M)**
TOTAL COST =	**8.6 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-71
Segment ID: 4A
From: I-64
To: I-264
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 4A on I-71 extends from I-64 to I-264 in Jefferson County. The corridor is approximately 6.0 miles long and includes three interchanges.

The western portion of this corridor is surrounded by a mix of institutional, industrial, and dense residential uses on the edge of downtown Louisville. These areas are considered as urban according to the KYSTMv19 data. The eastern portion transitions to suburban areas and abuts recreational uses on the northern side and a mix of industrial and detached and multifamily residential areas.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’	Depressed (36’)	55 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-64	South Fork Beargrass Creek/ Letterle Rd	220’ - 290'
South Fork Beargrass Creek/ Letterle Rd	Zorn Ave	350’ - 395'
Zorn Ave	I-264	260’ - 320'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.409, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-64	Directional
Zorn Ave	Diverging Diamond
I-264	Three Leg Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00063L	Route On Structure	2.00	MOCKINGBIRD VALLEY RD	Fair	87	No	6	6	5	41.99	N
056B00063R	Route On Structure	1.99	MOCKINGBIRD VALLEY RD	Fair	87	No	6	6	5	46	N
056B00064L	Route On Structure	3.04	INDIAN HILLS TRL	Fair	87	No	6	6	5	29.86	N
056B00064R	Route On Structure	3.01	INDIAN HILLS TRL	Fair	87	No	6	6	5	29.86	N
056B00065L	Route On Structure	3.68	BLANKENBAKER LN	Fair	87	No	6	6	5	29.86	N
056B00065R	Route On Structure	3.64	BLANKENBAKER LN	Fair	87	No	6	6	5	35	N
056B00166L	Route On Structure	0.91	EDITH RD	Good	91.3	No	7	7	7	30	N
056B00166R	Route On Structure	0.89	EDITH RD	Good	92.2	No	7	7	7	41.99	N
056B00167L	Route On Structure	1.79	ZORN AVE	Fair	76.7	No	5	7	6	41.99	N
056B00167R	Route On Structure	1.77	ZORN AVE	Fair	77.5	No	5	6	6	24	N
056B00168L	Route On Structure	0.56	OLD RAILROAD	Fair	79.4	No	6	7	5	24	N
056B00168R	Route On Structure	0.54	OLD RAILROAD	Fair	79.7	No	6	6	5	94	N
056B00169L	Route On Structure	0.35	BEARGRASS CREEK	Fair	79.4	No	6	5	7	94	N
056B00169R	Route On Structure	0.33	BEARGRASS CREEK	Fair	79.4	No	6	5	7	94	N
056T00935N	Route On Structure	0.14	I-64 WB	Good	85	No	7	7	7	52.67	N
056T00940N	Route On Structure	0.02	FRANKFORT AVE	Good	83	No	7	7	7	52.83	N
056T00934N	Route On Structure	0.50	I-64 & RAMPS	Good	97.2	No	7	7	8	75.42	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00056N	Route On Structure	I-71 SB RAMP	15	40
	One Route Under	I-71 SB RAMP	15.22	40
056B00057N	1st Route Under	I-264 EB RAMP	17.67	26.25
	2nd Route Under	I-264 EB RAMP	17.67	26.25
	Route On Structure	I-264 EB RAMP	11.58	40.03

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
056B00066N	One Route Under	POPLAR HILL CT	54	32
	1st Non-Card Route Under	POPLAR HILL CT	54	32

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-64 to Zorn Ave	64,000	4,000	6%
From Zorn Ave to I-264	59,000	3,000	5%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	4, 12’	36’	10’	64,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 39.6% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently five CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From I-64 to Zorn Ave (MP 0.0 to 1.5)	Ramp Metering at Zorn Ave. Part-time shoulder use throughout. Dynamic Message Signs and CCTV cameras at all interchanges[2]. Traffic Incident Management throughout	N/A	Improve safety and mobility along I-71.	D	D	D	C
From Zorn Ave to I-264 (MP 2.0 to 4.8)				D	C	C	C

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
2) DMS are at the following locations: in the NB direction before the exit at I-264 as well as the midpoint between those two interchanges; in the SB direction before the merge with I-64 and the exit at Zorn.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-64 (I-71 WB to I-64 WB ramp)
Zorn Ave (I-71 EB off-ramp)

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00063L	2	MOCKINGBIRD VALLEY RD	Bridge Rating
056B00063R	1.99	MOCKINGBIRD VALLEY RD	Bridge Rating
056B00064L	3.04	INDIAN HILLS TRL	Bridge Rating
056B00064R	3.01	INDIAN HILLS TRL	Bridge Rating
056B00065L	3.68	BLANKENBAKER LN	Bridge Rating
056B00065R	3.64	BLANKENBAKER LN	Bridge Rating
056B00167L	1.79	ZORN AVE	Bridge Rating
056B00167R	1.77	ZORN AVE	Bridge Rating
056B00168L	0.56	OLD RAILROAD	Bridge Rating
056B00168R	0.54	OLD RAILROAD	Bridge Rating
056B00169L	0.35	BEARGRASS CREEK	Bridge Rating
056B00169R	0.33	BEARGRASS CREEK	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.409). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-64 to I-264 (entire corridor)	Congestion	Incident Management, Dynamic Message Signs and CCTV cameras at all interchanges
	Zorn Ave	Congestion	Ramp Metering
CAT2: Other major clusters of safety issues	I-64 to I-264 (entire corridor)	Congestion	Queue Warning, Comparative Travel Times
CAT3: Spot locations with history of severe crashes	I-264 Interchange	Roadway Curvature and Congestion	KYTC has phase 1 design completed to address these issues (Item #5-557.00)

Proposed Phasing: The proposed spot improvements at interchanges (e.g., ramp metering, DMS, etc.) and part-time shoulder riding can be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency underground storage tank sites in the western half of the corridor. There are two hazardous waste sites at the west end of the corridor. Historic districts and properties listed on the National Register of Historic Places are common near Butchertown, Clifton, Clifton Heights, Brownsboro Zorn, Riverwood, and Glenview neighborhoods. Two Local Trails, Upper River Road Trail and Butchertown Greenway are both in Clifton and Clifton Heights neighborhoods. Two Local Parks are located in Glenview neighborhood. Three Land and Water Conservation Fund sites, Waterfront Park, Eva Bandman Park, and Cox Park, are located along the corridor. Karsts can be found in Mockingbird Valley, Clifton Heights, and Riverwood neighborhoods. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County and there is Known Summer 1 habitat for the Northern Long-eared Bat (NLEB) and Indiana bat along the corridor. There is one census tract with greater than 25% of the population living at or below the poverty level, and two census tracts where the minority population is more than 28%. There is no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns		
Environmental Red Flag Features	**I-64/I-71 Interchange**	**I-71/Zorn Ave Interchange**
Superfunds	N	N
Special Waters[1]	N	N
Forested Areas	N	N
NLEB Habitat Priority	N	N
IB Habitat Priority Area	Y	Y
FAA Airport Runways	N	N
Public Hunting Areas	N	N
Wildlife Management Areas	N	N
Local Parks	N	Y
State/ National Parks	N	N
Kentucky Heritage Land Conservation Fund	N	N
Land and Water Conservation Fund	Y	N
Area Landmarks	Y	Y
Point Landmarks	Y	Y
National Register of Historic Places Location (Point)	Y	N
National Register of Historic Places Location (Polygon)	Y	Y

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
From I-64 to I-264 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From I-64 to I-264 (entire corridor)	Traffic Incident Management throughout	No
From I-64 to I-264 (entire corridor)	Part Time Hard Shoulder Running	Potentially
I-64/I-71 System Interchange	Adding a lane on I-71 WB to I-64 WB ramp	Potentially
I-71/Zorn Ave Interchange	Adding a lane on EB off-ramp	No
I-71/Zorn Ave Interchange	Ramp metering	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0.6 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	5.6 ($M)
Subtotal:	**6.3 ($M)**

TSMO Strategies

Ramp Metering - Traffic Responsive Centralized:	0.5 ($M)
Part-time Shoulder Use (General Purpose Lane):	2.5 ($M)
DMS:	1.6 ($M)
Subtotal:	**4.6 ($M)**

TOTAL COST = 10.9 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-71
Segment ID: 4B
From: I-264
To: I-265
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 4B on I-71 extends from I-264 to I-265 in Jefferson County. The corridor is approximately 4.1 miles long and contains two interchanges.

The area around the I-71/I-265 interchange includes office parks and large-lot detached housing, and the rest of the corridor passes low- to moderate- density detached housing and several multifamily apartment complexes. These areas are considered suburban according to the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’	Depressed (60’)	65 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-264	Barbour Ln	260’ - 300’
Barbour Ln	I-265	315’ - 340'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.589, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-264	Three Leg Directional
I-265	Full Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00059R	Route On Structure	6.23	US 42	Fair	69	No	5	5	6	32	N
056B00059L	Route On Structure	6.23	US 42	Poor	67	No	4	5	6	33	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00056N	Route On Structure	I-71 SB RAMP	15	40
	One Route Under	I-71 SB RAMP	15.22	40
056B00057N	1st Route Under	I-264 EB RAMP	17.67	26.25
	2nd Route Under	I-264 EB RAMP	17.67	26.25
	Route On Structure	I-264 EB RAMP	11.58	40.03
056B00058N	1st Non-Card Route Under	LIME KILN LN	12.75	12
	One Route Under	LIME KILN LN	17.5	33
056B00060N	One Route Under	BARBOUR LN	17.67	32
	1st Non-Card Route Under	BARBOUR LN	17.67	41.99
056B00061N	1st Route Under	SPRINGDALE RD	16.25	41.99
	1st Non-Card Route Under	SPRINGDALE RD	16.25	41.99
	2nd Route Under	SPRINGDALE RD	16.25	41.99
056B00091L	One Route Under	I-265 SB	15.42	37.73
	1st Non-Card Route Under	I-265 SB	15.5	37.73
056B00091R	Route On Structure	I-265 SB	21.5	40
	1st Non-Card Route Under	I-265 NB	21.5	40
	One Route Under	I-265 NB	17.17	23.95
	Route On Structure	I-265 NB	17.25	23.95

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-264 to I-265 (entire corridor)	66,000	10,000	15%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	4, 12’	60’	10’	66,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 27.7% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently four CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
Entire Corridor (MP 5.3 to 8.6)	Part-time shoulder use throughout; Dynamic Message Signs and CCTV cameras at all interchanges[2]; Traffic Incident Management throughout	N/A	Improve safety and mobility along I-71.	D	D	D	D

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
2) DMS are proposed between the two interchanges at I-264 and I-265.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-71/I-265 System Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary

to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00059R	6.23	US 42	Bridge Rating
056B00059L	6.23	US 42	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.589). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-264 to I-265 (entire corridor)	Congestion	Dynamic Message Signs and CCTV cameras at all interchanges; Traffic Incident Management throughout
CAT2: Other major clusters of safety issues	I-264 to I-265 (entire corridor)	Congestion, Roadway Geometry	Queue Warning, Comparative Travel Times, Rumble Strips
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed I-71/I-265 system interchange modification can be one phase. The other spot improvements at interchanges (e.g. DMS, part-time shoulder riding, etc.) can be another phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Karsts are common in Hills and Dales neighborhood and Glenview Hills neighborhood. A National Historic District, Cedarbrook Farm, is near the I-265 and I-71 interchange. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**I-71/I-265 System Interchange**
Superfunds	N
Special Waters[1]	N
Forested Areas	N
NLEB Habitat Priority	Y
IB Habitat Priority Area	Y
FAA Airport Runways	N
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	N
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	N
Area Landmarks	N
Point Landmarks	Y
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-264 to I-265 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
I-264 to I-265 (entire corridor)	Traffic Incident Management Throughout	No
I-264 to I-265 (entire corridor)	Part Time Hard Shoulder Running	Potentially
I-71/I-265 System Interchange	Interchange Modification	Potentially

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	6.2 ($M)
ROW:	2.3 ($M)
Utility:	1.3 ($M)
Construction:	60.0 ($M)
Subtotal:	**69.8 ($M)**
TSMO Strategies	
Part-time Shoulder Use (General Purpose Lane):	2.0 ($M)
Dynamic Message Sign:	0.8 ($M)
Subtotal:	**2.8 ($M)**
TOTAL COST =	**72.6 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-71
Segment ID: 4C
From: I-265
To: KY 53 in La Grange
Counties: Jefferson, Oldham
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 4C on I-71 extends from I-265 in Jefferson County to KY 53 in La Grange (Oldham County). The corridor is approximately 12.7 miles long and contains five interchanges.

The western portion of the corridor (from I-265 to east of the Oldham County line) passes by an office park, multifamily housing complexes, and moderately dense detached housing residential areas in Jefferson County. These areas are considered suburban according to the KYSTMv19 data. The remaining portion of the corridor transitions to rural or rural town/exurban, and traverses undeveloped areas, farmland, and pockets of low-density detached houses in Oldham County.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’	Depressed (60’ or >60’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-265	Moser Farm Rd in Prospect	250 - 275'
Moser Farm Rd in Prospect	Veterans Memorial Pkwy in Crestwood	345 - 460'
Veterans Memorial Pkwy in Crestwood	KY 146 in Buckner	200 - 240'
KY 146 in Buckner	KY 53 in La Grange	705 - 910'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.625, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-265	Full Cloverleaf
KY 329 (Veterans Memorial Pkwy)	Diamond
KY 146 (Lagrange Rd)	Partial Cloverleaf
KY 393	Diamond
KY 53 (S 1st St)	Diamond

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00062L	Route On Structure	9.81	CHAMBERLAIN LN	Fair	86	No	5	5	5	35	N
056B00062R	Route On Structure	9.81	CHAMBERLAIN LN	Fair	86	No	5	5	5	35	N
093B00028L	Route On Structure	18.56	KY 393	Fair	96	No	6	7	6	47	N
093B00028R	Route On Structure	18.51	KY 393	Fair	96	No	6	7	6	58.8	N
093B00030R	Route On Structure	14.49	KY 329	Fair	98	No	6	6	6	31	N
093B00031L	Route On Structure	14.52	KY 329	Fair	98	No	6	6	6	34	N
093B00033R	Route On Structure	11.80	MOSER FARM RD	Fair	91.4	No	N	N	N	39.7	6
093B00034L	Route On Structure	11.82	MOSER FARM RD	Fair	91.4	No	N	N	N	39.7	6
093B00035R	Route On Structure	12.52	TRIB TO S FK HARRODS CRK	Fair	89.2	No	N	N	N	39.7	6
093B00036L	Route On Structure	12.56	TRIB TO S FK HARRODS CRK	Fair	89.2	No	N	N	N	39.7	6
093B00037R	Route On Structure	13.48	S FORK HARRODS CREEK	Fair	89.2	No	N	N	N	39.7	6
093B00038L	Route On Structure	13.43	S FORK HARRODS CREEK	Fair	76.9	No	N	N	N	39.7	5
093B00039N	Route On Structure	17.91	N FORK CURRYS FORK	Fair	85.3	No	N	N	N	39.7	6

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00091L	One Route Under	I-265 SB	15.42	37.73
	1st Non-Card Route Under	I-265 SB	15.5	37.73
	Route On Structure	I-265 SB	21.5	40
056B00091R	1st Non-Card Route Under	I-265 NB	21.5	40
	One Route Under	I-265 NB	17.17	23.95
	Route On Structure	I-265 NB	17.25	23.95
093B00002N	One Route Under	KY 53	18.75	44.29
093B00003N	One Route Under	KY 53	17.52	65.25
093B00009N	1st Non-Card Route Under	KY 146	17.52	31.5
	One Route Under	KY 146	17.27	22

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
093B00029N	One Route Under	CSX RAILROAD	15.96	58.8
	1st Non-Card Route Under	CSX RAILROAD	16	39
093B00032N	1st Non-Card Route Under	GLENARM RD	17.25	39.7
	One Route Under	GLENARM RD	15.5	37.73
093B00058N	One Route Under	PEDESTRIAN BRIDGE	17.92	39.7
093B00059N	One Route Under	KY 2857	18.17	39.7
056B00547N	Route On Structure	BROWNSBORO RD	17.16	34.00

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-265 to KY 329	61,000	13,000	21%
From KY 329 to KY 146	58,000	12,000	21%
From KY 146 to KY 393	56,000	12,000	22%
From KY 393 to KY 53	50,000	12,000	25%

1,2) Rounded to the nearest thousand.

Mobility: There is one potential traffic bottleneck along this corridor. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details. Traffic condition is acceptable along the remainder of this corridor.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
From I-265 to KY 146	Interstate	4, 12’	60’- 350’	10’	61,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 8.2% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 =

moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently two CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
Entire Corridor (MP 9.4 to 22.0)	Extend acceleration and deceleration lane lengths at all interchange ramps; Dynamic Message Signs and CCTV cameras at all interchanges[2]; Traffic Incident Management throughout	N/A	Improve safety and mobility along I-71.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
2) DMS are proposed at the following locations: in the NB direction before exits at KY 329, KY 146, and KY 53; in the SB direction before exits at KY 393 and KY 329.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-71/I-265 System Interchange
I-71/KY 393 Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00062L	9.81	CHAMBERLAIN LN	Bridge Rating
056B00062R	9.81	CHAMBERLAIN LN	Bridge Rating
093B00033R	11.8	MOSER FARM RD	Bridge Rating
093B00034L	11.82	MOSER FARM RD	Bridge Rating
093B00035R	12.52	TRIB TO S FK HARRODS CRK	Bridge Rating
093B00036L	12.56	TRIB TO S FK HARRODS CRK	Bridge Rating
093B00037R	13.48	S FORK HARRODS CREEK	Bridge Rating
093B00038L	13.43	S FORK HARRODS CREEK	Bridge Rating
093B00039N	17.91	N FORK CURRYS FORK	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.625). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-265 to KY 53 (entire corridor)	Merge/Diverge, Congestion	Increase acceleration/deceleration lengths at interchanges, Incident Management, Dynamic Message Signs and CCTV cameras
CAT2: Other major clusters of safety issues	I-265 to KY 53 (entire corridor)	Congestion	Queue Warning, Comparative Travel Times, Rumble Strips
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed interchange modifications at the I-71/I-265 system interchange and the I-71/KY 393 service interchange can be two separate phases. The other spot improvements at interchanges (e.g. DMS, increasing acceleration/deceleration lane lengths, etc.) can be another phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated between two well-developed urban cities, resulting in a high frequency of underground storage tank sites throughout the corridor. There are two hazardous waste sites near Northfield neighborhood and Glenview Manor neighborhood and one near La Grange. One Historic site, Wesley Methodist Church, listed on the National Register of Historic Places is northwest of Orchard Grass Hills neighborhood. Karsts are common along the west half of the corridor. One quarry is located northwest of Orchard Grass Hills neighborhood. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County and Other Records can be found for the Gray bat in Oldham County. There is Known Summer 1 habitat for the Indiana bat along the corridor. There is one census tract where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns					
Environmental Red Flag Features	**I-71/I-265 Interchange**	**I-71/KY 329 Interchange**	**I-71/KY 146 Interchange**	**I-71/KY 393 Interchange**	**I-71/KY 53 Interchange**
Superfunds	N	N	N	N	N
Special Waters[1]	N	N	N	N	N
Forested Areas	N	N	N	N	N
NLEB Habitat Priority	N	N	N	N	N
IB Habitat Priority Area	Y	N	N	N	N
FAA Airport Runways	N	N	N	N	N
Public Hunting Areas	N	N	N	N	N
Wildlife Management Areas	N	N	N	N	N
Local Parks	N	N	N	N	N
State/ National Parks	N	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N	N
Land and Water Conservation Fund	N	N	N	N	N
Area Landmarks	N	N	N	N	Y
Point Landmarks	Y	N	N	N	Y
National Register of Historic Places Location (Point)	N	N	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-265 to KY 53 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
I-265 to KY 53 (entire corridor)	Traffic Incident Management Throughout	No
Interchanges at KY 329, KY 146, KY 393, KY 53	Extend acceleration and deceleration lane lengths	Likely Not
I-71/I-265 System Interchange	Extend acceleration and deceleration lane lengths	Potentially
I-71/I-265 System Interchange	Interchange modification	Potentially
I-71/KY 393 Interchange	Interchange modification	Potentially

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	6.5 ($M)
ROW:	2.3 ($M)
Utility:	1.3 ($M)
Construction:	62.5 ($M)
Subtotal:	**72.6 ($M)**

TSMO Strategies

Increase Acceleration Lane Length:	4.8 ($M)
Increase Deceleration Lane Length:	3.6 ($M)
Dynamic Message Sign:	2.0 ($M)
Subtotal:	**10.4 ($M)**

TOTAL COST = 83.0 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-71
Segment ID: 4D
From: KY 53 in La Grange
To: I-75
Counties: Oldham, Henry, Trimble, Carroll, Gallatin, Boone
Highway District(s): 5, 6

CORRIDOR SEGMENT OVERVIEW

Corridor 4D on I-71 extends from KY 53 in La Grange (Oldham County) to I-75 in Walton (Boone County). The corridor passes through Henry, Trimble, Carroll, and Gallatin Counties. The corridor is approximately 55.6 miles long and contains ten interchanges.

The western portion of this corridor (from KY 53 to Jericho Rd in La Grange) is considered rural town/exurban (according to v8_KYSTMv19 data) and passes through low-density residential and open space areas. The remainder of the corridor is in rural areas, which traverses farmland, large-lot agricultural residential, and undeveloped areas, with low-density detached housing scattered here and there.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire corridor	Interstate	4, 12’	10’	Depressed (60’), Concrete Barrier (31’)	70 mph

Right of Way: The existing right of way is generally 220’ – 265’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.549, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 53 (S 1st St)	Diamond
KY 153 (Pendleton Rd)	Diamond
US 421 (Campbellsburg Rd)	Diamond
KY 389	Diamond
KY 227	Partial Cloverleaf
KY 1039	Diamond
KY 35 (Sparta Pike)	Diamond
US 127	Diamond
KY 14 (Verona-Mudlick Rd)	Diamond
I-75	Trumpet

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
008B00042L	Route On Structure	76.72	I-75	Fair	77	No	6	6	5	60	N
008B00042R	Route On Structure	76.66	I-75	Fair	68	No	6	6	5	30.25	N
008B00043N	Route On Structure	73.63	MCCOYS FORK	Fair	70	No	N	N	N	60	6
	1st Non-Card Route On	73.64	MCCOYS FORK	Fair	70	No	N	N	N	60	6
021B00036L	Route On Structure	46.90	KY 1112 & WHITES RUN CRK	Poor	53	No	6	6	4	61.17	N
021B00036R	Route On Structure	46.88	KY 1112 & WHITES RUN CRK	Fair	69	No	6	6	5	60	N
021B00037L	Route On Structure	44.32	CSX RR & KY 227	Fair	96.9	No	6	6	6	60.14	N
021B00037R	Route On Structure	44.34	CSX RR & KY 227	Fair	95.7	No	6	7	6	60	N
021B00038L	Route On Structure	39.38	MILL CR + MILL CR RD	Fair	80	No	7	7	6	59.71	N
021B00038R	Route On Structure	39.36	MILL CR + MILL CR RD	Fair	80	No	8	7	6	60	N
021B00039L	Route On Structure	39.50	MILL CR + MILL CR RD	Fair	80	No	6	6	6	60	N
021B00039R	Route On Structure	39.50	MILL CR + MILL CR RD	Fair	80	No	7	6	7	62.67	N
021B00040N	Route On Structure	43.64	GREEN BOTTOM ROAD	Fair	66	No	N	N	N	62.67	6
	1st Non-Card Route On	43.62	GREEN BOTTOM ROAD	Fair	66	No	N	N	N	60	6
021B00042L	Route On Structure	44.00	KENTUCKY RIVER	Fair	80	No	7	6	7	60	N
021B00042R	Route On Structure	44.02	KENTUCKY RIVER	Fair	80	No	7	6	6	60	N
039B00023L	Route On Structure	53.46	KY 47	Fair	97	No	6	6	6	56	N
039B00023R	Route On Structure	53.46	KY47	Fair	86	No	6	6	5	56	N
039B00025L	Route On Structure	63.52	KY3002	Fair	92	No	5	6	6	56	N
039B00025R	Route On Structure	63.53	KY3002	Fair	97	No	5	6	6	60	N
039B00026L	Route On Structure	65.52	LITTLE SUGAR ROAD	Fair	98	No	6	6	6	60	N
039B00026R	Route On Structure	65.52	LITTLE SUGAR ROAD	Fair	98	No	6	6	6	60	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
039B00027L	Route On Structure	67.16	ROBERTS ROAD	Fair	84	No	5	5	5	66	N
039B00027R	Route On Structure	67.14	ROBERTS ROAD	Fair	85	No	6	6	5	66	N
039B00028N	1st Non-Card Route On	69.23	BIG SOUTH FORK CREEK	Good	70	No	N	N	N	43.58	7
	Route On Structure	69.23	BIG SOUTH FORK CREEK	Good	70	No	N	N	N	43.58	7
039B00048N	Route On Structure	56.68	KY 35	Good	94	No	7	7	7	49	N
	1st Non-Card Route On	56.69	KY 35	Good	94	No	7	7	7	27.5	N
052B00049R	Route On Structure	29.94	KY 1606 & FALLEN TMB CRK	Fair	85.6	No	6	6	6	59	N
052B00050L	Route On Structure	30.00	KY 1606 & FALLEN TMB CRK	Fair	83.5	No	6	6	6	47.83	N
052B00051L	Route On Structure	32.36	CSX RR&WHITE SULPHUR CRK	Fair	86.3	No	6	6	6	55.45	N
052B00051R	Route On Structure	32.36	CSX RR&WHITE SULPHUR CRK	Fair	74.4	No	6	5	6	55.45	N
052B00053N	Route On Structure	35.82	JONES RD	Fair	75.6	No	N	N	N	42	6
	1st Non-Card Route On	35.82	JONES RD	Fair	75.6	No	N	N	N	68	6
052B00054L	Route On Structure	28.22	LITTLE KENTUCKY RIVER	Fair	87	No	6	6	5	75.5	N
052B00054R	Route On Structure	28.15	LITTLE KENTUCKY RIVER	Fair	87	No	6	5	5	55.75	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
093B00003N	One Route Under	KY 53	17.52	65.25
093B00002N	One Route Under	KY 53	18.75	44.29
093B00015N	1st Non-Card Route Under	KY 712	15.51	47
	One Route Under	KY 712	17.27	22
052B00052N	1st Non-Card Route Under	KY 3320	25	52.5
	One Route Under	KY 3320	25	52.5
052B00026N	1st Non-Card Route Under	KY 146	19.08	30.25
	One Route Under	KY 146	16.75	84
052B00034N	1st Non-Card Route Under	KY 153	16.75	84
	One Route Under	KY 153	18.33	32.25
052B00036N	One Route Under	KY 157	18.33	41
	1st Non-Card Route Under	KY 157	16.17	30
052B00038N	1st Non-Card Route Under	US 421	15.42	42
	One Route Under	US 421	16.17	30
052B00001N	One Route Under	KY 55	19.08	30
	1st Non-Card Route Under	KY 55	19.08	30
008B00032N	One Route Under	KY-1292	24.67	44.95
	1st Non-Card Route Under	KY-1292	24.67	44.95

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
008B00031N	1st Non-Card Route Under	KY-14	16.67	87.93
	One Route Under	KY-14	16.67	87.93
039B00030N	1st Non-Card Route Under	KY-2850	16.33	90
	One Route Under	KY-2850	16.17	60
039B00029N	1st Non-Card Route Under	WALNUT LICK RD	16.75	43.58
	One Route Under	WALNUT LICK RD	16.33	90
039B00017N	1st Non-Card Route Under	KY-562	16.5	92
	One Route Under	KY-562	16.75	56
039B00015N	One Route Under	KY-465	17.33	80
	1st Non-Card Route Under	KY-465	16.5	92
039B00014N	One Route Under	KY-455	16.08	34
	1st Non-Card Route Under	KY-455	17.33	80
021B00006N	1st Non-Card Route Under	KY-36	17.75	35.1
	One Route Under	KY-36	18.5	47.06
039B00045N	1st Non-Card Route Under	KY-1039	16.17	60
	One Route Under	KY-1039	17.08	90
021B00013N	1st Non-Card Route Under	KY-389	18.5	47.06
	One Route Under	KY-389	18.5	61.17
039B00007N	1st Non-Card Route Under	US-127	15.33	56
	One Route Under	US-127	16.08	34

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 53 to KY 153	40,000	12,000	29%
From KY 153 to US 421	35,000	11,000	33%
From US 421 to KY 389	32,000	10,000	31%
From KY 389 to KY 227	35,000	10,000	30%

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 227 to KY 1039	32,000	10,000	33%
From KY 1039 to KY 35	32,000	10,000	33%
From KY 35 to US 127	32,000	10,000	32%
From US 127 to KY 14	34,000	11,000	32%
From KY 14 to I-75	39,000	11,000	29%

1,2) Rounded to the nearest thousand.

Mobility: There's no major potential traffic bottleneck sections along this corridor segment. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.)

Safety: 8.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently three CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
I-71 mainline from Boone/ Gallatin County Line to KY 14 (MP 69.89 to 71.64)	Widening to 6-lane	3, 12-foot lanes in each direction with 12-foot shoulder and 30.67-foot flush median	This improvement is included in KYTC's recent study (Item # 6-80212)	C	C	B	B
I-71 mainline from KY 14 to I-75 (MP 71.64 to 76.35)				C	C	B	B
Entire corridor (from KY 53 to I-75) (MP 22.03 to MP 76.35)	Extend acceleration and deceleration lane lengths at all interchange ramps; Traffic incident management; Dynamic Message Signs and CCTV cameras at all interchanges[4]	N/A	Improve safety and mobility along I-71.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) DMS are proposed at the following locations: In the NB direction before exits at KY 153, US 421, KY 389, KY 227, KY 1039, KY 35, US 127, and KY 14; in the SB direction before exits at KY 14, US 127, KY 35, KY 1039, KY 227, KY 389, US 421, KY 153, and KY 53.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1)If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening		
Bridge ID	**Feature Intersect**	**Reason for Rehab/Widening**
008B00042L	I-75	Bridge Rating & Within Widening Section
008B00042R	I-75	Bridge Rating & Within Widening Section
008B00043N	MCCOYS FORK	Bridge Rating & Within Widening Section
021B00036R	KY 1112 & WHITES RUN CRK	Bridge Rating
021B00040N	GREEN BOTTOM ROAD	Bridge Rating
039B00023R	KY47	Bridge Rating
039B00025L	KY3002	Bridge Rating
039B00025R	KY3002	Bridge Rating
039B00027L	ROBERTS ROAD	Bridge Rating
039B00027R	ROBERTS ROAD	Bridge Rating
052B00051R	CSX RR&WHITE SULPHUR CRK	Bridge Rating
052B00053N	JONES RD	Bridge Rating
052B00054L	LITTLE KENTUCKY RIVER	Bridge Rating
052B00054R	LITTLE KENTUCKY RIVER	Bridge Rating

- **Bridges for Replacement:** Replacement is recommended for one bridge along the entire corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement		
Bridge ID	**Feature Intersect**	**Reason for Replacement**
021B00036L	KY 1112 & WHITES RUN CRK	Bridge Rating

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.549). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of sever crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of sever crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	KY 53 to I-75 (entire corridor)	Merge/Diverge, Congestion	Increase acceleration/deceleration lengths, Incident Management, DMS and CCTV cameras
CAT2: Other major clusters of safety issues	KY 53 to KY 1039, KY 227 to KY 1112	Long Grade, Roadway Curvature	Truck Climbing Lanes, Curve Warning Signs, High Friction Surface Treatments (HFST)
CAT3: Spot locations with history of severe crashes	Interchanges at KY 153, US 127, and KY 14. MP 39-41. Approach to I-71	No Interchange Lighting, Roadway Curvature	Add lighting, add curve warning signs at MP 39-41 and the approach to I-71

Proposed Phasing: The proposed I-71 corridor widening in Boone County can be one phase. The proposed spot improvements at interchanges (e.g., increase of acceleration and deceleration lanes, lighting, comparative travel time, and queue warning) within the corridor widening in Boone County can be done at the same time the roadway is widened. Other proposed spot improvements at interchanges could be phased geographically (e.g., by KYTC District). A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Several underground storage tank sites are located along the corridor. One hazardous waste site is located in La Grange. There are oil/gas wells located northeast of the I-71/KY-53 interchange, west of I-71/KY-47, west of I-71/KY-35, and northeast of I-71/Old US 127. Benjamin F. Turley House, a National Register of Historic Places Location, is south of I-71/KY-35. Karst features are common near La Grange, near Campbellsburg, and the I-71/KY-227 interchange. Special Waters can be found near I-71/KY-47 (Indian Creek), near I-71/US 127 interchange (UNT to Big Sugar Creek), and near I-71/KY-14 interchange (Little South Fork). Wooded area can be found along the corridor. There are Maternity and Reproductive Records for the Gray bat in Trimble County and Other Records in Oldham County. There are two census tracts with greater than 25% of the population living at or below the poverty level.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns											
Environmental Red Flag Features	**Mainline from I-75 to Boone/ Gallatin County Line**	**Interchange @ KY 53**	**Interchange @ KY 153**	**Interchange @ US 421**	**Interchange @ KY 389**	**Interchange @ KY 227**	**Interchange @ KY 1039**	**Interchange @ KY 35**	**Interchange @ US 127**	**Interchange @ KY 14**	**Interchange @ I-75**
Superfunds	N	N	N	N	N	N	N	N	N	N	N
Special Waters[1]	Y	N	N	N	N	N	N	N	N	Y	N
Forested Areas	Y	N	N	N	Y	Y	Y	N	Y	Y	N
NLEB Habitat Priority	N	N	N	N	N	N	N	N	N	N	N
IB Habitat Priority Area	N	N	N	N	N	N	N	N	N	N	N
FAA Airport Runways	N	N	N	N	N	N	N	N	N	N	N
Public Hunting Areas	N	N	N	N	N	N	N	N	N	N	N
Wildlife Management Areas	N	N	N	N	N	N	N	N	N	N	N
Local Parks	N	N	N	N	N	N	N	N	N	N	N
State/ National Parks	N	N	N	N	N	N	N	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N	N	N	N	N	N	N	N
Land and Water Conservation Fund	N	N	N	N	N	N	N	N	N	N	N
Area Landmarks	N	N	N	N	N	N	N	N	N	N	N
Point Landmarks	N	N	N	N	N	N	N	N	N	N	Y
National Register of Historic Places Location (Point)	N	N	N	N	N	N	N	Y	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N	N	N	N	Y	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-71 mainline from I-75 to Boone/Gallatin County Line	Widening to 6-lane	Yes
KY 53 to I-75 (entire corridor)	Dynamic Message Signs and CCTV cameras	No
KY 53 to I-75 (entire corridor)	Traffic Incident Management throughout	No
Interchanges at all interchanges	Extend acceleration and deceleration lane lengths	Likely Not

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	2.5 ($M)
ROW:	0.1 ($M)
Utility:	0.1 ($M)
Construction:	95.8 ($M)
Subtotal:	**98.5 ($M)**

TSMO Strategies

Dynamic Message Sign:	6.8 ($M)
Acceleration/Deceleration Lane at interchanges:	16.8 ($M)
Subtotal:	**23.6 ($M)**

TOTAL COST = 122.1 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-65
Segment ID: 6B
From: Cumberland Expressway
To: Western Kentucky Parkway
Counties: Warren, Edmonson, Barren, Hart, Hardin, Larue
Highway District(s): 3, 4

CORRIDOR SEGMENT OVERVIEW

Corridor 6B on I-65 extends from the Cumberland Expressway in Warren County to the Western Kentucky Parkway in Hardin County, passing through Edmonson, Barren, Hart, and Larue Counties along the way. The corridor is approximately 47.7 miles long and includes 10 interchanges.

The corridor passes by low-density residential and commercial areas of Park City and Cave City in Barren County, Munfordville in Hart County, and Upton in Larue County. Apart from those rural towns, the corridor passes through farmland, low-density detached housing, undeveloped land, and large-lot agricultural uses. These areas are considered rural by the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	6, 12’	10’ or 14’	Concrete Barrier (31’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
Cumberland Expressway	KY 728 (Bacon Creek Rd) in Bonnieville	270’ - 320'
KY 728 (Bacon Creek Rd) in Bonnieville	KY 224 (Upton Talley Rd) in Upton	230’ - 270'
KY 224 (Upton Talley Rd) in Upton	KY 61/Western KY Pkwy)	275’ - 315'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.250, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
Cumberland Pkwy	Trumpet
KY 255 (Mammoth Cave Pkwy)	Diamond
KY 70 (Mammoth Cave Rd)	Diamond
KY 218 (Flint Ridge Rd)	Diamond
US 31W (Main St)	Partial Cloverleaf
KY 728 (Bacon Creek Rd)	Partial Cloverleaf
KY 224 (Upton Talley Rd)	Diamond
KY 84 (E Western Ave)	Diamond
KY 222 (Glendale Hodgenville Rd W)	Diamond
Western KY Pkwy	Full Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
005B00103N	1st Non-Card Route On	46.87	US 31W	Fair	79	No	6	7	7	53.81	N
	Route On Structure	46.87	US 31W	Fair	79	No	6	7	7	25.92	N
005B00104L	Route On Structure	47.40	KY 255	Fair	98	No	6	7	7	25.92	N
005B00104R	Route On Structure	47.37	KY 255	Good	97.7	No	7	8	7	23.95	N
005B00106N	1st Non-Card Route On	46.68	CSX RAILROAD	Good	79	No	7	7	7	29.86	N
	Route On Structure	46.70	CSX RAILROAD	Good	79	No	7	7	7	29.86	N
047B00035N	Route On Structure	87.84	EAST RHUDES CREEK	Good	81.6	No	N	N	N	24	7
	1st Non-Card Route On	87.84	EAST RHUDES CREEK	Good	81.6	No	N	N	N	78	7
047B00037N	1st Non-Card Route On	81.93	COX RUN	Fair	77.5	No	N	N	N	78	6
	Route On Structure	81.94	COX RUN	Fair	77.5	No	N	N	N	78	6
047B00038N	Route On Structure	79.58	DORSEY CREEK	Good	53.9	No	N	N	N	78	7
	1st Non-Card Route On	79.59	DORSEY CREEK	Good	53.9	No	N	N	N	75	7
047B00185N	Route On Structure	83.15	Nolin River	Good	95.9	No	8	8	8	67	N
	1st Non-Card Route On	83.16	Nolin River	Good	95.9	No	8	8	8	67	N
047B00186N	Route On Structure	88.30	Rhudes Creek Road	Good	75	No	8	8	8	59	N
	1st Non-Card Route On	88.30	Rhudes Creek Road	Good	75	No	8	8	8	59	N
050B00015N	1st Non-Card Route On	67.20	KY-2756	Fair	59	No	N	N	N	59	6
	Route On Structure	67.20	KY-2756	Fair	59	No	N	N	N	27	6
050B00047N	Route On Structure	61.16	Green River	Good	79	No	8	8	8	38.75	N
	1st Non-Card Route On	61.16	Green River	Good	79	No	8	8	8	25	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
050B00049N	Route On Structure	63.98	CSX R/R	Good	79	No	8	8	8	96	N
050B00050L	Route On Structure	64.16	US-31W	Good	94	No	8	8	8	91.25	N
050B00050R	Route On Structure	64.15	US-31W	Good	94	No	8	8	8	96	N
050B00051N	Route On Structure	70.29	Bacon Creek	Good	79	No	8	8	8	42.58	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
005B00067R	1st Non-Card Route Under	LN-9008	17.67	55.77
	One Route Under	LN-9008	19.86	26.33
	Route On Structure	LN-9008	19.86	26.33
005B00067L	1st Non-Card Route Under	LOUIE B NUNN-CUMBE	16.17	35
	One Route Under	LOUIE B NUNN-CUMBE	16.92	51.18
	Route On Structure	LOUIE B NUNN-CUMBE	16.92	51.18
031B00035N	One Route Under	KY-1339	16.08	27.89
	1st Non-Card Route Under	KY-1339	16.11	52.12
005B00107N	1st Non-Card Route Under	KY-70	25	72
	One Route Under	KY-70	15.83	29.86
050B00045N	One Route Under	KY 2746	16.42	27
	1st Non-Card Route Under	KY 2746	16.5	38.75
050B00046N	1st Non-Card Route Under	KY 218	16.5	38.75
	One Route Under	KY 218	16.5	38.75
050B00044N	One Route Under	Cave Springs Rd	16.42	27
	1st Non-Card Route Under	Cave Springs Rd	16.42	27
050B00048N	1st Non-Card Route Under	KY 88	16.83	25
	One Route Under	KY 88	17.42	90
050B00052N	One Route Under	KY 728	17.67	75
062B00056N	One Route Under	KY 224	17	64.96
047B00181N	One Route Under	US 31W	16.58	67
047B00178N	One Route Under	KY 84	17.42	34
047B00179N	One Route Under	Old Sonora Rd	17.42	34
047B00180N	One Route Under	KY 1407	16.58	67
047B00182N	One Route Under	KY 1136	16.58	67
047B00047N	One Route Under	KY-222	17.5	35.5
	1st Non-Card Route Under	KY-222	16.75	36.25
047B00127R	1st Non-Card Route Under	WK-9001	17.58	64.39
	3rd Route Under	WK-9001	17.58	64.39

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	2nd Route Under	WK-9001	17.58	64.39
	1st Route Under	WK-9001	17.58	64.39
	Route On Structure	WK-9001	17.58	64.39
047B00127L	1st Route Under	WESTERN KENTUCKY P	19.75	64.17
	2nd Route Under	WESTERN KENTUCKY P	19.75	64.17
	3rd Route Under	WESTERN KENTUCKY P	19.75	64.17
	1st Non-Card Route Under	WESTERN KENTUCKY P	19.75	64.17
	Route On Structure	WESTERN KENTUCKY P	19.75	64.17

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From Cumberland Parkway to KY 255	33,000	12,000	36%
From KY 255 to KY 90	36,000	14,000	38%
From KY 90 to KY 218	37,000	14,000	39%
From KY 218 to US 31W	38,000	14,000	38%
From US 31W to KY 728	34,000	14,000	41%
From KY 728 to KY 224	34,000	14,000	40%
From KY 224 to KY 84	37,000	14,000	39%
From KY 84 to KY 222	39,000	15,000	38%
From KY 222 to Western KY Pkwy	39,000	14,000	38%

1,2) Rounded to the nearest thousand.

Mobility: There's no major potential traffic bottleneck sections along this corridor segment. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.)

Safety: 26.4% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and three Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
Entire Corridor (MP 42.9 to 90.5)	Dynamic Message Signs and CCTV cameras at all interchanges[2]; Traffic Incident Management throughout	N/A	Improve safety and mobility along I-65.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
2) DMS are proposed at the following locations: in the NB direction before the exits at KY 255, KY 90, KY 335, US 31W, KY 728, KY 84, and KY 222; in the SB direction before the exits at KY 222, KY 84, KY 224, KY 728, US 31W, KY 335, KY 255, and Cumberland Expressway.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-65/Western KY Pkwy Interchange[1] (I-65 NB on-ramp & SB off-ramp)

1) See additional improvements recommended by the Western Kentucky Parkway Upgrade Study.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
047B00037N	81.93	COX RUN	Bridge Rating
	81.94	COX RUN	Bridge Rating
050B00015N	67.2	KY-2756	Bridge Rating
	67.2	KY-2756	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.250). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire Corridor	Congestion, Incidents	Incident Management, Dynamic Message Signs and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	US 31W to KY 728	Weather condition (rain)	Improve drainage to avoid pooling of rain and add High Friction Surface Treatments (HFST) in areas with rain related crashes in curves.
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed interchange ramp improvement at the I-65/Western KY Parkway interchange can be one phase. The proposed DMS can be grouped to be one phase or phased geographically. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Common features throughout the corridor include hazardous waste sites, underground storage tank sites, and oil/gas wells. Two wellhead protection areas are in the northern portion of the corridor. There is one special water, Green River, located southwest of Munfordville. There is a well-developed karst landscape in the southern portion of the corridor. One National Park, Mammoth Cave, is near Park City. Two Land and Water Conservation Fund sites, Munfordville Sports Complex (Perryville) and Horse Cave City Park (Horse Cave) are located along the corridor. First Presbyterian Church, Richards – Hamms House, and Richards – Murry House are listed on the National Register of Historic Places in Hardin County. Three census tracts, two in Barren County and one in Hart County, have more than 25% of residents living at or below the poverty level. Wooded area can be found along the corridor. Priority areas for Northern Long-eared Bat (NLEB), Indiana bats, and Gray bats are present along the corridor in Edmonson, Hart, Barren, Hardin, Larue, and Warren Counties.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**I-65/Western KY Pkwy Interchange**
Superfunds	N
Special Waters[1]	N
Forested Areas	N
NLEB Habitat Priority	Y
IB Habitat Priority Area	N
FAA Airport Runways	N
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	N
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	N
Area Landmarks	N
Point Landmarks	N
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
Cumberland Expressway to Western KY Pkwy (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
Cumberland Expressway to Western KY Pkwy (entire corridor)	Traffic Incident Management throughout	No
I-65/Western KY Pkwy interchange	Adding a lane on I-65 NB on-ramp & SB off-ramp	Potentially

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	2.7 ($M)
ROW:	0.2 ($M)
Utility:	0.1 ($M)
Construction:	9.9 ($M)
Subtotal:	**12.9 ($M)**

TSMO Strategies

Dynamic Message Sign:	6.0 ($M)
Subtotal:	**6.0 ($M)**

TOTAL COST = 18.9 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-65
Segment ID: 6C
From: Western Kentucky Parkway
To: KY 44 in Shepherdsville
Counties: Hardin, Bullitt
Highway District(s): 4, 5

CORRIDOR SEGMENT OVERVIEW

Corridor 6C on I-65 extends from the Western Kentucky Parkway in Hardin County to KY 44 in Shepherdsville (Bullitt County). The corridor is approximately 25.8 miles long and includes nine interchanges.

The southern portion of this corridor is classified as rural town/exurban (according to KYSTMv19 data) and passes residential, industrial, and highway commercial areas on the southern and western edges of Elizabethtown. The northern portion is considered rural town/exurban, passing low-density residential and industrial uses on the approach to Shepherdsville. The remaining of the corridor passes through undeveloped land, with occasional farmland and low-density residential areas.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	6, 12’	10’	Depressed (60’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
Western Kentucky Parkway	KY 313 (Joe Prather Hwy) north of Elizabethtown	320’ - 365'
KY 313 (Joe Prather Hwy) north of Elizabethtown	KY 44 in Shepherdsville	285’ - 335'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.384, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
Western KY Pkwy	Full Cloverleaf
KY 9002 (Bluegrass Pkwy)	Trumpet
US 62 (N Mulberry St)	Diamond
KY 313 (Joe Prather Hwy)	Trumpet
KY 61 (Preston Hwy)	Partial Cloverleaf
KY 245 (Clermont Rd)	Diamond
KY 3538 (Ohm Dr)[1]	Diamond
KY 480 (Cedar Grove Rd)	Diamond
KY 44 (E 4th St)	Partial Cloverleaf

1) New interchange at Ohm Dr is open as of 2022 (Item #5-538).

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
015B00040L	Route On Structure	116.09	SALT RIVER	Fair	79.3	No	6	5	6	56	N
015B00040R	Route On Structure	116.08	SALT RIVER	Fair	79.3	No	6	5	6	56	N
015B00046N	1st Non-Card Route On	109.96	BARLEY CREEK	Fair	55.3	No	N	N	N	14.44	6
	Route On Structure	109.97	BARLEY CREEK	Fair	55.3	No	N	N	N	46	6
015B00049N	Route On Structure	106.85	CAIN RUN CREEK	Good	76	No	N	N	N	46	7
	1st Non-Card Route On	106.85	CAIN RUN CREEK	Good	76	No	N	N	N	46	7
015B00051N	1st Non-Card Route On	109.48	CROOKED CREEK	Fair	43.4	No	N	N	N	46	5
	Route On Structure	109.47	CROOKED CREEK	Fair	43.4	No	N	N	N	29.53	5
015B00067L	Route On Structure	104.69	CSX RR & KY 61	Fair	98	No	7	7	6	66.6	N
015B00067R	Route On Structure	104.70	CSX RR & KY 61	Fair	87	No	7	7	5	61.45	N
015B00068L	Route On Structure	105.91	E OAK ST	Fair	96	No	7	7	6	54.46	N
015B00068R	Route On Structure	105.94	E OAK ST	Fair	96	No	6	7	6	54.46	N
015B00073L	Route On Structure	112.34	LONG LICK CREEK	Fair	97	No	5	6	7	61.68	N
015B00073R	Route On Structure	112.33	LONG LICK CREEK	Fair	97	No	5	6	6	61.68	N
015B00074L	Route On Structure	112.45	RJ CORMAN RAILROAD	Fair	98	No	6	8	8	61.68	N
015B00074R	Route On Structure	112.45	RJ CORMAN RAILROAD	Fair	97	No	5	8	8	61.68	N
015B00076L	Route On Structure	115.58	KY 480	Fair	94	No	6	7	7	51.18	N
015B00076R	Route On Structure	115.57	KY 480	Fair	94	No	6	7	7	51.18	N
047B00011N	1st Non-Card Route On	93.70	TOWN BRANCH	Good	73.5	No	N	N	N	40.83	7
	Route On Structure	93.72	TOWN BRANCH	Good	73.5	No	N	N	N	24	7
047B00021N	1st Non-Card Route On	92.05	VALLEY CREEK	Fair	70	No	N	N	N	24	6

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
	Route On Structure	92.04	VALLEY CREEK	Fair	70	No	N	N	N	24	6
047B00118L	Route On Structure	100.52	COLESBURG ROAD	Good	74.6	No	7	7	7	76.5	N
047B00118R	Route On Structure	100.51	COLESBURG ROAD	Fair	76.3	No	6	8	6	96.5	N
047B00119L	Route On Structure	98.56	CLEAR CREEK	Good	93	No	7	7	7	96.5	N
047B00119R	Route On Structure	98.56	CLEAR CREEK	Good	93	No	7	7	7	96.5	N
047B00123N	Route On Structure	98.79	CLEAR CREEK	Fair	69.7	No	N	N	N	44	6
	1st Non-Card Route On	98.79	CLEAR CREEK	Fair	69.7	No	N	N	N	44	6
047B00125L	1st Non-Card Route On	91.53	CSX RAILROAD& HAWKINS DR	Good	97.2	No	7	7	7	107.87	N
	Route On Structure	91.55	CSX RAILROAD& HAWKINS DR	Good	97.2	No	7	7	7	107.87	N
047B00125R	Route On Structure	91.54	CSX RAILROAD& HAWKINS DR	Good	93	No	7	7	7	45.67	N
	1st Non-Card Route On	91.48	CSX RAILROAD& HAWKINS DR	Good	93	No	7	7	7	45.67	N
047B00126R	Route On Structure	91.43	US 31 W	Fair	91.6	No	7	7	6	64.17	N
	1st Non-Card Route On	91.41	US 31 W	Fair	91.6	No	7	7	6	45.67	N
047B00129L	Route On Structure	92.16	SPRINGFIELD ROAD	Good	93	No	7	7	7	48.5	N
047B00129R	Route On Structure	92.16	SPRINGFIELD ROAD	Good	93	No	7	7	7	48.5	N
047B00132L	Route On Structure	91.45	US 31W	Good	83.6	No	7	7	7	64.42	N
047B00133L	Route On Structure	103.29	ROLLING FORK RIVER	Fair	78.6	No	6	5	6	64.42	N
047B00133R	Route On Structure	103.28	ROLLING FORK RIVER	Fair	75.6	No	5	5	6	60	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
015B00069N	One Route Under	KY 733	16.08	45.93
	1st Non-Card Route Under	KY 733	16.08	45.93
015B00071N	1st Non-Card Route Under	PIONEER DR	17.17	41.99
	One Route Under	PIONEER DR	17.17	41.99
015B00072N	1st Non-Card Route Under	KY 245	16	61.68
	One Route Under	KY 245	16	61.68
015B00075N	2nd Route Under	KY 3219	16.42	51.18
	1st Non-Card Route Under	KY 3219	16.42	51.18
	1st Route Under	KY 3219	16.42	51.18
015B00077N	2nd Route Under	KY 44	16.42	51.18
	1st Route Under	KY 44	16.42	51.18

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	1st Non-Card Route Under	KY 44	16.42	51.18
015B00108N	One Route Under	KY 3538	16.04	39.04
047B00122N	1st Non-Card Route Under	Tunnel Hill Rd	16.67	96.5
	One Route Under	Tunnel Hill Rd	16.67	96.5
047B00127L	1st Route Under	WESTERN KENTUCKY P	19.75	64.17
	2nd Route Under	WESTERN KENTUCKY P	19.75	64.17
	3rd Route Under	WESTERN KENTUCKY P	19.75	64.17
	1st Non-Card Route Under	WESTERN KENTUCKY P	19.75	64.17
	Route On Structure	WESTERN KENTUCKY P	19.75	64.17
047B00127R	1st Non-Card Route Under	WK-9001	17.58	64.39
	3rd Route Under	WK-9001	17.58	64.39
	2nd Route Under	WK-9001	17.58	64.39
	1st Route Under	WK-9001	17.58	64.39
	Route On Structure	WK-9001	17.58	64.39
047B00128L	One Route Under	Bluegrass Parkway	18.17	91.15
	1st Non-Card Route Under	Bluegrass Parkway	18.17	91.15
	Route On Structure	Bluegrass Parkway	18.17	91.15
047B00128R	1st Non-Card Route Under	Bluegrass Parkway	18.17	91.15
	One Route Under	Bluegrass Parkway	16.08	48.5
	Route On Structure	Bluegrass Parkway	16.08	48.5
047B00130L	1st Non-Card Route Under	U.S. 62	16.08	48.5
	One Route Under	U.S. 62	16	64.42
047B00130R	One Route Under	US-62	16	64.42
	1st Non-Card Route Under	US-62	16	64.42
047B00149L	1st Non-Card Route Under	KY 313	28.25	60
	1st Route Under	KY 313	17.25	71.5
047B00149R	1st Non-Card Route Under	KY-313	17.25	71.5
	1st Route Under	KY-313	17.25	71.5
	2nd Route Under	KY-313	17.25	71.5

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From Western KY Pkwy to KY 9002	61,000	18,000	30%
From KY 9002 to US 62	55,000	16,000	30%
From US 62 to KY 313	50,000	16,000	32%
From KY 313 to KY 61	56,000	15,000	28%
From KY 61 to KY 245	58,000	16,000	28%
From KY 245 to KY 480	70,000	18,000	25%
From KY 480 to KY 44	80,000	18,000	23%

1,2) Rounded to the nearest thousand.

Mobility: There's no major potential traffic bottleneck sections along this corridor segment. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.)

Safety: 8.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and three Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
From KY 313 to KY 61 (MP 102.5 to 104.7)	Truck Climbing Only Lane for the steep uphill grades	N/A	Improve safety and mobility along I-65.	C	D	C	D
From KY 61 to E Oak St (MP 104.7 to 106)				D	D	D	D
From Wilson Creek Rd to KY 245 (MP 108 to 111.8)				D	D	D	D
From KY 245 to Ohm Dr (MP 111.8 to 114.3)				C	C	C	C
From Ohm Dr to KY 480 (MP 114.3 to 115.6)				C	C	C	C
From KY 480 to KY 44 (MP 115.6 to 116.3)				C	C	C	C
Entire Corridor (MP 90.5 to 116.3)	Dynamic Message Signs and CCTV cameras at all interchanges[2]; Traffic Incident Management throughout	N/A	Improve safety and mobility along I-65.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

2) DMS are proposed at the following locations: in the NB direction before the exits at US 62, KY 313, KY 61, KY 245, Ohm Drive, KY 480, and KY 44; in the SB direction before the exits at KY 480, Ohm Drive, KY 245, KY 313, US 62 and Bluegrass Parkway.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-65/Western KY Pkwy Interchange (I-65 NB on-ramp & SB off-ramp)
KY 245 (I-65 SB off-ramp)
KY 44 (I-65 SB off-ramp)

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
015B00040L	116.09	SALT RIVER	Bridge Rating
015B00040R	116.08	SALT RIVER	Bridge Rating
015B00046N	109.96	BARLEY CREEK	Bridge Rating
	109.97	BARLEY CREEK	Bridge Rating
015B00051N	109.48	CROOKED CREEK	Bridge Rating
	109.47	CROOKED CREEK	Bridge Rating
015B00067R	104.7	CSX RR & KY 61	Bridge Rating
015B00073L	112.34	LONG LICK CREEK	Bridge Rating
015B00073R	112.33	LONG LICK CREEK	Bridge Rating
015B00074R	112.45	RJ CORMAN RAILROAD	Bridge Rating
047B00021N	92.05	VALLEY CREEK	Bridge Rating
	92.04	VALLEY CREEK	Bridge Rating
047B00123N	98.79	CLEAR CREEK	Bridge Rating
	98.79	CLEAR CREEK	Bridge Rating
047B00133L	103.29	ROLLING FORK RIVER	Bridge Rating
047B00133R	103.28	ROLLING FORK RIVER	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to

accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.384). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	MP 104-106 and 107-116	Steep grades	Truck climbing only lane
	Entire Corridor	Congestion/incidents	Traffic Incident Management, Dynamic Message Signs (DMS) and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	Western KY Pkwy to KY 44; US 62 to KY 313	Wet Weather, Roadway Curvature	Wet Weather Warning Signs, Curve Warning Signs
CAT3: Spot locations with history of severe crashes	Curve North of US 62	Roadway Curvature	High Friction Surface Treatments (HFST)

Proposed Phasing: The proposed truck climbing only lanes can be one phase. The spot improvements at interchanges (interchange ramp improvements and DMS) can be grouped to be one phase or phased geographically (e.g., by KYTC District), depending on funding availability. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated between two well-developed urban cities, resulting in a high frequency of underground storage tank sites, most in Elizabethtown. Two Wellhead Protection Areas and two hazardous waste sites are located near Elizabethtown. Oil/gas wells are common throughout the corridor, surrounding the urban areas. One Special Water, Wilson Creek, is located south of Lebanon Junction. One local trail, Elizabethtown Greenspace Trail System, is in Elizabethtown. A Kentucky Frontier Trail, Wilderness Road, is located near Shepherdsville. Knobs State Forest and Wildlife Management Area (Public Hunting Ground, Kentucky Heritage Land Conservation Fund, and Forested Area) is located south of Clermont. Karsts are common near Elizabethtown. Wooded area can be found along the corridor. Maturity and reproductive records can be found for the Gray bat in Hardin County and Nelson County and other records in Bullitt County. There is Known Summer 1 habitat for the Indiana bat in Bullitt, Hardin, and Nelson Counties. There is Known Summer 1 habitat for the Northern Long-eared Bat (NLEB) in Bullitt County, Known Swarming 2 habitat and Known Summer 1 habitat and Swarming 2 habitat in Hardin County. There is one census tracts with greater than 25% of the population living at or below the poverty level.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns				
Environmental Red Flag Features	**I-65 mainline from KY 313 to Ohm Dr**	**I-65/Western KY Pkwy Interchange**	**I-65/KY 245 Interchange**	**I-65/KY 44 Interchange**
Superfunds	N	N	N	N
Special Waters[1]	Y	N	N	N
Forested Areas	Y	Y	Y	N
NLEB Habitat Priority	Y	Y	N	Y
IB Habitat Priority Area	Y	N	Y	N
FAA Airport Runways	N	N	N	N
Public Hunting Areas	Y	N	N	N
Wildlife Management Areas	Y	N	N	N
Local Parks	N	N	N	N
State/ National Parks	N	N	N	N
Kentucky Heritage Land Conservation Fund	Y	N	N	N
Land and Water Conservation Fund	N	N	N	N
Area Landmarks	N	N	N	N
Point Landmarks	N	N	N	N
National Register of Historic Places Location (Point)	N	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-65 from MP 104 to 106 and from MP 107 to 116	Truck Climbing Only Lane for the steep uphill grades	Potentially
I-65/Western KY Pkwy Interchange	Adding a lane on I-65 NB on-ramp & SB off-ramp	Potentially
I-65/KY 245 Interchange	Adding a lane on I-65 SB off-ramp	No
I-65/KY 44 Interchange	Adding a lane on I-65 SB off-ramp	Potentially
From Western KY Pkwy to KY 44 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From Western KY Pkwy to KY 44 (entire corridor)	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	3.3 ($M)
ROW:	0.2 ($M)
Utility:	0.2 ($M)
Construction:	16.0 ($M)
Subtotal:	**19.7 ($M)**
TSMO Strategies	
Truck Climbing Lanes:	1.1 ($M)
Dynamic Message Sign:	5.2 ($M)
Subtotal:	**6.3 ($M)**
TOTAL COST =	**26.0 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-65
Segment ID: 6D
From: KY 44 in Shepherdsville
To: I-265
Counties: Bullitt, Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 6D on I-65 extends from KY 44 in Shepherdsville (Bullitt County) to I-265 in Jefferson County. The corridor is approximately 8.5 miles long and includes three interchanges.

The southern portion of this corridor passes through industrial, residential, and agricultural areas in Bullitt County. These areas are considered as rural town/exurban (according to v8_KYSTMv19 data) with clusters of homes and commercial buildings adjacent to I-65. The northern portion of this corridor transitions to suburban Louisville in Jefferson County with denser residential and industrial areas.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire corridor	Interstate	6, 12’	10’	Depressed (60’)	70 mph

Right of Way: The existing right of way is generally 275’ – 310’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.448, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 44 (E 4th St)	Partial Cloverleaf
KY 1526 (John Harper Hwy)	Diamond
I-265	Semi Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
015B00043N	Route On Structure	118.96	BLUE LICK CREEK	Fair	52.1	No	N	N	N	60	6
	1st Non-Card Route On	118.97	BLUE LICK CREEK	Fair	52.1	No	N	N	N	60	6
015B00045N	1st Non-Card Route On	121.48	BROOKS RUN	Fair	72	No	N	N	N	54.46	5
	Route On Structure	121.44	BROOKS RUN	Fair	72	No	N	N	N	14.44	5
056B00305N	Route On Structure	124.91	MUD CREEK	Fair	70	No	N	N	N	30	6
	1st Non-Card Route On	124.91	MUD CREEK	Fair	70	No	N	N	N	22	6

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
015B00077N	2nd Route Under	KY 44	16.42	51.18
	1st Route Under	KY 44	16.42	51.18
	1st Non-Card Route Under	KY 44	16.42	51.18
015B00078R	One Route Under	KY 61 NB	16.17	39.04
	1st Non-Card Route Under	KY 61 NB	16.17	39.04
015B00079N	1st Non-Card Route Under	KY 1526	16.17	39.04
	One Route Under	KY 1526	16.17	39.04
015B00105L	One Route Under	KY 61 SB	16.17	39.04
056B00318L	3rd Route Under	KY 841 WB	18.92	90
	3rd Route Under	KY 841 WB	19.92	43.5
	1st Non-Card Route Under	KY 841 WB	18.92	90
	1st Non-Card Route Under	KY 841 WB	18.92	90
	Route On Structure	KY 841 WB	19.92	43.5
	2nd Route Under	KY 841 WB	18.42	68
	2nd Route Under	KY 841 WB	19.92	43.5
056B00318R	1st Non-Card Route Under	KY 841 EB	18.5	53.58
	1st Non-Card Route Under	KY 841 EB	17.58	64
	Route On Structure	KY 841 EB	16.67	62.08
056B00319N	1st Non-Card Route Under	I-65 NB RAMP	19.92	50
	Route On Structure	I-65 NB RAMP	19.92	50
	One Route Under	I-65 NB RAMP	17.17	24
056B00320N	1st Non-Card Route Under	I-65 SB RAMP	17.17	24
	One Route Under	I-65 SB RAMP	17.08	50

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	Route On Structure	I-65 SB RAMP	17.08	50
056B00340N	One Route Under	KY 1851	17.58	29
	1st Non-Card Route Under	KY 1851	17.58	29

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 44 to KY 1526	86,000	19,000	22%
From KY 1526 to I-265	115,000	20,000	18%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire corridor	Interstate	6, 12’	60’	10’	115,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently one CCTV camera and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts[1]**	**Notes[2]**	**Reason for Improvement**	**Level of Service (LOS)[3]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
From KY 44 to KY 1526 (MP 116.27 to 121.30)	Widening to 8-lane	4, 12-foot lanes in each direction with 12-foot shoulder and 36-foot flush median	The expected v/c in 2045 and LOTTR exceed the established thresholds.	D	D	C	D
From KY 1526 to Ripple Creek Rd (MP 121.30 to 124.00)[4]				E	F	D	E
Steep Vertical Grade (MP 117-MP 120)	Truck Climbing Lanes	N/A	Improve safety and mobility along I-65.	See above	See above	See above	See above
Entire corridor (MP 116.27 to 125.0)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[5]	N/A	Improve safety and mobility along I-65.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) I-65 from Ripple Creek Rd (MP 124.00) to I-265 (MP 125.00) already has 8 lanes in 2019.
5) DMS are proposed at the following locations: in the NB direction before the exit at KY 1526 and in the SB direction before the exits at KY 1526 and KY 44.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
KY 44 (I-65 SB off-ramp)
KY 1526 (I-65 SB off-ramp and NB on-ramp)
I-65/I-265 System Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** All bridges along the corridor are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
015B00043N	118.96	BLUE LICK CREEK	Bridge Rating & Within Widening Section
	118.97	BLUE LICK CREEK	Bridge Rating & Within Widening Section
015B00045N	121.48	BROOKS RUN	Bridge Rating & Within Widening Section
	121.44	BROOKS RUN	Bridge Rating & Within Widening Section
056B00305N[1]	124.91	MUD CREEK	Bridge Rating
	124.91	MUD CREEK	Bridge Rating

1) The I-65 section that carries bridge 056B00305N already has 8 lanes in 2019.

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.448). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire Corridor, Steep Vertical Grade (MP 117-120)	Congestion/incidents, Grades	Traffic Incident Management, Dynamic Message Signs (DMS) and CCTV cameras, Truck Climbing Lanes
CAT2: Other major clusters of safety issues	KY 44 to I-265	High speeds, roadway departure	Continuous rumble strips
CAT3: Spot locations with history of severe crashes	KY 44 and KY 1526 Interchanges	Nighttime crashes	Upgrade lighting

Proposed Phasing: The proposed I-65 widening for the entire corridor can be one phase or split into two phases geographically (one for the section between KY 44 and KY 1526, and another for the section between KY 1526 and Ripple Creek Rd), depending on funding availability. The proposed spot improvements at interchanges (e.g., interchange modification, lighting, etc.) and truck climbing only lanes within the corridor widening can be done at the same time the roadway is widened. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed or developing area resulting in a high frequency of underground storage tank sites, most are surrounding the interchanges. Two hazardous waste sites are located northwest of I-65 and KY 44, and one hazardous waste site is located at I-65 and KY 1526. Two local parks are in Shepherdsville. One karst is located northeast of Shepherdsville. One Land and Water Conservation Fund, Bullitt County Park, is in Shepherdsville. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson and Bullitt Counties and there is Known Summer 1 habitat for the Northern Long-eared Bat (NLEB) in Bullitt and Jefferson Counties. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns				
Environmental Red Flag Features	**Entire Corridor**	**I-65/KY 44 Interchange**	**I-65/KY 1526 Interchange**	**I-65/I-265 Interchange**
Superfunds	N	N	N	N
Special Waters[1]	N	N	N	N
Forested Areas	Y	N	N	Y
NLEB Habitat Priority	Y	N	N	Y
IB Habitat Priority Area	N	N	N	N
FAA Airport Runways	N	N	N	N
Public Hunting Areas	N	N	N	N
Wildlife Management Areas	N	N	N	N
Local Parks	Y	Y	N	N
State/ National Parks	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N
Land and Water Conservation Fund	N	N	N	N
Area Landmarks	N	N	N	N
Point Landmarks	Y	N	Y	N
National Register of Historic Places Location (Point)	N	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
From KY 44 to Ripple Creek Rd	Widening to 8 lanes	Potentially
KY 44 to I-265 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
KY 44 to I-265 (entire corridor)	Traffic Incident Management throughout	No
Steep Vertical Grade (MP 117-MP 120)	Truck Climbing Only Lanes for the steep uphill grades	Potentially
I-65/KY 44 Interchange	Adding a lane on I-65 SB off-ramp	Potentially
I-65/KY 1526 Interchange	Adding a lane on I-65 SB off-ramp & NB on-ramp	Potentially
I-65/I-265 System Interchange	Interchange modification	Potentially

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	11.7 ($M)
ROW:	2.3 ($M)
Utility:	1.3 ($M)
Construction:	199.7 ($M)
Subtotal:	**215.1 ($M)**
TSMO Strategies	
Dynamic Message Sign:	1.2 ($M)
Truck Climbing Lane:	0.3 ($M)
Subtotal:	**1.5 ($M)**
TOTAL COST =	**216.5 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-65
Segment ID: 6E
From: I-265
To: I-264
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 6E on I-65 extends from I-265 to I-264 in Jefferson County. The corridor is approximately 5.6 miles long and has five interchanges.

The corridor is classified as suburban according to the KYSTMv19 data, with the northern terminus categorized as dense urban. The western side of the corridor is flanked by industrial uses, open space, and the Louisville International Airport, while the eastern side mostly abuts dense detached residential housing and some industrial areas.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-265 to KY 1065	Interstate	12, 12’	10’	Concrete Barrier (23’)	65 mph
From KY 1065 to KY 1747	Interstate	8, 12’	15’	Concrete Barrier (23’)	65 mph
From KY 1747 to I-264	Interstate	10, 12’	10’	Concrete Barrier (23’)	55 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-265	KY 1747 (Fern Valley Rd)	420’ - 465'
KY 1747 (Fern Valley Rd)	I-264	300’ - 315'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.231, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-265	Semi Directional
KY 1065 (Outer Loop)	Partial Cloverleaf
KY 1747 (Fern Valley Rd)	Partial Cloverleaf
Grade Ln and KY 61 (Preston Hwy)	Split Diamond
I-264	Semi Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00110N	1st Non-Card Route On	126.54	SOUTHERN DITCH	Fair	70	No	N	N	N	32	6
	Route On Structure	126.54	SOUTHERN DITCH	Fair	70	No	N	N	N	32	6
056B00386N	Route On Structure	127.83	CSX RR, NORTHERN DITCH	Fair	73	No	5	6	5	28	N
	1st Non-Card Route On	127.82	CSX RR, NORTHERN DITCH	Fair	73	No	5	6	5	60.33	N
	2nd Non-Card Route On	127.83	CSX RR, NORTHERN DITCH	Fair	73	No	5	6	5	24.5	N
	3rd Non-Card Route On	127.84	CSX RR, NORTHERN DITCH	Fair	73	No	5	6	5	23	N
056B00387N	Route On Structure	128.09	GREASY DITCH	Fair	59	No	N	N	N	60	5
	1st Non-Card Route On	128.08	GREASY DITCH	Fair	59	No	N	N	N	61	5
	2nd Non-Card Route On	128.09	GREASY DITCH	Fair	59	No	N	N	N	63	5
056B00389N	2nd Non-Card Route On	129.79	GRADE LN	Poor	82.7	No	4	7	6	62.21	N
	Route On Structure	129.78	GRADE LN	Poor	82.7	No	4	7	6	80	N
	1st Non-Card Route On	129.77	GRADE LN	Poor	82.7	No	4	7	6	62.08	N
056B00390N	2nd Non-Card Route On	130.04	STANDIFORD LN	Poor	66.7	No	4	5	7	62.08	N
	Route On Structure	130.03	STANDIFORD LN	Poor	66.7	No	4	5	7	64.4	N
	1st Non-Card Route On	130.02	STANDIFORD LN	Poor	66.7	No	4	5	7	64.4	N
056B00391N	Route On Structure	130.75	I-264 & RAMPS	Fair	71	No	5	6	5	39.37	N
	1st Non-Card Route On	130.74	I-264 & RAMPS	Fair	71	No	5	6	5	39.37	N
056B00392N	1st Non-Card Route On	130.59	I-264 EB ON RAMP	Fair	80	No	7	6	6	39.4	N
	Route On Structure	130.59	I-264 EB ON RAMP	Fair	80	No	7	6	6	40	N
	3rd Non-Card Route On	130.59	I-264 EB ON RAMP	Fair	80	No	7	6	6	40	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00394N	Route On Structure	130.72	I-264 & RAMPS	Fair	82	No	7	7	6	39.04	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00306N	1st Non-Card Route Under	S PARK RD	16.42	22
	1st Route Under	S PARK RD	14.75	30
	2nd Route Under	S PARK RD	14.75	30
	3rd Route Under	S PARK RD	14.75	30
056B00307N	1st Route Under	KY 1065	14.92	60
	2nd Route Under	KY 1065	16.83	53.5
	3rd Route Under	KY 1065	16.83	53.5
	1st Non-Card Route Under	KY 1065	16.17	61
056B00318L	3rd Route Under	KY 841 WB	18.92	90
	3rd Route Under	KY 841 WB	19.92	43.5
	1st Non-Card Route Under	KY 841 WB	18.92	90
	1st Non-Card Route Under	KY 841 WB	18.92	90
	Route On Structure	KY 841 WB	19.92	43.5
	2nd Route Under	KY 841 WB	18.42	68
	2nd Route Under	KY 841 WB	19.92	43.5
	1st Route Under	KY 841 WB	18.92	90
	1st Route Under	KY 841 WB	19.92	43.5
056B00318R	1st Non-Card Route Under	KY 841 EB	18.5	53.58
	1st Non-Card Route Under	KY 841 EB	17.58	64
	Route On Structure	KY 841 EB	16.67	62.08
	1st Route Under	KY 841 EB	17.58	64
	1st Route Under	KY 841 EB	17.58	64
056B00388N	2nd Route Under	KY 1747	23.25	70.33
	1st Route Under	KY 1747	23.25	70.33
	1st Non-Card Route Under	KY 1747	17.83	62.21
056B00487N	1st Route Under	GRADE LN CONNECTOR	17.42	33
	1st Non-Card Route Under	GRADE LN CONNECTOR	16	52

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-265 to KY 1065	141,000	19,000	13%
From KY 1065 to KY 1747	120,000	18,000	15%
From KY 1747 to Grade Ln/KY 61	159,000	20,000	13%
From Grade Ln/KY 61 to I-264	118,000	17,000	14%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	8-12, 12’	23’	10’-15’	159,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently five CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are

identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
From I-265 to KY 1065 (MP 125.5 to 126.2)	Collector-Distributor (CD) System throughout (except for the section between KY 1065 and KY 1747 with existing CD)	2, 12-foot lane with 4-foot left shoulder and 6-foot right shoulder.	Improve safety and mobility along I-65.	C	C	C	C
From KY 1065 to KY 1747 (MP 127.0 to 128.0)				D	D	C	C
From KY 1747 to Grade Ln/KY 61 (MP 128.6 to 129.4)				D	D	D	D
From Grade Ln/KY 61 to I-264 (MP 130.0 to 130.3)				C	D	C	C
Entire Corridor (MP 124.8 to 130.2)	Queue Warning/ Comparative Travel Time and Traffic Incident Management throughout	N/A	Improve safety and mobility along I-65.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None (due to mobility deficiency). However, interchange modifications may be needed at KY 1065, KY 1747, and KY 61, due to the potential new CD system.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00110N[1]	126.54	SOUTHERN DITCH	Bridge Rating
	126.54	SOUTHERN DITCH	Bridge Rating
056B00386N	127.83	CSX RR, NORTHERN DITCH	Bridge Rating
	127.82	CSX RR, NORTHERN DITCH	Bridge Rating
	127.83	CSX RR, NORTHERN DITCH	Bridge Rating
	127.84	CSX RR, NORTHERN DITCH	Bridge Rating
056B00387N[1]	128.09	GREASY DITCH	Bridge Rating
	128.08	GREASY DITCH	Bridge Rating
	128.09	GREASY DITCH	Bridge Rating
056B00389N[1]	129.79	GRADE LN	Bridge Rating
	129.78	GRADE LN	Bridge Rating
	129.77	GRADE LN	Bridge Rating
056B00390N[1]	130.04	STANDIFORD LN	Bridge Rating
	130.03	STANDIFORD LN	Bridge Rating
	130.02	STANDIFORD LN	Bridge Rating
056B00391N	130.75	I-264 & RAMPS	Bridge Rating
	130.74	I-264 & RAMPS	Bridge Rating

1) The bridges may also need widening due to the potential new CD system.

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.231). Proposed CD system lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-265 to I-264 (entire corridor)	Congestion	CD System, Queue Warning, Comparative Travel Time, Incident Management
CAT2: Other major clusters of safety issues	I-265 to I-264 (entire corridor)	High Speed	Speed Warning Signage
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed Collector-Distributor System can be one phase or split into two phases geographically (one for the section between I-265 and KY 1065, another for the section between KY 1747 and I-264), depending on funding availability. The spot improvements at interchanges (Queue Warning) can be grouped to be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites, most found in the top half of the corridor and two hazardous waste sites adjacent to the Louisville Muhammad Ali International Airport. A Kentucky Frontier Trail, Wilderness Road is in the northeast quarter of the corridor. Wooded area can be found along the corridor; most is in the southern half of the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County. There are no special use or outstanding resource waters in the corridor. There are three census tracts with

greater than 25% of the population living at or below the poverty level, and one census tracts where the minority population is more than 28%.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**Entire Corridor**
Superfunds	N
Special Waters[1]	N
Forested Areas	Y
NLEB Habitat Priority	N
IB Habitat Priority Area	N
FAA Airport Runways	Y
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	N
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	N
Area Landmarks	Y
Point Landmarks	Y
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
From I-265 to I-264 (entire corridor)	Collector Distributor System throughout	Yes
	Queue Warning and Comparative Travel Time/Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	7.7 ($M)
ROW:	1.0 ($M)
Utility:	1.0 ($M)
Construction:	70.4 ($M)
Subtotal:	**80.0 ($M)**
TSMO Strategies	
Queue Warning:	2.8 ($M)
Subtotal:	**2.8 ($M)**
TOTAL COST =	**82.8 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. The cost estimation does not include the potential interchange modifications due to the proposed new CD system.
5. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
6. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-65
Segment ID: 6F
From: I-264
To: Indiana State Line
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 6F on I-65 extends from I-264 in Jefferson County to the Indiana state line. The corridor is approximately 7.0 miles long and includes 11 interchanges.

From the southern terminus to the interchange north of E Burnett Ave, the corridor passes high density detached housing, the Louisville Muhammad Ali International Airport International Airport, and commercial/industrial uses on the east side, and the University of Louisville on the west side. From there the corridor passes through high density detached housing and then a mix of uses as it cuts through downtown Louisville. These areas are considered dense urban according to the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-264 to Crittenden Dr	Interstate	7-8, 12’	10’	Concrete Barrier (9’)	55 mph
From Crittenden Dr to the Indiana state line	Interstate	6, 12’	10’	Concrete Barrier (9’)	55 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-264	Eastern Pkwy	200’ - 250'
Eastern Pkwy	US 150 (W Broadway)	100’ - 120'
US 150 (W Broadway)	Indiana state line	230’ - 275'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.284, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-264	Semi Directional
Crittenden Dr	Half Diamond
US 60 (Eastern Pkwy)	Half Diamond
University Blvd	Diamond
Arthur St	Half Diamond
KY 61/ S Preston St	Single Entrance
S Jackson St, et al	Split Diamond
St Catherine St/ E Oak St	Split Diamond
E Jacob St	Half Diamond
E Chestnut St	Half Diamond
E Liberty St, et al	Split Diamond
I-64	Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00179N	Route On Structure	133.87	HILL, CSX RR & BURNETT	Poor	53	No	5	5	4	94	N
	1st Non-Card Route On	133.87	HILL, CSX RR & BURNETT	Poor	53	No	5	5	4	35	N
056B00180N	1st Non-Card Route On	132.92	US 60A (EASTERN PKWY)	Fair	84	No	5	6	5	62	N
	Route On Structure	132.91	US 60A (EASTERN PKWY)	Fair	84	No	5	6	5	62	N
056B00181N	1st Non-Card Route On	133.05	UNIVERSITY BLVD	Fair	82	No	5	6	5	58	N
	Route On Structure	133.06	UNIVERSITY BLVD	Fair	82	No	5	6	5	58	N
056B00182N	Route On Structure	133.33	KY 61 (E BRANDEIS AVE)	Fair	69	No	5	5	5	63	N
	1st Non-Card Route On	133.33	KY 61 (E BRANDEIS AVE)	Fair	69	No	5	5	5	63	N
056B00183N	1st Non-Card Route On	134.74	E KENTUCKY & S BROOK ST	Poor	47.8	No	5	4	4	62	N
	Route On Structure	134.75	E KENTUCKY & S BROOK ST	Poor	47.8	No	5	4	4	62	N
056B00184N	Route On Structure	134.62	ST CATHERINE ST	Fair	69	No	5	6	5	140	N
	1st Non-Card Route On	134.62	ST CATHERINE ST	Fair	69	No	5	6	5	40	N
056B00185N	1st Non-Card Route On	134.50	S FLOYD ST	Fair	69	No	5	6	5	40	N
	Route On Structure	134.53	S FLOYD ST	Fair	69	No	5	6	5	99.9	N
056B00186N	Route On Structure	134.44	E OAK ST	Fair	69	No	5	6	5	99.9	N

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
	1st Non-Card Route On	134.44	E OAK ST	Fair	69	No	5	6	5	99.9	N
056B00187N	1st Non-Card Route On	134.24	E ORMSBY AVE	Fair	78.7	No	5	6	6	30.5	N
	Route On Structure	134.24	E ORMSBY AVE	Fair	78.7	No	5	6	6	25.92	N
056B00188N	Route On Structure	135.07	COLLEGE ST	Fair	80.1	No	6	6	6	25.92	N
	1st Non-Card Route On	135.07	COLLEGE ST	Fair	80.1	No	6	6	6	28.54	N
056B00189N	1st Non-Card Route On	134.95	E BRECKINRIDGE ST	Fair	67.2	No	6	5	6	25.5	N
	Route On Structure	134.95	E BRECKINRIDGE ST	Fair	67.2	No	6	5	6	28	N
056B00190N	Route On Structure	134.85	CALDWELL ST	Fair	81	No	6	6	6	28	N
	1st Non-Card Route On	134.85	CALDWELL ST	Fair	81	No	6	6	6	65.33	N
056B00191N	1st Non-Card Route On	135.27	JACOB, BROADWAY, GRAY ST	Fair	73.9	No	6	5	5	65.33	N
	Route On Structure	135.27	JACOB, BROADWAY, GRAY ST	Fair	73.9	No	6	5	5	60	N
056B00192N	Route On Structure	135.43	E CHESTNUT ST	Fair	70	No	6	5	5	60	N
	1st Non-Card Route On	135.43	E CHESTNUT ST	Fair	70	No	6	5	5	60	N
056B00193N	1st Non-Card Route On	135.58	BROOK ST & MUHAMMAD ALI	Fair	67.9	No	5	5	5	60	N
	Route On Structure	135.58	BROOK ST & MUHAMMAD ALI	Fair	67.9	No	5	5	5	57	N
056B00195R	Route On Structure	135.75	S FLOYD ST	Fair	85	No	7	7	6	57.61	N
056B00197R	Route On Structure	135.81	E LIBERTY ST	Fair	96	No	5	6	6	28	N
056B00205N	Route On Structure	132.64	NS RAILROAD	Fair	73	No	5	5	5	61.5	N
	1st Non-Card Route On	132.64	NS RAILROAD	Fair	73	No	5	5	5	62	N
056B00206N	1st Non-Card Route On	134.08	WOODBINE ST	Fair	70	No	6	6	5	62	N
	Route On Structure	134.09	WOODBINE ST	Fair	70	No	6	6	5	62	N
056B00207N	1st Non-Card Route On	134.01	I-65 SB ON RAMP	Fair	80	No	5	6	6	43	N
	Route On Structure	134.01	I-65 SB ON RAMP	Fair	80	No	5	6	6	43	N
056B00209N	1st Non-Card Route On	131.24	PHILLIPS LN	Fair	75.9	No	5	5	5	22	N
	Route On Structure	131.24	PHILLIPS LN	Fair	75.9	No	5	5	5	83.5	N
056B00210N	Route On Structure	131.30	MANNING RD	Fair	73	No	5	5	5	41	N
	1st Non-Card Route On	131.29	MANNING RD	Fair	73	No	5	5	5	41	N
056B00211N	Route On Structure	131.40	KFEC GATE 6 DR	Fair	81.4	No	5	5	5	30	N
	1st Non-Card Route On	131.39	KFEC GATE 6 DR	Fair	81.4	No	5	5	5	30	N
056B00212N	1st Non-Card Route On	132.19	BRADLEY AVE	Fair	82	No	5	5	5	30	N
	Route On Structure	132.20	BRADLEY AVE	Fair	82	No	5	5	5	30	N
056B00213N	1st Non-Card Route On	132.53	KY 1631 (CRITTENDEN DR)	Fair	81	No	6	6	6	30	N
	Route On Structure	132.55	KY 1631 (CRITTENDEN DR)	Fair	81	No	6	6	6	30	N
056B00214L	Route On Structure	136.89	OHIO RIVER	Fair	66.9	No	7	5	6	24.75	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00391N	Route On Structure	130.75	I-264 & RAMPS	Fair	71	No	5	6	5	39.37	N
	1st Non-Card Route On	130.74	I-264 & RAMPS	Fair	71	No	5	6	5	39.37	N
056B00393N	Route On Structure	130.89	I-65 RAMP 8	Fair	85	No	6	7	6	63.98	N
	1st Non-Card Route On	130.88	I-65 RAMP 8	Fair	85	No	6	7	6	28.22	N
056B00394N	Route On Structure	130.72	I-264 & RAMPS	Fair	82	No	7	7	6	39.04	N
056B00526R	Route On Structure	136.88	OHIO RIVER	Good	80	No	7	7	7	54	N
056T00901L	Route On Structure	135.77	S FLOYD ST	Good	95.1	No	7	8	7	49.67	N
056T00902L	1st Non-Card Route On	135.81	E LIBERTY ST	Good	96.1	No	7	7	7	95.23	N
	Route On Structure	135.81	E LIBERTY ST	Good	96.1	No	7	7	7	95.23	N
056T00904N	1st Non-Card Route On	135.91	KY 61 SB & JEFFERSON ST	Good	87.4	No	7	8	7	51.25	N
	3rd Non-Card Route On	135.92	KY 61 SB & JEFFERSON ST	Good	87.4	No	7	8	7	26	N
	2nd Non-Card Route On	135.90	KY 61 SB & JEFFERSON ST	Good	87.4	No	7	8	7	26	N
	Route On Structure	135.91	KY 61 SB & JEFFERSON ST	Good	87.4	No	7	8	7	78	N
056T00905N	1st Non-Card Route On	136.02	KY 61 NB (JACKSON ST)	Good	81	No	7	8	7	78	N
	2nd Non-Card Route On	136.01	KY 61 NB (JACKSON ST)	Good	81	No	7	8	7	78	N
	Route On Structure	136.01	KY 61 NB (JACKSON ST)	Good	81	No	7	8	7	78	N
	3rd Non-Card Route On	136.03	KY 61 NB (JACKSON ST)	Good	81	No	7	8	7	51.92	N
056T00906N	3rd Non-Card Route On	136.07	US 31E NB (MARKET ST)	Good	84	No	7	8	7	25	N
	Route On Structure	136.09	US 31E NB (MARKET ST)	Good	84	No	7	8	7	25.92	N
	2nd Non-Card Route On	136.10	US 31E NB (MARKET ST)	Good	84	No	7	8	7	38.25	N
	1st Non-Card Route On	136.08	US 31E NB (MARKET ST)	Good	84	No	7	8	7	25.92	N
056T00908L	Route On Structure	136.22	US 31E SB (MAIN ST)	Good	85	No	7	7	7	28	N
056T00908R	Route On Structure	136.23	US 31E SB (MAIN ST)	Good	85	No	7	7	7	66	N
056T00913L	Route On Structure	136.40	I-64 EB, RAMPS & WTHRSPN	Good	94	No	7	8	7	36	N
056T00914R	Route On Structure	136.41	I-64 EB, RAMPS & WTHRSPN	Good	94	No	7	7	8	60	N
056T00923L	Route On Structure	136.52	I-64 WB & I-65 SB RAMPS	Good	85	No	7	8	8	85	N
056T00924R	Route On Structure	136.53	I-64 WB & I-65 SB RAMPS	Good	83	No	7	8	8	85.75	N
056T00927L	Route On Structure	136.63	RIVER RD	Good	81	No	7	8	7	34	N
056T00928R	Route On Structure	136.61	RIVER RD	Good	81	No	7	8	8	34	N

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
056B00397N	2nd Route Under	I-65 NB OFF RAMP	15.81	28
	3rd Route Under	I-65 NB OFF RAMP	15.81	28
	1st Route Under	I-65 NB OFF RAMP	15.81	28
	Route On Structure	I-65 NB OFF RAMP	15.81	28
	1st Non-Card Route Under	I-65 NB OFF RAMP	15.81	28

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-264 to Crittenden Dr	121,000	15,000	12%
From Crittenden Dr to Eastern Pkwy	124,000	16,000	13%
From Eastern Pkwy to University Blvd	118,000	15,000	13%
From University Blvd to S Preston St	113,000	15,000	13%
From S Preston St to Jackson St	124,000	16,000	13%
From Jackson St to St Catherine St	105,000	15,000	14%
From E St Catherine St to Broadway	121,000	17,000	14%
From Broadway to Liberty St	85,000	13,000	16%
From Liberty St to I-64	48,000	10,000	22%
From I-64 to Indiana state line	90,000	14,000	16%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6-8, 12’	9’	3’-10’	124,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 21.2% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently ten CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts[1]**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[2]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
From I-264 to Crittenden Dr (MP 131.1 to 132.4)	Ramp Metering at all non-system interchanges.	N/A	Improve safety and mobility along I-65.	D	D	D	D
From Crittenden Dr to Eastern Pkwy (MP 132.7 to 132.8)				D	F	D	F
From Eastern Pkwy to University Blvd (MP 132.8 to 132.9)				D	E	D	E
From University Blvd to S Preston St (MP 133.1 to 133.7)				D	E	D	D
From S Preston St to Jackson St (MP 133.7 to 133.9)				E	D	E	D
From Jackson St to St Catherine St (MP 134.0 to 134.4)				D	D	D	D
From E St Catherine St to Broadway (MP 134.7 to 135.0)				D	D	D	D
From Broadway to Liberty St (MP 135.3 to 135.7)				D	C	D	C
From Liberty St to I-64 (MP 135.8 to 136.4)				C	C	C	C

Proposed Improvement Concepts							
Locations	Improvement Concepts[1]	Notes	Reason for Improvement	Level of Service (LOS)[2]			
				2045 No Build		2045 Build	
				NB	SB	NB	SB
Entire Corridor (MP 131.1 to 137.3)	Queue Warning/ Comparative Travel Time and Traffic Incident Management throughout.	N/A	Improve safety and mobility along I-65.	N/A	N/A	N/A	N/A

1) The I-65 Corridor Study (Item No. 5-569) proposed additional improvements.
2) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	Mile Point	Feature Intersect	Reason for Rehab/Widening
056B00180N	132.92	US 60A (EASTERN PKWY)	Bridge Rating
	132.91	US 60A (EASTERN PKWY)	Bridge Rating

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00181N	133.05	UNIVERSITY BLVD	Bridge Rating
	133.06	UNIVERSITY BLVD	Bridge Rating
056B00182N	133.33	KY 61 (E BRANDEIS AVE)	Bridge Rating
	133.33	KY 61 (E BRANDEIS AVE)	Bridge Rating
056B00184N	134.62	ST CATHERINE ST	Bridge Rating
	134.62	ST CATHERINE ST	Bridge Rating
056B00185N	134.5	S FLOYD ST	Bridge Rating
	134.53	S FLOYD ST	Bridge Rating
056B00186N	134.44	E OAK ST	Bridge Rating
	134.44	E OAK ST	Bridge Rating
056B00187N	134.24	E ORMSBY AVE	Bridge Rating
	134.24	E ORMSBY AVE	Bridge Rating
056B00189N	134.95	E BRECKINRIDGE ST	Bridge Rating
	134.95	E BRECKINRIDGE ST	Bridge Rating
056B00191N	135.27	JACOB, BROADWAY, GRAY ST	Bridge Rating
	135.27	JACOB, BROADWAY, GRAY ST	Bridge Rating
056B00192N	135.43	E CHESTNUT ST	Bridge Rating
	135.43	E CHESTNUT ST	Bridge Rating
056B00193N	135.58	BROOK ST & MUHAMMAD ALI	Bridge Rating
	135.58	BROOK ST & MUHAMMAD ALI	Bridge Rating
056B00197R	135.81	E LIBERTY ST	Bridge Rating
056B00205N	132.64	NS RAILROAD	Bridge Rating
	132.64	NS RAILROAD	Bridge Rating
056B00206N	134.08	WOODBINE ST	Bridge Rating
	134.09	WOODBINE ST	Bridge Rating
056B00207N	134.01	I-65 SB ON RAMP	Bridge Rating
	134.01	I-65 SB ON RAMP	Bridge Rating
056B00209N	131.24	PHILLIPS LN	Bridge Rating
	131.24	PHILLIPS LN	Bridge Rating
056B00210N	131.3	MANNING RD	Bridge Rating
	131.29	MANNING RD	Bridge Rating
056B00211N	131.4	KFEC GATE 6 DR	Bridge Rating
	131.39	KFEC GATE 6 DR	Bridge Rating
056B00212N	132.19	BRADLEY AVE	Bridge Rating
	132.2	BRADLEY AVE	Bridge Rating
056B00214L	136.89	OHIO RIVER	Bridge Rating
056B00391N	130.75	I-264 & RAMPS	Bridge Rating
	130.74	I-264 & RAMPS	Bridge Rating

Bridges for Replacement: The table below shows the bridges that are recommended for replacement. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and

is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
056B00179N	133.87	HILL, CSX RR & BURNETT	Bridge Rating
	133.87	HILL, CSX RR & BURNETT	Bridge Rating
056B00183N	134.74	E KENTUCKY & S BROOK ST	Bridge Rating
	134.75	E KENTUCKY & S BROOK ST	Bridge Rating

Pavement Treatment: The overall pavement condition is good (average PDI = 0.284). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-264 to Indiana State Line (entire corridor)	Congestion, high truck volumes, weaving	Ramp Metering – Traffic Responsive- Centralized, Queue Warning, Comparative Travel Time, Incident Management
CAT2: Other major clusters of safety issues	I-264 to Indiana State Line (entire corridor)	Roadway Curvature, Lack of space for merging/diverging	Curve Warning Signage, Increase Accel/Decel Lengths, Improve Signage
CAT3: Spot locations with history of severe crashes	I-264 to Indiana State Line (entire corridor)	Collisions with Pedestrians	Increase Shoulder Width

Proposed Phasing: The proposed spot improvements at interchanges (ramp metering, queue warning, etc.) can be grouped to be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites and hazardous waste sites. Historic districts and properties listed on the National Register of Historic Places are common near Shelby Park, Old Louisville, Smoketown, Phoenix Hill, East Market District, Butchertown, Saint Joseph, and Merriwether neighborhoods. Local parks are common in Old Louisville, Germantown, Saint Joseph, Bradley, East Market District neighborhoods and adjacent to University of Louisville. Two Land and Water Conservation Funds, University of Louisville, and Waterfront Park, are located along the corridor. Wooded area can be found in the northern most portion of the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County and there is Known Summer 1 habitat for the Indiana bat in Kentucky and within 20 miles of the area. There are eight census tracts with greater than 25% of the population living at or below the poverty level, and five census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The critical red flag concern table is not included for this corridor since the proposed mobility improvements are TSMO solutions that are not likely to have impact on the existing right-of-way.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
From I-264 to Indiana State Line (entire corridor)	Ramp metering at all non-system interchanges	No
	Queue Warning and Comparative Travel Time, Traffic Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	0 ($M)
ROW:	0 ($M)
Utility:	0 ($M)
Construction:	0 ($M)
Subtotal:	**0 ($M)**
TSMO Strategies	
Ramp Metering - Traffic Responsive Centralized:	3.2 ($M)
Queue Warning:	2.8 ($M)
Subtotal:	**6.0 ($M)**
TOTAL COST =	**6.0 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-265/KY 841 (Gene Snyder Freeway)
Segment ID: 7B
From: I-65
To: I-64
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 7B on I-265/KY 841 (Gene Snyder Freeway) extends from I-65 to I-64 in Jefferson County. The corridor is approximately 15.1 miles long and contains eight interchanges.

The western portion of the corridor (from I-65 to the Billtown Rd) passes low- to moderate-density detached housing, with some multifamily housing, and commercial areas around the interchanges. The remainder of the corridor passes through undeveloped areas with pockets of residential and commercial uses. These areas are considered suburban according to the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’	Depressed (60’)	65 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-65	Old Heady Rd	290’ - 340'
Old Heady Rd	I-64	265’ - 295'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.230, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-65	Semi Directional
KY 61 (Preston Hwy)	Partial Cloverleaf and Directional
Smyrna Pkwy	Diamond
KY 864 (Beulah Church Rd)	Diamond
US 150 (Bardstown Rd)	Partial Cloverleaf
Billtown Rd	Diamond
KY 155 (Taylorsville Rd)	Diamond
I-64	Full Cloverleaf [1]

1) The I-265/I-64 interchange is modified to a partial cloverleaf and directional interchange, as part of I-MOVE.

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00089L	Route On Structure	23.35	NS RAILROAD	Fair	93	No	5	6	7	39.51	N
056B00089R	Route On Structure	23.38	NS RAILROAD	Fair	93	No	5	6	6	42	N
056B00090L	Route On Structure	25.45	I-64	Fair	83	No	6	6	6	27.89	N
056B00090R	Route On Structure	25.48	I-64	Fair	84	No	6	6	6	29.86	N
056B00097N	1st Non-Card Route On	24.40	POPE LICK CREEK	Fair	59	No	N	N	N	38.5	5
	Route On Structure	24.43	POPE LICK CREEK	Fair	59	No	N	N	N	38.5	5
056B00318L	Route On Structure	10.23	I-65 & RAMPS	Fair	88	No	5	5	5	43.5	N
056B00318R	Route On Structure	10.23	I-65 & RAMPS	Fair	80.6	No	5	5	5	62.08	N
056B00322L	Route On Structure	10.40	I-65 NB ON RAMP	Fair	98	No	6	6	6	62.08	N
	Route On Structure	10.40	I-65 NB ON RAMP	Fair	98	No	6	6	6	47	N
056B00322R	Route On Structure	10.39	I-65 NB ON RAMP	Fair	87	No	6	6	5	58.83	N
	Route On Structure	10.39	I-65 NB ON RAMP	Fair	87	No	6	6	5	58.83	N
056B00324L	Route On Structure	10.79	FREEDOM WAY	Fair	86	No	5	6	5	44	N
056B00324R	Route On Structure	10.75	FREEDOM WAY	Fair	94	No	6	6	6	44	N
056B00325L	Route On Structure	10.91	KY 1450 (BLUE LICK RD)	Fair	97	No	7	6	7	44	N
056B00325R	Route On Structure	10.90	KY 1450 (BLUE LICK RD)	Fair	97	No	6	6	6	48	N
056B00329N	1st Non-Card Route On	11.36	FISHPOOL CREEK	Fair	83	No	N	N	N	44	6
	Route On Structure	11.36	FISHPOOL CREEK	Fair	83	No	N	N	N	60	6
056B00368L	Route On Structure	12.80	CINDERELLA LN	Fair	96	No	5	6	6	29.86	N
056B00368R	Route On Structure	12.81	CINDERELLA LN	Fair	96.7	No	6	6	6	29.86	N
056B00370N	Route On Structure	14.01	PENNSYLVANIA RUN	Fair	40.5	No	N	N	N	38.71	5
	1st Non-Card Route On	14.00	PENNSYLVANIA RUN	Fair	40.5	No	N	N	N	40	5
056B00372L	Route On Structure	15.18	KY 864(BEULAH CHURCH RD)	Fair	87	No	6	5	6	27.89	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00372R	Route On Structure	15.18	KY 864(BEULAH CHURCH RD)	Fair	98	No	6	6	6	27.89	N
056B00374N	1st Non-Card Route On	16.97	CEDAR CREEK	Fair	71.3	No	N	N	N	37	5
	Route On Structure	16.98	CEDAR CREEK	Fair	71.3	No	N	N	N	36.3	5
056B00375L	Route On Structure	17.29	US 31E (BARDSTOWN RD)	Fair	94	No	6	6	6	37	N
056B00375R	Route On Structure	17.30	US 31E (BARDSTOWN RD)	Fair	94	No	6	6	6	98	N
056B00378L	Route On Structure	20.09	CHENOWETH RUN	Fair	98	No	6	6	6	30	N
056B00378R	Route On Structure	20.09	CHENOWETH RUN	Fair	98	No	6	6	6	37	N
056B00380L	Route On Structure	23.10	KY 155 (TAYLORSVILLE RD)	Fair	86	No	5	6	5	30	N
056B00380R	Route On Structure	23.13	KY 155 (TAYLORSVILLE RD)	Fair	86	No	5	6	5	60	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00086N	One Route Under	REHL RD	18.17	98.5
	1st Non-Card Route Under	REHL RD	18.17	98.5
056B00093N	1st Non-Card Route Under	S POPE LICK RD	15.9	38.06
	One Route Under	S POPE LICK RD	16.5	38.06
056B00326N	1st Non-Card Route Under	KY 61	19.92	48
	One Route Under	KY 61	19.92	48
056B00327N	1st Non-Card Route Under	I-265 SB ON RAMP	19.92	48
	Route On Structure	I-265 SB ON RAMP	18.67	43.75
	1st Route Under	I-265 SB ON RAMP	18.67	43.75
056B00369N	1st Non-Card Route Under	SMYRNA PKWY	17.25	30.18
	One Route Under	SMYRNA PKWY	16.08	32.5
056B00371N	One Route Under	PENNSYLVANIA RN RD	16.83	64
	1st Non-Card Route Under	PENNSYLVANIA RN RD	16.83	64
056B00373N	One Route Under	JOHNSON SCHOOL RD	16.5	24.56
	1st Non-Card Route Under	JOHNSON SCHOOL RD	16.5	24.56
056B00376N	One Route Under	SEATONVILLE RD	17.33	98
	1st Non-Card Route Under	SEATONVILLE RD	17.33	98
056B00377N	One Route Under	KY 1819	16.75	98
	1st Non-Card Route Under	KY 1819	16.75	30
056B00379N	1st Route Under	OLD HEADY RD	17.42	37
	1st Non-Card Route Under	OLD HEADY RD	17.42	30

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-65 to KY 61	80,000	7,000	9%
From KY 61 to Smyrna Pkwy	75,000	7,000	9%
From Smyrna Pkwy to KY 864	73,000	6,000	8%
From KY 864 to US 150	72,000	6,000	8%
From US 150 to Billtown Rd	61,000	6,000	9%
From Billtown Rd to KY 155	63,000	6,000	9%
From KY 155 to I-64	68,000	7,000	10%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) Typical roadway attributes of the potential bottleneck area can be found above for the entire segment.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	4, 12’	60’	10’	80,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 6.9% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently four CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
From I-65 to KY 61 (MP 10.7 to 11.3)	Ramp Metering at all non-system interchanges.	N/A	Improve safety and mobility along I-265.	D	D	D	D
From KY 61 to Smyrna Pkwy (12.0 to 13.2)				D	D	D	D
From Smyrna Pkwy to KY 864 (MP 13.8 to 15.0)				D	D	D	D
From KY 864 to US 150 (MP 15.5 to 17.0)				D	D	D	D
From US 150 to Billtown Rd (MP 17.6 to 19.0)				D	D	C	C
From Billtown Rd to KY 155 (MP 19.8 to 22.8)				D	D	D	D
From KY 155 to I-64 (MP 23.4 to 25.2)				D	D	D	D
Entire Corridor (MP 10.7 to 25.2)	Dynamic Message Signs[2] and CCTV cameras at all interchanges, Traffic Incident Management throughout	N/A	Improve safety and mobility along I-265.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
2) DMS are proposed at the following locations: in the EB direction before exits at KY 61, Smyrna Parkway, KY 864, US 150, Billtown Road, and KY 155; in the WB direction before the exits at KY 155, Billtown Road, US 150, KY 864, Smyrna Parkway and I-65.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-65/I-265 Interchange
KY 61 (I-265 EB off-ramp and WB off-ramp)
Smyrna Pkwy (I-265 EB off-ramp
I-265/US 150 Interchange
I-265/KY 155 Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00089L	23.35	NS RAILROAD	Bridge Rating
056B00089R	23.38	NS RAILROAD	Bridge Rating
056B00097N	24.4	POPE LICK CREEK	Bridge Rating
	24.43	POPE LICK CREEK	Bridge Rating
056B00318L	10.23	I-65 & RAMPS	Bridge Rating
056B00318R	10.23	I-65 & RAMPS	Bridge Rating
056B00322R	10.39	I-65 NB ON RAMP	Bridge Rating
	10.39	I-65 NB ON RAMP	Bridge Rating
056B00324L	10.79	FREEDOM WAY	Bridge Rating
056B00329N	11.36	FISHPOOL CREEK	Bridge Rating
	11.36	FISHPOOL CREEK	Bridge Rating
056B00368L	12.8	CINDERELLA LN	Bridge Rating
056B00370N	14.01	PENNSYLVANIA RUN	Bridge Rating
	14	PENNSYLVANIA RUN	Bridge Rating
056B00372L	15.18	KY 864(BEULAH CHURCH RD)	Bridge Rating
056B00374N	16.97	CEDAR CREEK	Bridge Rating
	16.98	CEDAR CREEK	Bridge Rating
056B00380L	23.1	KY 155 (TAYLORSVILLE RD)	Bridge Rating
056B00380R	23.13	KY 155 (TAYLORSVILLE RD)	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.230). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire Corridor	Congestion/incidents	Centralized traffic responsive ramp meters, Dynamic Message Signs (DMS) and CCTV cameras at all interchanges, Traffic incident management.
CAT2: Other major clusters of safety issues	N/A	N/A	N/A
CAT3: Spot locations with history of severe crashes	Interchanges at I-65, Bardstown Road, and Billtown Road	Nighttime crashes, narrow shoulder	Widen shoulders through interchanges; Upgrade lighting at Billtown Road

Proposed Phasing: The proposed interchange modification at I-65, US 150, and KY 155 can be three separate phases. The other spot improvements at interchanges (ramp improvement, ramp metering, DMS, lighting etc.) can be grouped to be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage sites, most found in the southern portion of the corridor, and three hazardous waste sites (adjacent to the intersection at I-265 and KY 61 and I-265 and US 150). This corridor has a well-developed karst landscape, which is in Jefferson County. One local park along the corridor, Fisherman's Park, is near the Hopewell neighborhood. There are two Frontier Trails that run through the corridor, Wilderness Road (south of KY 61 and I-265) and Harrods Old Trace – 1779 (south of the I-64 and I-265 interchange). There are three National Register of Historic Places within the corridor, Levin Bates House (south of I-265 and Bardstown Road interchange), Fishpool Plantation (Southwest quadrant of the interchange at I-265 and KY 61), and Omer-Pond House (northeast quadrant of the interchange at I-265 and Billtown Road). Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns					
Environmental Red Flag Features	**I-65/I-265 Interchange**	**I-265/KY 61 Interchange**	**I-265/Smyrna Pkwy Interchange**	**I-265/US 150 Interchange**	**I-265/KY 155 Interchange**
Superfunds	N	N	N	N	N
Special Waters[1]	N	N	N	N	N
Forested Areas	Y	N	N	N	Y
NLEB Habitat Priority	N	N	N	N	N
IB Habitat Priority Area	N	Y	Y	Y	N
FAA Airport Runways	N	N	N	N	N
Public Hunting Areas	N	N	N	N	N
Wildlife Management Areas	N	N	N	N	N
Local Parks	N	N	N	N	N
State/ National Parks	N	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N	N
Land and Water Conservation Fund	N	N	N	N	N
Area Landmarks	N	N	Y	N	N
Point Landmarks	Y	N	N	N	N
National Register of Historic Places Location (Point)	N	N	N	Y	N
National Register of Historic Places Location (Polygon)	N	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
From I-65 to I-64 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From I-65 to I-64 (entire corridor)	Traffic Incident Management throughout	No
At all non-system interchanges	Ramp metering	No
I-65/I-265 Interchange	Interchange modification	Potentially
I-265/KY 61 Interchange	Adding a lane on I-265 EB off-ramp & WB off-ramp	No
I-265/Smyrna Pkwy Interchange	Adding a lane on I-265 EB off-ramp	Potentially
I-265/US 150 Interchange	Interchange modification	Potentially
I-265/KY 155 Interchange	Interchange modification	Potentially

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	19.6 ($M)
ROW:	6.8 ($M)
Utility:	3.8 ($M)
Construction:	187.7 ($M)
Subtotal:	**218.0 ($M)**
TSMO Strategies	
Ramp Metering - Traffic Responsive Centralized:	3.8 ($M)
Dynamic Message Sign:	4.8 ($M)
Subtotal:	**8.6 ($M)**
TOTAL COST =	**226.6 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-265/KY 841 (Gene Snyder Freeway)
Segment ID: 7C
From: I-64
To: I-71
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 7C on I-265/KY 841 (Gene Snyder Freeway) extends from I-64 to I-71 in Jefferson County. The corridor is approximately 9.4 miles long and includes seven interchanges.

The corridor passes by industrial, multifamily residential and detached housing areas, as well as office parks and shopping centers in the outer suburbs of Louisville. These areas are classified as suburban per the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’-11’	Depressed (60’)	65 mph

Right of Way: The existing right of way is generally 270’ – 320’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.227, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-64	Full Cloverleaf
US 60 (Shelbyville Rd)	Diamond
KY 3084 (Old Henry Rd)	Diamond
KY 146 (La Grange Rd)	Partial Cloverleaf
KY 1447 (Westport Rd)	Partial Cloverleaf and Directional

Interchanges	Interchange Type
KY 22 (Brownsboro Rd)	Partial Cloverleaf
I-71	Full Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00087L	Route On Structure	34.05	KY 22 (BROWNSBORO RD)	Poor	70	No	6	6	4	42	N
056B00087R	Route On Structure	34.08	KY 22 (BROWNSBORO RD)	Poor	71	No	6	6	4	42	N
056B00090L	Route On Structure	25.45	I-64	Fair	83	No	6	6	6	27.89	N
056B00090R	Route On Structure	25.48	I-64	Fair	84	No	6	6	6	29.86	N
056B00091L	Route On Structure	34.71	I-71	Fair	74.3	No	5	6	5	40	N
056B00091R	Route On Structure	34.71	I-71	Fair	74.3	No	5	6	5	23.95	N
056B00287L	Route On Structure	32.49	KY 1447 (WESTPORT RD)	Fair	98	No	6	6	6	42	N
056B00287R	Route On Structure	32.53	KY 1447 (WESTPORT RD)	Fair	94	No	6	6	6	42	N
056B00288L	Route On Structure	32.37	I-265 SB OFF RAMP	Fair	97.2	No	6	6	6	30.13	N
056B00288R	Route On Structure	32.42	I-265 SB OFF RAMP	Fair	85.2	No	6	6	5	28	N
056B00289L	Route On Structure	30.41	KY 146 & CSX RAILROAD	Fair	83.4	No	5	5	5	28	N
056B00289R	Route On Structure	30.47	KY 146 & CSX RAILROAD	Fair	72.9	No	6	5	5	34.08	N
056B00334L	Route On Structure	26.78	US 60	Fair	94	No	6	6	6	60	N
056B00334R	Route On Structure	26.81	US 60	Fair	94	No	6	6	6	60	N
056B00335N	1st Non-Card Route On	27.67	CHENOWETH RUN	Fair	70	No	N	N	N	60	6
	Route On Structure	27.70	CHENOWETH RUN	Fair	70	No	N	N	N	44	6
056B00336L	Route On Structure	27.73	AIKEN RD	Fair	98	No	6	6	7	44	N
056B00336R	Route On Structure	27.78	AIKEN RD	Fair	98	No	7	6	7	44	N
056B00337L	Route On Structure	27.89	RJ CORMAN RAILROAD	Fair	98	No	6	6	6	44	N
056B00337R	Route On Structure	27.91	RJ CORMAN RAILROAD	Fair	98	No	6	6	6	59.5	N
056B00338N	Route On Structure	28.28	AVOCA-QUARRY RD	Poor	39	No	N	N	N	59.5	4
	1st Non-Card Route On	28.25	AVOCA-QUARRY RD	Poor	39	No	N	N	N	59.5	4

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00339N	One Route Under	KY 3084	17.08	59.5
	1st Non-Card Route Under	KY 3084	17.33	52.19

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-64 to US 60	88,000	7,000	8%
From US 60 to Old Henry Rd	69,000	7,000	10%
From Old Henry Rd to KY 146	59,000	5,000	9%
From KY 146 to KY 1447	58,000	5,000	9%
From KY 1447 to KY 22	63,000	7,000	10%
From KY 22 to I-71	81,000	7,000	9%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	4, 12’	60’	10’-11’	88,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently seven CCTV cameras and two Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts[1]**	**Notes[2]**	**Reason for Improvement**	**Level of Service (LOS)[3]**			
				2045 No Build		**2045 Build**	
				NB	**SB**	**NB**	**SB**
From I-64 to US 60 (MP 25.8 to 26.5)	Ramp Metering at all non-system interchanges	N/A	Improve safety and mobility along I-265.	D	F	E	F
From US 60 to Old Henry Rd (MP 27.1 to 28.5)				D	E	D	D
From Old Henry Rd to KY 146 (MP 29.0 to 30.0)				D	D	C	D
From KY 146 to KY 1447 (MP 30.4 to 32.2)				D	D	C	D
From KY 1447 to KY 22 (MP 32.8 to 33.7)				D	D	C	D
From KY 22 to I-71 (MP 33.7 to 35.1)	New Collector-Distributor System. Ramp Metering at all non-system interchanges	2, 12-foot lane with 4-foot left shoulder and 6-foot right shoulder.	The expected v/c in 2045 exceeds the established thresholds.	E	E	B	B
Entire Corridor (MP 25.8 to 35.1)	Dynamic Message Signs[4] and CCTV cameras at all interchanges, Traffic Incident Management throughout	N/A	Improve safety and mobility along I-265.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) Dynamic Message Signs in the NB direction before US 60, Old Henry Road, KY 146, KY 1447, and I-71, in the SB direction before, KY 22, KY 1447, KY 146, Old Henry Road, and I-64.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-265/US 60 Interchange
I-265/Old Henry Rd Interchange
KY 1447 (I-265 SB off-ramp and NB loop ramp)
I-71/KY 22 Interchange
I-71/I-265 System Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00091L	34.71	I-71	Bridge Rating
056B00091R	34.71	I-71	Bridge Rating
056B00288R	32.42	I-265 SB OFF RAMP	Bridge Rating
056B00289L	30.41	KY 146 & CSX RAILROAD	Bridge Rating
056B00289R	30.47	KY 146 & CSX RAILROAD	Bridge Rating
056B00335N	27.67	CHENOWETH RUN	Bridge Rating
	27.7	CHENOWETH RUN	Bridge Rating

- **Bridges for Replacement:** The table below shows the bridges that are recommended for replacement. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
056B00087L	34.05	KY 22 (BROWNSBORO RD)	Bridge Rating
056B00087R	34.08	KY 22 (BROWNSBORO RD)	Bridge Rating
056B00338N	28.28	AVOCA-QUARRY RD	Bridge Rating
	28.25	AVOCA-QUARRY RD	Bridge Rating

Pavement Treatment: The overall pavement condition is good (average PDI = 0.227). Proposed Collector-Distributor lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-64 to I-71 (entire corridor)	Congestion, incidents	Centralized traffic responsive ramp metering system, Dynamic Message Signs (DMS) and CCTV cameras at all interchanges, Traffic Incident Management
	I-71 to KY 22	Congestion, incidents	C-D System and Ramp Metering

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT2: Other major clusters of safety issues	I-64 to I-71 (entire corridor)	Nighttime Crashes between interchanges	Provide lighting along entire corridor
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed new Collector-Distributor system between I-71 and KY 22 can be one phase. The proposed interchange modification at US 60, Old Henry Rd, and I-71 can be three separate phases. The other spot improvements at interchanges (single ramp improvement, ramp metering, DMS, lighting etc.) can be grouped to be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of hazardous waste sites and underground storage tank sites, clusters can be found near interchanges. One oil/gas well is located near the city of Middletown. Karsts are common along the northern half of the corridor. A Kentucky Frontier Trail, Boones Wagon Road, runs through the southern section of the corridor. Three National Register of Historic Places are located along the corridor. Chenoweth Fort-Springhouse is located north of the city of Middletown, St. Lukes Church is located east of Hickory Hills neighborhood, Von Allmen Dairy Farm House is located east of Brownsboro Farm neighborhood, and Cedarbrook Farm is located in the northwest quadrant of the corridor. There is Known Summer 1 habitat for the Indiana bat and Northern Long-eared bat (NLEB). Maturity and reproductive records can be found for the Gray bat in Jefferson County. Wooded area can be found along the corridor. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns						
Environmental Red Flag Features	**I-265 Mainline from I-71 to KY 22**	**I-265/US 60 Interchange**	**I-265/Old Henry Rd Interchange**	**I-265/KY 1447 Interchange**	**I-265/ KY 22 Interchange**	**I-71/I-265 Interchange**
Superfunds	N	N	N	N	N	N
Special Waters[1]	N	N	N	N	N	N
Forested Areas	N	N	N	N	N	N
NLEB Habitat Priority	N	N	N	N	N	N
IB Habitat Priority Area	Y	N	N	N	Y	Y
FAA Airport Runways	N	N	N	N	N	N
Public Hunting Areas	N	N	N	N	N	N
Wildlife Management Areas	N	N	N	N	N	N
Local Parks	N	N	N	N	N	N
State/ National Parks	N	N	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N	N	N
Land and Water Conservation Fund	N	N	N	N	N	N
Area Landmarks	N	N	N	Y	N	N
Point Landmarks	N	N	N	N	N	N
National Register of Historic Places Location (Point)	Y	N	N	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-265 mainline from I-71 to KY 22	A new Collector Distributor System	Yes
I-265/US 60 Interchange	Interchange Modification	Potentially
I-265/Old Henry Rd Interchange	Interchange Modification	Potentially
I-265/KY 1447 Interchange	Adding a lane on I-265 SB off-ramp and NB loop ramp	Likely Not
I-265/KY 22 Interchange	Interchange Modification	Potentially
I-71/I-265 System Interchange	Interchange Modification	Potentially
At all non-system interchanges	Ramp metering	No
From I-64 to I-71 (entire corridor)	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
From I-64 to I-71 (entire corridor)	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	27.7 ($M)
ROW:	9.4 ($M)
Utility:	5.4 ($M)
Construction:	265.0 ($M)
Subtotal:	**307.5 ($M)**
TSMO Strategies	
Ramp Metering - Traffic responsive centralized:	2.8 ($M)
Dynamic Message Sign:	4.0 ($M)
Subtotal:	**6.8 ($M)**
TOTAL COST =	**314.3 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-64
Segment ID: 8A
From: Indiana State Line
To: I-65
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 8A on I-64 extends from the Indiana state line to I-65 in Jefferson County. The corridor is approximately 5.0 miles long and includes six interchanges.

The northern side of the corridor are mostly recreational and industrial waterfront uses abutting the Ohio River. On the southern side of the corridor, the portion from the state line to S 9th St passes moderately dense residential, industrial, and commercial uses on northwest Louisville. These areas are considered urban according to the KYSTMv19 data. The remainder of the corridor passes a mix of uses in downtown Louisville and is categorized as dense urban by the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	6, 12’	3’-5’	Concrete Barrier (9’)	55 mph

Right of Way: The existing right of way is generally 160’ – 205’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.105, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-264	Three Leg Directional
N 22nd St	Partial Cloverleaf
S 9th St	Directional

Interchanges	Interchange Type
3rd St/ River Rd	Single Exit
River Rd/ 2nd St	Single Entrance
I-65	Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00142N	Route On Structure	5.02	KY 3077 (RIVER RD)	Poor	20	No	6	4	5	36.75	N
	1st Non-Card Route On	4.80	KY 3077 (RIVER RD)	Poor	20	No	6	4	5	36.75	N
056B00161N	1st Non-Card Route On	0.50	SHAWNEE GOLF COURSE	Fair	53.4	No	5	5	5	60.83	N
	Route On Structure	0.48	SHAWNEE GOLF COURSE	Fair	53.4	No	5	5	5	60.5	N
056B00279N	Route On Structure	0.17	OHIO RIVER, W WATER ST	Fair	50	No	5	5	6	24	N
	1st Non-Card Route On	0.18	OHIO RIVER, W WATER ST	Fair	50	No	5	5	6	24	N
056B00282N	Route On Structure	2.74	22ND ST & NORTHWESTERN	Fair	52.2	No	7	6	6	46.42	N
	1st Non-Card Route On	2.66	22ND ST & NORTHWESTERN	Fair	52.2	No	7	6	6	38	N
056B00283N	1st Non-Card Route On	2.05	NS RR, 27TH ST & LANNAN	Fair	43.3	No	7	6	6	29.86	N
	Route On Structure	2.11	NS RR, 27TH ST & LANNAN	Fair	43.3	No	7	6	6	42	N
056B00284N	1st Non-Card Route On	1.58	NS RAILROAD	Fair	82	No	6	6	6	42	N
	Route On Structure	1.64	NS RAILROAD	Fair	82	No	6	6	6	38	N
056B00285N	Route On Structure	3.52	L&I RR & NORTHWESTERN	Fair	41.8	No	6	5	5	47	N
	1st Non-Card Route On	3.37	L&I RR & NORTHWESTERN	Fair	41.8	No	6	5	5	47	N
056B00292N	1st Non-Card Route On	4.34	KY 3077 & BELVEDERE	Poor	34.9	No	6	4	5	34.08	N
	Route On Structure	4.53	KY 3077 & BELVEDERE	Poor	34.9	No	6	4	5	42	N
056B00293N	Route On Structure	3.97	PARKING LOTS (7-13 ST)	Poor	25	No	6	4	5	42	N
	1st Non-Card Route On	3.82	PARKING LOTS (7-13 ST)	Poor	25	No	6	4	5	44	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00136N	2nd Route Under	US 31 (2ND ST)	16.58	38.83
	1st Route Under	US 31 (2ND ST)	15.58	40.7
	1st Non-Card Route Under	US 31 (2ND ST)	24.8	40.7
056B00278N	One Route Under	I-64 WB RAMP	21.92	28.5
	Route On Structure	I-64 WB RAMP	20.5	28.5

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
056B00298N	1st Non-Card Route Under	I-64 WB OFF RAMP 4	15.58	54.33
	Route On Structure	I-64 WB OFF RAMP 4	15.58	54.33
	1st Route Under	I-64 WB OFF RAMP 4	23.5	44.33
	2nd Route Under	I-64 WB OFF RAMP 4	23.5	44.33
	3rd Route Under	I-64 WB OFF RAMP 4	23	44.33
056B00300N	1st Non-Card Route Under	I-64 WB ON RAMP 1	16.42	44.29
	Route On Structure	I-64 WB ON RAMP 1	16.42	44.29
	1st Route Under	I-64 WB ON RAMP 1	14.67	44.33
056B00303N	One Route Under	PEDESTRIAN BRIDGE	16.83	44.33
	1st Non-Card Route Under	PEDESTRIAN BRIDGE	16.08	30
056B00304N	One Route Under	PEDESTRIAN BRIDGE	16.08	30
	1st Non-Card Route Under	PEDESTRIAN BRIDGE	16.08	30
056B00496L	1st Route Under	I-264 WB RAMP	23.17	68.78
056T00912N	Route On Structure	I-65 SB ON RAMP	16.75	59
	2nd Route Under	I-65 SB ON RAMP	16.75	59
	1st Route Under	I-65 SB ON RAMP	17.67	33.25
	1st Non-Card Route On	I-65 SB ON RAMP	17.67	33.25
056T00913L	Route On Structure	I-65 SB	15.42	36
	2nd Route Under	I-65 SB	15.33	73
	3rd Route Under	I-65 SB	19.25	79.9
	4th Route Under	I-65 SB	16.42	35.96
	1st Route Under	I-65 SB	18.17	60
056T00914R	Route On Structure	I-65 NB	18.17	60
	3rd Route Under	I-65 NB	15.67	72.21
	2nd Route Under	I-65 NB	15.67	72.21
	1st Route Under	I-65 NB	18	72
	4th Route Under	I-65 NB	18	72
056T00916N	3rd Route Under	I-64 WB RAMP	17.83	58
	Route On Structure	I-64 WB RAMP	16.25	73.67
	1st Route Under	I-64 WB RAMP	16.25	73.67
	2nd Route Under	I-64 WB RAMP	16.5	64
056T00917N	Route On Structure	I-65 NB RAMP	16.5	64
	1st Route Under	I-65 NB RAMP	16.42	27
	4th Route Under	I-65 NB RAMP	16.42	27
	3rd Route Under	I-65 NB RAMP	16.5	38.75
	2nd Route Under	I-65 NB RAMP	16.5	38.75
056T00918N	Route On Structure	I-64 EB RAMP	23.83	83.31
	1st Route Under	I-64 EB RAMP	20.83	23
056T00921N	Route On Structure	I-64 WB RAMP	17.92	86

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	One Route Under	I-64 WB RAMP	17.33	44
056T00922N	1st Route Under	I-64 EB RAMP	17.33	44
	Route On Structure	I-64 EB RAMP	17.33	44
056T00923L	3rd Route Under	I-65 SB	17.83	85
	Route On Structure	I-65 SB	17.83	85
	2nd Route Under	I-65 SB	17.83	85
	1st Route Under	I-65 SB	17.83	85
056T00924R	1st Route Under	I-65 NB	16.25	73.67
056T00925N	1st Route Under	I-64 EB RAMP	15.5	46.3
	3rd Route Under	I-64 EB RAMP	15.5	46.3
	2nd Route Under	I-64 EB RAMP	19.83	44
	Route On Structure	I-64 EB RAMP	19.83	44
056T00926N	1st Route Under	I-64 WB RAMP	18.92	90
	2nd Route Under	I-64 WB RAMP	18.92	90
	Route On Structure	I-64 WB RAMP	18.5	34

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From Indiana state line to I-264	77,000	7,000	9%
From I-264 to 22nd St	64,000	6,000	10%
From 22nd St to 9th St	82,000	6,000	8%
From 9th St to 3rd St	98,000	6,000	6%
From 3rd St to I-65	108,000	6,000	6%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	9’	3’-5’	108,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently eight CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts**	**Notes**	**Reason for Improvement**	**Level of Service (LOS)[1]**			
				2045 No Build		**2045 Build**	
				EB	**WB**	**EB**	**WB**
From I-264 to 22nd St (MP 1.3 to 2.6)	Ramp Metering at all non-system interchanges	N/A	Improve safety and mobility along I-64.	C	C	C	C
From 22nd St to 9th St (MP 3.0 to 3.9)				C	D	C	C
From 9th St to 3rd St (MP 4.2 to 4.8)				D	D	C	D
From 3rd St to I-65 (MP 4.7 to 4.9)				D	D	C	D

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
Entire Corridor (MP 0.0 to 5.1)	Queue Warning and Comparative Travel Time; Incident Management	N/A	Improve safety and mobility along I-64.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00142N	5.02	KY 3077 (RIVER RD)	Bridge Rating
	4.8	KY 3077 (RIVER RD)	Bridge Rating
056B00161N	0.5	SHAWNEE GOLF COURSE	Bridge Rating
	0.48	SHAWNEE GOLF COURSE	Bridge Rating
056B00279N	0.17	OHIO RIVER, W WATER ST	Bridge Rating
	0.18	OHIO RIVER, W WATER ST	Bridge Rating
056B00285N	3.52	L&I RR & NORTHWESTERN	Bridge Rating
	3.37	L&I RR & NORTHWESTERN	Bridge Rating
056B00292N	4.34	KY 3077 & BELVEDERE	Bridge Rating
	4.53	KY 3077 & BELVEDERE	Bridge Rating
056B00293N	3.97	PARKING LOTS (7-13 ST)	Bridge Rating
	3.82	PARKING LOTS (7-13 ST)	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is good (average PDI = 0.105). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot

improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Indiana State Line to I-65 (entire corridor)	Congestion, Weaving	Ramp Metering at all non-system interchanges, Queue Warning, Comparative Travel Times, Incident Management
CAT2: Other major clusters of safety issues	Indiana State Line to I-65 (entire corridor)	Lack of Shoulders, Lack of Merge/Diverge Area	Increase Shoulder Width and Acceleration/Deceleration Lanes, Rumble Strips
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed spot improvements at interchanges (ramp metering, Queue Warning, increase shoulder width, etc.) can be grouped to be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites. One oil/gas well is located north of California neighborhood. There is a high frequency of National Register of Historic Places Locations (polygon) throughout the corridor. There is a high frequency of National Register of Historic Places Locations (point) within the downtown district of Louisville. One Land and Water Conservation Fund, Shawnee Golf Course, is located within the corridor. Two Kentucky Frontier Trails, Wilderness Road and Harrods Old Trace are in downtown Louisville. Seven local parks (Portland Wharf Park, Waterfront Park, Lannan Memorial Park, Portland Park, Charles Young Park, Shawnee Golf Course, and Portland Cemetery) are located within the corridor. Louisville Riverwalk is located along the corridor. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County. There are five census tracts with greater than 25% of the population living at or below the poverty level, and four census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The critical red flag concern table is not included for this corridor since the proposed mobility improvements are TSMO solutions that are not likely to have impact on the existing right-of-way.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
At all non-system interchanges	Ramp Metering	No
Entire Corridor	Queue Warning and Comparative Travel Time; Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0.0 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	0.0 ($M)
Subtotal:	**0.0 ($M)**

TSMO Strategies

Ramp Metering - Traffic Responsive Centralized:	1.0 ($M)
Queue Warning:	2.0 ($M)
Subtotal:	**3.0 ($M)**

TOTAL COST = 3.0 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-64
Segment ID: 8B
From: I-65
To: I-264
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 8B on I-64 extends from I-65 to I-264 in Jefferson County. The corridor is approximately 6.8 miles long and contains six interchanges.

The western portion of the corridor passes through a mix of recreational, residential, and commercial uses in Louisville. These areas are considered urban according to the KYSTMv19 data. The eastern portion transitions to suburban and traverses recreational and low-density detached residential uses, terminating at a cluster of commercial uses and shopping centers around the interchange with I-264.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’	Depressed (40’)	55 mph

Right of Way: The existing right of way is generally 225’ – 270’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.411, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-65	Directional
I-71	Three Leg Directional
US 42 (Story Ave/Mellwood Ave)	Split Diamond
Grinstead Dr	Diamond
Cannons Ln	Diamond
I-264	Semi Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056T00931N	Route On Structure	5.77	WITHERSPOON & CSX RR	Fair	81	No	7	8	6	44	N
056T00933N	Route On Structure	5.49	WITHERSPOON & CSX RR	Good	81	No	7	8	7	75.42	N
056B00151R	Route On Structure	6.58	US 42 WB (STORY AVE)	Fair	94.7	No	5	6	6	38	N
056T00938L	Route On Structure	6.36	US 42 WB	Fair	95.3	No	6	6	6	52.75	N
056B00141R	Route On Structure	6.70	US 42 & BEARGRASS CREEK	Fair	95	No	5	6	6	23	N
056T00939L	Route On Structure	6.48	US 42 EB & BEARGRASS CRK	Fair	82.8	No	5	6	5	52.83	N
056B00149R	Route On Structure	8.07	GRINSTEAD DR	Fair	84	No	6	5	5	43	N
056B00149L	Route On Structure	7.87	GRINSTEAD DR	Fair	84	No	6	5	6	43	N
056B00148R	Route On Structure	8.29	US 60A (LEXINGTON RD)	Fair	85	No	6	5	6	43	N
056B00148L	Route On Structure	8.10	US 60A (LEXINGTON RD)	Fair	84	No	6	5	6	29.1	N
056B00147R	Route On Structure	8.54	BEALS BRANCH RD	Fair	82.6	No	6	6	6	29.1	N
056B00147L	Route On Structure	8.35	BEALS BRANCH RD	Fair	82.6	No	6	6	6	29.1	N
056B00143R	Route On Structure	10.19	OLD CANNONS LN	Fair	98	No	6	6	6	30	N
056B00143L	Route On Structure	10.00	OLD CANNONS LN	Fair	98	No	6	6	7	36.75	N
056B00052R	Route On Structure	11.78	MID FK BEARGRASS CREEK	Poor	70	No	4	4	5	26.25	N
056B00052L	Route On Structure	11.62	MID FK BEARGRASS CREEK	Poor	69.6	No	5	4	5	26.25	N
056B00446L	Route On Structure	12.47	I-264 & RAMPS	Fair	75.8	No	7	6	6	87.93	N
056B00446R	1st Non-Card Route On	12.48	I-264 & RAMPS	Fair	74.4	No	7	6	6	27.89	N
	Route On Structure	12.47	I-264 & RAMPS	Fair	74.4	No	7	6	6	44	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056T00913L	Route On Structure	I-65 SB	15.42	36
	2nd Route Under	I-65 SB	15.33	73
	3rd Route Under	I-65 SB	19.25	79.9
	4th Route Under	I-65 SB	16.42	35.96
	1st Route Under	I-65 SB	18.17	60
056T00914R	Route On Structure	I-65 NB	18.17	60
	3rd Route Under	I-65 NB	15.67	72.21
	2nd Route Under	I-65 NB	15.67	72.21
	1st Route Under	I-65 NB	18	72

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	4th Route Under	I-65 NB	18	72
056T00916N	3rd Route Under	I-64 WB RAMP	17.83	58
	Route On Structure	I-64 WB RAMP	16.25	73.67
	1st Route Under	I-64 WB RAMP	16.25	73.67
	2nd Route Under	I-64 WB RAMP	16.5	64
056T00917N	Route On Structure	I-65 NB RAMP	16.5	64
	1st Route Under	I-65 NB RAMP	16.42	27
	4th Route Under	I-65 NB RAMP	16.42	27
	3rd Route Under	I-65 NB RAMP	16.5	38.75
	2nd Route Under	I-65 NB RAMP	16.5	38.75
056T00923L	3rd Route Under	I-65 SB	17.83	85
	Route On Structure	I-65 SB	17.83	85
	2nd Route Under	I-65 SB	17.83	85
	1st Route Under	I-65 SB	17.83	85
056T00924R	1st Route Under	I-65 NB	16.25	73.67
056T00912N	Route On Structure	I-65 SB ON RAMP	16.75	59
	2nd Route Under	I-65 SB ON RAMP	16.75	59
	1st Route Under	I-65 SB ON RAMP	17.67	33.25
	1st Non-Card Route On	I-65 SB ON RAMP	17.67	33.25
056T00918N	Route On Structure	I-64 EB RAMP	23.83	83.31
	1st Route Under	I-64 EB RAMP	20.83	23
056T00925N	1st Route Under	I-64 EB RAMP	15.5	46.3
	3rd Route Under	I-64 EB RAMP	15.5	46.3
	2nd Route Under	I-64 EB RAMP	19.83	44
	Route On Structure	I-64 EB RAMP	19.83	44
056T00926N	1st Route Under	I-64 WB RAMP	18.92	90
	2nd Route Under	I-64 WB RAMP	18.92	90
	Route On Structure	I-64 WB RAMP	18.5	34
056T00921N	Route On Structure	I-64 WB RAMP	17.92	86
	One Route Under	I-64 WB RAMP	17.33	44
056T00922N	1st Route Under	I-64 EB RAMP	17.33	44
	Route On Structure	I-64 EB RAMP	17.33	44
056T00934N	Route On Structure	I-64 WB RAMP	18.83	75.42
	1st Route Under	I-64 WB RAMP	23.75	73.67
	2nd Route Under	I-64 WB RAMP	23.08	73.66
	3rd Route Under	I-64 WB RAMP	16.42	52.67
056B00160N	1st Non-Card Route Under	CSX RAILROAD	16.17	38
	One Route Under	CSX RAILROAD	16.67	60.83
056B00150N	One Route Under	PAYNE ST	17.5	38.2

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	1st Non-Card Route Under	PAYNE ST	17.5	38.2
056B00146R	One Route Under	ALTA VISTA RD	20.25	29.1
056B00145N	1st Non-Card Route Under	BRIDLE PATH	19.92	40
	One Route Under	BRIDLE PATH	19.92	43.96
056B00144N	One Route Under	PEE WEE REESE RD	15.33	30
	1st Non-Card Route Under	PEE WEE REESE RD	15.33	40
056B00146L	One Route Under	ALTA VISTA RD	21.92	43.96
056B00262N	1st Non-Card Route Under	KY 2048	15.92	24
	One Route Under	KY 2048	15.17	62.08
056B00118N	1st Non-Card Route Under	KY 1932	13.08	36.75
	One Route Under	KY 1932	13.08	36.75
056B00440N	1st Non-Card Route Under	BROWNS LN	16.42	39.04
	2nd Route Under	BROWNS LN	16.33	39.04
056B00443N	2nd Route Under	I-64 WB OFF RAMP	19.92	39.04
	Route On Structure	I-64 WB OFF RAMP	19.92	82.68
	1st Non-Card Route Under	I-64 WB OFF RAMP	15.58	39.7

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: This corridor runs through a tunnel under Cochran Hill Rd (MP 8.27).

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-65 to Story Ave	70,000	7,000	10%
From Story Ave to Mellwood Ave	68,000	8,000	12%
From Mellwood Ave to Grinstead Dr	75,000	9,000	12%
From Grinstead Dr to Cannons Ln	76,000	6,000	8%
From Cannons Ln to I-264	72,000	5,000	7%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	4, 12’	40’	10’	76,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently four CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	**Improvement Concepts[1]**	**Notes[2]**	**Reason for Improvement**	**Level of Service (LOS)[3]**			
				2045 No Build		**2045 Build**	
				EB	**WB**	**EB**	**WB**
From I-71 to US 42 (Mellwood Ave) (MP 5.7 to 6.7)	Adding auxiliary lanes in both directions	3, 12-foot lane with 6-foot shoulder.	The expected v/c in 2045 and LOTTR exceed the established thresholds.	E	E	D	D
Entire Corridor (MP 4.9 to 12.0)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[4]	N/A	Improve safety and mobility along I-64.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) DMS are proposed at the following locations: in the EB direction before the exits at Story Avenue, Grinstead Drive, Cannons Lane, and I-264; in the WB direction before the exits at Cannons Lane, Grinstead Drive, and I-65.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
I-64/I-264 System Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00151R	6.58	US 42 WB (STORY AVE)	Bridge Rating & Within Widening Section
056T00938L	6.36	US 42 WB	Within Widening Section
056B00141R	6.7	US 42 & BEARGRASS CREEK	Bridge Rating & Within Widening Section
056T00939L	6.48	US 42 EB & BEARGRASS CRK	Bridge Rating & Within Widening Section
056B00149R	8.07	GRINSTEAD DR	Bridge Rating
056B00149L	7.87	GRINSTEAD DR	Bridge Rating
056B00148R	8.29	US 60A (LEXINGTON RD)	Bridge Rating
056B00148L	8.1	US 60A (LEXINGTON RD)	Bridge Rating
056B00052R	11.78	MID FK BEARGRASS CREEK	Bridge Rating
056B00052L	11.62	MID FK BEARGRASS CREEK	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.411). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be

isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire corridor	Congestion, incidents	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges
	I-71 to Mellwood Ave	Congestion, incidents	Add auxiliary lane in both directions
CAT2: Other major clusters of safety issues	I-65 to I-264	Collisions on Curves	Curve Warning Signs
CAT3: Spot locations with history of severe crashes	Payne St. Bridge	Collisions on Shoulder	Improve Shoulders

Proposed Phasing: The proposed auxiliary lanes can be one phase and the interchange modification at I-264 could be another phase. The other spot improvements at interchanges (DMS) can be grouped into one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites (throughout the corridor) and hazardous waste sites (north of Meadowview Estates and Phoenix Hill neighborhoods). The Cochran Hill Tunnel is located on this corridor, which is on the list of Nationally and Exceptionally Significant Features of the Federal Interstate Highway System. There is a high frequency of National Register of Historic Places (point) in East Market District neighborhood, Butchertown neighborhood, Clifton neighborhood, and Saint Matthews neighborhood. There is a high frequency of National Register of Historic Places (polygon) in Butchertown, Clifton, Crescent Hill, Garden Court, Phoenix Hill, and Irish Hill neighborhoods. There are several local parks that are located along the corridor. Three Land and Water Conservation Fund sites, Waterfront Park, Cherokee Park, and Seneca Park, are located along the corridor. There are two local recreational trails, Butchertown Greenway and Cherokee Park-Barringer Spring Trail, located within the corridor. Four karsts are in the Seneca Gardens and Clifton neighborhoods. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County and there is Known Summer 1 habitat for the Indiana bat along the corridor. There are two census tracts with greater than 25% of the population living at or below the poverty level, and two census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns		
Environmental Red Flag Features	**I-64 Mainline from I-71 to Mellwood Ave**	**I-64/I-264 Interchange**
Superfunds	N	N
Special Waters[1]	N	N
Forested Areas	N	N
NLEB Habitat Priority	N	N
IB Habitat Priority Area	Y	Y
FAA Airport Runways	N	N
Public Hunting Areas	N	N
Wildlife Management Areas	N	N
Local Parks	Y	N
State/ National Parks	N	N
Kentucky Heritage Land Conservation Fund	N	N
Land and Water Conservation Fund	N	N
Area Landmarks	N	N
Point Landmarks	N	N
National Register of Historic Places Location (Point)	Y	N
National Register of Historic Places Location (Polygon)	Y	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-64 mainline from I-71 to Mellwood Ave	Adding auxiliary lanes in both directions	Yes
I-64 /I-264 Interchange	Interchange modification	Potentially
Entire Corridor	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
Entire Corridor	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	11.4 ($M)
ROW:	2.7 ($M)
Utility:	1.5 ($M)
Construction:	75.2 ($M)
Subtotal:	**90.8 ($M)**

TSMO Strategies

Dynamic Message Sign:	2.8 ($M)
Subtotal:	**2.8 ($M)**

TOTAL COST = 93.6 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-64
Segment ID: 8C
From: I-264
To: I-265
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 8C on I-64 extends from I-264 to I-265 in Jefferson County. The corridor is approximately 6.9 miles long and includes four interchanges.

The western portion of the corridor (from I-264 to S Hurstbourne Pkwy) is surrounded by open space and moderately dense detached housing. The eastern portion of the corridor abuts a mix of industrial/warehousing uses and office parks. These areas are considered suburban according to the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-264 to KY 1747	Interstate	8, 12’	10’-12’	Concrete Barrier (36’)	55 mph
From KY 1747 to I-265	Interstate	6, 12’	10’-12’	Concrete Barrier (36’)	65 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-264	KY 1747 (S Hurstbourne Pkwy)	230’ - 260'
KY 1747 (S Hurstbourne Pkwy)	KY 913 (Blankenbaker Pkwy)	300’ - 335'
KY 913 (Blankenbaker Pkwy)	I-265	265’ - 300'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.404, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-264	Semi Directional
KY 1747 (S Hurstbourne Pkwy)	Partial Cloverleaf
KY 913 (Blankenbaker Pkwy)	Partial Cloverleaf
I-265	Full Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00038L	Route On Structure	16.37	KY 1819	Fair	78.2	No	6	7	5	48	N
056B00038R	Route On Structure	16.45	KY 1819	Fair	78.2	No	6	6	5	26	N
056B00039L	Route On Structure	17.73	TUCKER STATION RD	Poor	58	No	6	7	4	26	N
056B00039R	Route On Structure	17.79	TUCKER STATION RD	Fair	74	No	6	7	5	65.47	N
056B00040L	Route On Structure	14.93	KY 1747	Fair	82.9	No	6	6	5	65.47	N
056B00040R	Route On Structure	15.04	KY 1747	Fair	82.9	No	6	6	5	26	N
056B00051N	1st Non-Card Route On	18.00	POPE LICK CREEK	Fair	59	No	N	N	N	31.5	5
	Route On Structure	18.06	POPE LICK CREEK	Fair	59	No	N	N	N	30.18	5
056B00446L	Route On Structure	12.31	I-264 & RAMPS	Fair	75.8	No	7	6	6	87.93	N
056B00446R	1st Non-Card Route On	12.48	I-264 & RAMPS	Fair	74.4	No	7	6	6	27.89	N
	Route On Structure	12.47	I-264 & RAMPS	Fair	74.4	No	7	6	6	44	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00041N	One Route Under	OXMOOR AVE	17.75	26
	1st Non-Card Route Under	OXMOOR AVE	17.75	26
056B00090L	Route On Structure	I-265 SB	16.25	27.89
	1st Non-Card Route Under	I-265 SB	16.25	27.89
	One Route Under	I-265 SB	17.19	29.86
056B00090R	Route On Structure	I-265 NB	17.19	29.86
	1st Non-Card Route Under	I-265 NB	15.83	96.08
	One Route Under	I-265 NB	15.83	96.08
056B00416L	1st Non-Card Route Under	KY 913 SB	22.17	39.37
	1st Route Under	KY 913 SB	22.17	39.37
	2nd Route Under	KY 913 SB	15.92	27.56
	3rd Route Under	KY 913 SB	15.92	27.56

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
056B00416R	1st Non-Card Route Under	KY 913 NB	15.83	63.98
	1st Route Under	KY 913 NB	15.92	43.96
	2nd Route Under	KY 913 NB	15.92	43.96
	3rd Route Under	KY 913 NB	15.83	63.98

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-264 to KY 1747	131,000	8,000	6%
From KY 1747 to KY 913	116,000	8,000	7%
From KY 913 to I-265	95,000	6,000	6%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6-8, 12’	36’	10’-12’	131,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 18.4% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently five CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts

Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
Mainline from I-264 to KY 1747 (MP 13.0 to 14.3)	Eastbound managed lanes throughout. Added Through Lanes or Auxiliary Lanes in both directions between KY 1747 and KY 913. Ramp Metering at all non-system interchanges	Added Through Lanes or Auxiliary Lanes between KY 1747 and KY 913: 4, 12-foot lanes in each direction with 12-foot outside shoulder. 36-foot Raised Median.	Improve safety and mobility along I-64.	D	E	E	E
Mainline from KY 1747 to KY 913 (MP 15.3 to 16.7)			The expected v/c in 2045 exceeds the established threshold; Improve safety and mobility along I-64.	E	F	C	E
Mainline from KY 913 to I-265 (MP 17.4 to 18.7)			Improve safety and mobility along I-64.	C	D	B	D
Eastbound managed lane throughout (MP 13.0 to 18.7)	Eastbound managed lane	The managed lane will use one of the existing lanes with improved pavement markings and signages	Improve safety and mobility along I-64.	N/A	N/A	D	N/A
Mainline entire corridor (MP 13.0 to 18.7)	Queue Warning and Comparative Travel Time; Incident Management	N/A	Improve safety and mobility along I-64.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00038L	16.37	KY 1819	Bridge Rating & Within Widening Section
056B00038R	16.45	KY 1819	Bridge Rating & Within Widening Section
056B00040L	14.93	KY 1747	Bridge Rating & Within Widening Section
056B00040R	15.04	KY 1747	Bridge Rating & Within Widening Section
056B00039R	17.79	TUCKER STATION RD	Bridge Rating
056B00051N	18	POPE LICK CREEK	Bridge Rating
	18.06	POPE LICK CREEK	Bridge Rating

- **Bridges for Replacement:** The table below shows the bridges that are recommended for replacement. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
056B00039L	17.73	TUCKER STATION RD	Bridge Rating

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.404). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-264 to I-265 (entire corridor)	Congestion	Ramp Metering at all non-system interchanges; Queue Warning and Comparative Travel Time; Incident Management
CAT2: Other major clusters of safety issues	N/A	N/A	N/A
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed widening between KY 1747 and KY 913 can be one phase. The eastbound managed lane (through improved pavement markings and signages) can be done at the same time with other spot improvements at interchanges (ramp metering and queue warning). A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites and hazardous waste sites throughout the corridor. One National Register of Historic Places Location (polygon), Oxmoor, is in the Saint Regis Park neighborhood and one National Register of

Historic Places Location (point), James Brown House, is near Saint Matthews neighborhood. One Kentucky Frontier Trail, Boones Wagon Road, runs through the corridor near the Forest Hills neighborhood. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County and there is Known Summer 1 habitat for the Northern Long-eared Bat (NLEB) and Indiana bat along the corridor. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns	
Environmental Red Flag Features	**I-64 mainline between KY 1747 and KY 913**
Superfunds	N
Special Waters[1]	N
Forested Areas	N
NLEB Habitat Priority	N
IB Habitat Priority Area	Y
FAA Airport Runways	N
Public Hunting Areas	N
Wildlife Management Areas	N
Local Parks	N
State/ National Parks	N
Kentucky Heritage Land Conservation Fund	N
Land and Water Conservation Fund	Y
Area Landmarks	N
Point Landmarks	N
National Register of Historic Places Location (Point)	N
National Register of Historic Places Location (Polygon)	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-64 mainline between KY 1747 and KY 913	Added Through Lanes or Auxiliary Lanes in both directions	Potentially
Entire Corridor	Eastbound managed lanes through elongated pavement markings and improved signages	No
At all non-system interchanges	Ramp Metering	No
Entire Corridor	Queue Warning and Comparative Travel Time/Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	8.1 ($M)
ROW:	0.3 ($M)
Utility:	0.3 ($M)
Construction:	47.0 ($M)
Subtotal:	**55.7 ($M)**

TSMO Strategies

Ramp Metering - Traffic responsive centralized:	1.3 ($M)
Queue Warning:	3.3 ($M)
Elongated Pavement Markings:	0.4 ($M)
Improved Signage:	1.0 ($M)
Subtotal:	**5.9 ($M)**

TOTAL COST = 61.6 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-64
Segment ID: 8D
From: I-265
To: KY 53 in Shelbyville
Counties: Jefferson, Shelby
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 8D on I-64 extends from I-265 in Jefferson County to KY 53 in Shelbyville (Shelby County). The corridor is approximately 16.3 miles long and contains four interchanges.

The western portion of the corridor (from I-265 to the Shelby County line) passes through large-lot agriculture residential and low-density residential areas. These areas are considered suburban according to the KYSTMv19 data. The remainder of the corridor passes through farmland and large-lot residential uses, with some commercial, residential, and industrial uses around interchanges. These areas are categorized as rural by the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-265 to KY 55 (Taylorsville Rd)	Interstate	6, 12’	10’-12’	Concrete Barrier (31’)	70 mph
From KY 55 (Taylorsville Rd) to KY 53 (Mt Eden Rd)	Interstate	4, 12’	10’	Depressed (60’)	70 mph

Right of Way: The existing right of way is generally 270’ – 315’ wide.

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.359, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-265	Full Cloverleaf
KY 1848 (Buck Creek Rd)	Diamond
KY 55 (Taylorsville Rd)	Diamond
KY 53 (Mt Eden Rd)	Partial Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00050N	1st Non-Card Route On	20.27	BRANCH OF FLOYDS FORK	Fair	59	No	N	N	N	25.92	5
	Route On Structure	20.28	BRANCH OF FLOYDS FORK	Fair	59	No	N	N	N	25.92	5
056B00490N	1st Non-Card Route On	20.34	S BECKLEY STATION RD	Good	85.6	No	7	7	7	53	N
	Route On Structure	20.34	S BECKLEY STATION RD	Good	85.6	No	7	7	7	53.63	N
056B00492N	Route On Structure	21.98	KY 1531	Good	90.1	No	7	7	7	53	N
	1st Non-Card Route On	21.97	KY 1531	Good	90.1	No	7	7	7	55.51	N
056B00494N	Route On Structure	20.79	BECKLEY PKWY & FLOYDS FK	Good	82.5	No	7	7	7	52.67	N
	1st Non-Card Route On	20.79	BECKLEY PKWY & FLOYDS FK	Good	82.5	No	7	7	7	52.67	N
056B00495N	Route On Structure	22.08	LONG RUN	Good	90.1	No	7	7	7	68.78	N
	1st Non-Card Route On	22.08	LONG RUN	Good	90.1	No	7	7	7	52.67	N
106B00063N	1st Non-Card Route On	32.08	DRY RUN	Fair	72	No	N	N	N	25.92	5
	Route On Structure	32.08	DRY RUN	Fair	72	No	N	N	N	30.25	5
106B00064L	Route On Structure	33.29	CLEAR CREEK	Fair	80	No	5	6	6	39	N
106B00064R	Route On Structure	33.28	CLEAR CREEK	Fair	80	No	5	6	6	39	N
106B00065N	1st Non-Card Route On	33.90	TRIB TO CLEAR CREEK	Fair	59	No	N	N	N	18.7	5
	Route On Structure	33.89	TRIB TO CLEAR CREEK	Fair	59	No	N	N	N	23.95	5
106B00106N	Route On Structure	27.22	NS RAILROAD	Fair	86.6	No	6	7	7	25.92	N
	1st Non-Card Route On	27.24	NS RAILROAD	Fair	86.6	No	6	7	7	25.92	N
106B00107N	Route On Structure	25.09	CONNER STATION RD	Fair	86.6	No	7	6	7	25.92	N
	1st Non-Card Route On	25.10	CONNER STATION RD	Fair	86.6	No	7	6	7	27.89	N
	Route On Structure	25.09	BULLSKIN CREEK	Fair	86.3	No	6	7	7	26	N

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
056B00043N	One Route Under	S ENGLISH STATION	17.17	29.86
	1st Non-Card Route Under	S ENGLISH STATION	17.17	29.86
056B00090L	Route On Structure	I-265 SB	16.25	27.89
	1st Non-Card Route Under	I-265 SB	16.25	27.89
	One Route Under	I-265 SB	17.19	29.86
056B00090R	Route On Structure	I-265 NB	17.19	29.86
	1st Non-Card Route Under	I-265 NB	15.83	96.08
	One Route Under	I-265 NB	15.83	96.08
056B00491N	One Route Under	GILLILAND RD	15.83	53
	1st Non-Card Route Under	GILLILAND RD	16.42	53
056B00493N	One Route Under	CLARK STATION RD	20.5	52.67
	1st Non-Card Route Under	CLARK STATION RD	14.33	55.51
106B00009N	One Route Under	KY 53	14.65	39
	1st Non-Card Route Under	KY 53	14.65	39
106B00039N	One Route Under	KY 2861	16.56	41.99
	1st Non-Card Route Under	KY 2861	16.56	41.99
106B00104N	One Route Under	KY 1848	16	36.09
	1st Non-Card Route Under	KY 1848	18.08	25.92
106B00109N	One Route Under	KY 55	17.75	27.89

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-265 to KY 1848	64,000	8,000	12%
From KY 1848 to KY 55	61,000	8,000	14%
From KY 55 to KY 53	55,000	7,000	13%

1,2) Rounded to the nearest thousand.

Mobility: There is one potential traffic bottleneck section along this corridor. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) Typical roadway attributes of the potential bottleneck area can be found in the table below.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	6, 12’	31’	10’-12’	64,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 23.7% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently four CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From I-265 to new service interchange (MP 19.2 to 21.4)	A new service interchange at I-64 and a new connector road between Fisherville and Eastwood	See details in I-64 Interchange and New Connector Alternative Planning Study (2008, Item #5-8200.00)	Mitigate congestion, improve roadway connectivity and safety.	D	D	F	F[4]
From new service interchange to KY 1848 (MP 21.4 to 27.3)						D	D
Entire Corridor (MP 18.7 to 34.9)	Traffic incident management, Dynamic Message Signs and CCTV cameras at all interchanges[5]	N/A	Improve safety and mobility along I-64.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) The LOS F in Build scenario is due to traffic diversion through the proposed new Eastwood/Fisherville connector. SWIPP does not propose I-64 widening between I-265 and the new Eastwood/Fisherville connector to avoid conflict with KYTC ongoing project.
5) DMS proposed at the following locations: in the EB direction at MP 23 and before exits at KY 1848, KY 55, and KY 53; in the WB direction before exits at KY 55, KY 1848, and I-265.

Potential New Interchanges: A new service interchange is proposed at I-64 south of Eastwood (as per KYTC Item #5-80000).

Potential New Interchanges
South of Eastwood

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
KY 53 (I-64 EB off-ramp)

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00050N	20.27	BRANCH OF FLOYDS FORK	Bridge Rating
	20.28	BRANCH OF FLOYDS FORK	Bridge Rating
106B00063N	32.08	DRY RUN	Bridge Rating
	32.08	DRY RUN	Bridge Rating
106B00064L	33.29	CLEAR CREEK	Bridge Rating
106B00064R	33.28	CLEAR CREEK	Bridge Rating
106B00065N	33.9	TRIB TO CLEAR CREEK	Bridge Rating
	33.89	TRIB TO CLEAR CREEK	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.359). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire Corridor	Congestion/incidents	Traffic Incident Management, Dynamic Message Signs (DMS) and CCTV cameras at all interchanges
CAT2: Other major clusters of safety issues	KY 55 to KY 53	Lane Drop	Queue Warning in EB direction
CAT3: Spot locations with history of severe crashes	Between KY 55 and KY 53, and at KY 53 Interchange	Head-On Collision, Lack of space to merge	Add Cable Median Barrier. Increase westbound acceleration lane length

Proposed Phasing: The proposed new interchange south of Eastwood can be one phase. The new Eastwood/Fisherville connector road can be one phase or split into two phases (one north of I-64 and another south of I-64), depending on funding availability. The other spot improvements at interchanges (e.g., DMS, increase acceleration lane, etc.) can be done at the same time. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated between two well-developed urban areas resulting in a high frequency of underground storage tank sites throughout the corridor, most are at the east side of the corridor around interchanges. Two oil/gas wells are located along the corridor near interchanges. One National Register of Historic Places Location (polygon), Undulata, is located south of the city of Shelbyville. Two National

Register of Historic Places Location (point) are located along the corridor, Wickland is south of Simpsonville and Eastwood School is in the Eastwood neighborhood. Two Kentucky Frontier Trails, Harrods Old Trace and Boone Wagon, are located along the corridor. Beckley Creek Park is located along the corridor. Three karsts are located along the corridor, south of Shelbyville. Wooded area can be found along the corridor. Maturity and Reproductive Records and Other Records can be found for the Gray bat in Jefferson County and Shelby County. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns		
Environmental Red Flag Features	**I-64 Mainline from I-265 to K 1848**	**I-64/KY 53 Interchange**
Superfunds	N	N
Special Waters[1]	N	N
Forested Areas	Y	N
NLEB Habitat Priority	N	N
IB Habitat Priority Area	N	N
FAA Airport Runways	N	N
Public Hunting Areas	N	N
Wildlife Management Areas	N	N
Local Parks	N	N
State/ National Parks	N	N
Kentucky Heritage Land Conservation Fund	N	N
Land and Water Conservation Fund	N	N
Area Landmarks	N	N
Point Landmarks	Y	N
National Register of Historic Places Location (Point)	Y	N
National Register of Historic Places Location (Polygon)	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
South of Eastwood	A new service interchange + A new connector road	Yes
I-64/KY 53 Interchange	Adding a lane on I-64 EB off-ramp	Likely Not
Entire Corridor	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
Entire Corridor	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	7.2 ($M)
ROW:	9.3 ($M)
Utility:	3.6 ($M)
Construction:	72.4 ($M)
Subtotal:	**92.5 ($M)**

TSMO Strategies

Dynamic Message Sign:	2.8 ($M)
Subtotal:	**2.8 ($M)**

TOTAL COST = 95.3 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-64
Segment ID: 8E
From: KY 53 in Shelbyville
To: I-64/I-75 North Split
Counties: Shelby, Fayette, Woodford, Scott, Franklin
Highway District(s): 5, 7

CORRIDOR SEGMENT OVERVIEW

Corridor 8E on I-64 extends from KY 53 in Shelbyville (Shelby County) to I-64/I-75 north split in Fayette County, passing through Franklin County, Woodford County, and Scott County along the way. The corridor is approximately 40.4 miles long and includes eight interchanges.

The western portion of this corridor passes through low-density residential areas, farmland, and undeveloped areas and residential and commercial areas of Frankfort. These areas are considered rural or rural town/exurban according to the KYSTMv19 data. The eastern terminus of the corridor crosses the suburban fringe of Lexington.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From KY 53 to KY 1790 underpass	Interstate	4, 12’	10’	Depressed (60’-180’)	70 mph
From KY 1790 underpass to KY 395	Interstate	6, 12’	10’	Depressed (>100’)	70 mph
From KY 395 to US 60 in Frankfort	Interstate	4, 12’	10’	Depressed (>100’)	70 mph
From US 60 in Frankfort to I-64/I-75 North Split	Interstate	4, 12’	10’	Depressed (60’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
KY 53 in Shelbyville	KY 2823 (Bardstown Trl) in Waddy	385’ - 420'
KY 2823 (Bardstown Trl) in Waddy	US 127 (Lawrenceburg Rd) in Frankfort	255’ - 300'
US 127 (Lawrenceburg Rd) in Frankfort	KY 2821 (Hanly Ln) in Frankfort	485’ - 780'
KY 2821 (Hanly Ln) in Frankfort	I-64/I-75 north split	265’ - 305'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.392, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
KY 53 (Mount Eden Road)	Partial Cloverleaf
KY 395 (Waddy Road)	Diamond
KY 151 (Crab Orchard Rd)	Diamond
US 127 (Lawrenceburg Road)	Partial Cloverleaf
US 60 (Versailles Road)	Diamond
KY 341 (Georgetown Road)	Diamond
US 62 (Paynes Depot Road)	Diamond
I-75	Trumpet

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	**On_Under**	**Mile Point**	**Feature Intersect**	**NBIS Classification**	**Sufficiency Rating**	**Substandard**	**Deck Rating**	**Superstructure Rating**	**Substructure Rating**	**Horizontal Clearance (feet)**	**Culvert Rating**
037B00051L	Route On Structure	53.82	KY 420 & CEDAR RUN	Fair	54	No	5	5	5	44.95	N
037B00051R	Route On Structure	53.82	KY 420 & CEDAR RUN	Fair	67	No	5	5	5	50	N
037B00052L	Route On Structure	55.47	KENTUCKY RIVER	Poor	46.5	No	4	5	5	50	N
037B00052R	Route On Structure	55.46	KENTUCKY RIVER	Poor	46.5	No	4	5	5	50	N
037B00053L	Route On Structure	57.90	US 60	Fair	85	No	5	5	6	25	N
037B00053R	Route On Structure	57.91	US 60	Fair	85	No	5	5	6	25	N
037B00055L	Route On Structure	47.76	KY 151	Poor	64	No	4	5	5	38	N
037B00055R	Route On Structure	47.77	KY 151	Poor	63	No	4	5	5	38	N
037B00056L	Route On Structure	49.80	KY 1665 (EVERGREEN RD)	Fair	67	No	5	6	5	40	N
037B00056R	Route On Structure	49.80	KY 1665 (EVERGREEN RD)	Fair	68	No	6	6	5	40	N
037B00057L	Route On Structure	51.54	KY 2817	Poor	65	No	4	5	5	30	N
037B00057R	Route On Structure	51.55	KY 2817	Poor	65	No	4	5	5	30	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
037B00058L	Route On Structure	55.01	KY 1263	Fair	79.4	No	6	5	5	40	N
037B00058R	Route On Structure	54.95	KY 1263	Fair	80.5	No	5	6	5	40	N
037B00059L	Route On Structure	47.19	BENSON CREEK	Fair	60.9	No	5	5	6	26	N
037B00059R	Route On Structure	47.23	BENSON CREEK	Fair	73	No	5	6	6	26	N
037B00060L	Route On Structure	49.14	S BENSON CREEK	Fair	69	No	5	6	5	30	N
037B00060R	Route On Structure	49.15	S BENSON CREEK	Fair	69	No	5	6	5	60	N
037B00061N	1st Non-Card Route On	51.49	TRIB TO S BENSON CREEK	Fair	70.4	No	N	N	N	60	6
	Route On Structure	51.52	TRIB TO S BENSON CREEK	Fair	70.4	No	N	N	N	26.33	6
037B00062N	1st Non-Card Route On	59.22	HICKMAN CREEK	Fair	72	No	N	N	N	26.33	5
	Route On Structure	59.24	HICKMAN CREEK	Fair	72	No	N	N	N	62	5
106B00059L	Route On Structure	45.51	BARDSTOWN TRL, GOOSE CRK	Poor	61	No	4	6	5	37.73	N
106B00059R	Route On Structure	45.52	BARDSTOWN TRL, GOOSE CRK	Fair	63.2	No	5	6	5	37.73	N
106B00066L	Route On Structure	36.97	GUIST CREEK	Fair	59.2	No	6	6	5	40.04	N
106B00066R	Route On Structure	36.94	GUIST CREEK	Fair	62.5	No	6	6	5	26	N
106B00096L	Route On Structure	38.66	NS RAILROAD	Good	96.6	No	7	7	7	26	N
106B00096R	Route On Structure	38.68	NS RAILROAD	Good	96.6	No	7	8	7	60.04	N
106B00098L	Route On Structure	40.72	BOB JEFF RD	Good	88.7	No	7	7	7	48.5	N
106B00098R	Route On Structure	40.71	BOB JEFF RD	Good	88.7	No	7	7	7	29.86	N
106B00099L	Route On Structure	42.00	BZRD RST RD & JEPTHA CRK	Good	96.6	No	7	7	7	29.86	N
106B00099R	Route On Structure	42.01	BZRD RST RD & JEPTHA CRK	Fair	93	No	7	7	6	30	N
120B00021L	Route On Structure	61.75	WOODLAKE ROAD	Fair	97.1	No	7	6	7	51.9	N
120B00021R	Route On Structure	61.73	WOODLAKE ROAD	Fair	97.1	No	7	6	7	82	N
120B00022L	Route On Structure	64.98	US 421	Fair	94.1	No	7	6	7	52.49	N
120B00022R	Route On Structure	65.00	US 421	Fair	96.1	No	7	6	7	52.49	N
120B00023N	1st Non-Card Route On	61.72	BEALS RUN	Good	73.5	No	N	N	N	49.9	7
	Route On Structure	61.70	BEALS RUN	Good	73.5	No	N	N	N	49.9	7
120B00024L	Route On Structure	67.10	SOUTH ELKHORN CREEK	Fair	95	No	6	7	7	30.5	N
120B00024R	Route On Structure	67.10	SOUTH ELKHORN CREEK	Fair	94	No	5	7	7	30	N
120B00025N	1st Non-Card Route On	64.82	LEE BRANCH	Fair	75.7	No	N	N	N	50.1	6
	Route On Structure	53.82	LEE BRANCH	Fair	75.7	No	N	N	N	50.1	6

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
034B00002N	2nd Route Under	US-25	16.26	27.89

Structures Crossing Over the Corridor				
	1st Non-Card Route Under	US-25	16.33	25.92
	1st Route Under	US-25	16.33	25.92
034B00063N	1st Non-Card Route Under	N YARNALLTON PIKE	16.25	29.86
	One Route Under	N YARNALLTON PIKE	16.25	29.86
034B00084N	Route On Structure	N 75 RAMP	16.42	25.5
	One Route Under	N 75 RAMP	17.08	25.5
	1st Non-Card Route Under	N 75 RAMP	17.08	25.5
034B00085N	Route On Structure	S 75 NC	17.08	28
	One Route Under	S 75 NC	16.08	41
	1st Non-Card Route Under	S 75 NC	16.08	41
034B00086N	1st Non-Card Route Under	NS (CNO & TP) RR	20.08	40
	One Route Under	NS (CNO & TP) RR	20.08	40
037B00029N	One Route Under	KY 2821	15.08	50.77
	1st Non-Card Route Under	KY 2821	15.08	50.77
037B00054N	One Route Under	RJ CORMAN RAILROAD	17.75	25
	1st Non-Card Route Under	RJ CORMAN RAILROAD	70	38
037B00083N	One Route Under	KY 1472	16.5	62
	1st Non-Card Route Under	KY 1472	17.33	62
037B00096N	1st Non-Card Route Under	US 127	18.67	62
	One Route Under	US 127	23.9	46
105B00082N	1st Non-Card Route Under	CANE RUN RD	17.08	29.86
	One Route Under	CANE RUN RD	17.08	29.86
105B00083N	One Route Under	US-62	16.5	29.86
	1st Non-Card Route Under	US-62	16.5	29.86
106B00009N	One Route Under	KY 53	14.65	39
	1st Non-Card Route Under	KY 53	14.65	39
106B00047N	One Route Under	KY 1790	16.58	41.99
	1st Non-Card Route Under	KY 1790	16.58	41.99
106B00097N	One Route Under	KY 714	22.5	35
	1st Non-Card Route Under	KY 714	16.12	30
106B00100N	1st Non-Card Route Under	KY 395	18.42	30
	One Route Under	KY 395	16	36.09
120B00003N	One Route Under	KY-341	17	25.92
	1st Non-Card Route Under	KY-341	16.67	25.92
120B00020N	One Route Under	DUCKERS RD	16.33	51.9
	1st Non-Card Route Under	DUCKERS RD	18.08	50.1

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 53 (in Shelbyville) to KY 395	45,000	8,000	17%
From KY 395 to KY 151	43,000	7,000	17%
From KY 151 to US 127	40,000	7,000	17%
From US 127 to US 60	48,000	7,000	15%
From US 60 to KY 341	43,000	8,000	19%
From KY 341 to US 62	48,000	11,000	23%
From US 62 to I-64/I-75 north split	43,000	11,000	25%

1,2) Rounded to the nearest thousand.

Mobility: There is one potential traffic bottleneck section along this corridor. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) Typical roadway attributes of the potential bottleneck area can be found in the table below. Traffic condition is acceptable along the remainder of this corridor.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
I-64 from KY 341 to I-64/I-75 north split	Interstate	4, 12’	60’	10’	48,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 21.5% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently three CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts

Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From KY 151 to US 127 (MP 48.0 to 53.4)	Widening to 6 lanes	3, 12-foot lanes in each direction with 12-foot outside shoulder and 30.67-foot Flush Median with barrier	Fill the gap between two major widening projects on I-64 (4 to 6 lanes between KY 395 and KY 151[4] and between US 127 and US 60[5])	D	D	C	C
From US 60 to KY 341 (MP 57.7 to 65.6)			The expected v/c in 2045 is close to or above the established thresholds. Fill the gap between two major widening projects on I-64 (4 to 6 lanes between US 127 and US 60[5] and between I-64/I-75 north split to Newtown Pike[6])	D	D	D	D
From KY 341 to US 62 (MP 65.6 to 69.3)				D	D	D	C
From US 62 to I-64/ I-75 north split (MP 69.3 to 74.5)				D	C	C	C
Entire Corridor (MP 34.9 to 74.5)	Traffic incident management, Dynamic Message Signs[7] and CCTV cameras	N/A	Improve safety and mobility along I-64.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.
4) KYTC Item #5-2035.40.
5) KYTC Item #5-551.00.
6) KYTC Item #7-8909.10
7) DMS are proposed at the following locations: in the EB direction before exits at KY 395, KY 151, US 127, US 60, US 62, and I-75; in the WB direction before exits at US 62, KY 341, US 60, US 127, KY 151, KY 395, and KY 53.

Potential New Interchanges: None.

Interchanges for Potential Modification: Improvements are proposed for the existing interchanges listed below.

Interchanges for Potential Modification
KY 53 (I-64 EB off-ramp)
I-64/I-75 North Split (SB to EB ramp & WB to NB ramp)

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
037B00051L	53.82	KY 420 & CEDAR RUN	Bridge Rating
037B00051R	53.82	KY 420 & CEDAR RUN	Bridge Rating
037B00052L	55.47	KENTUCKY RIVER	Bridge Rating
037B00052R	55.46	KENTUCKY RIVER	Bridge Rating
037B00053L	57.9	US 60	Bridge Rating & Within Widening Section
037B00053R	57.91	US 60	Bridge Rating & Within Widening Section
037B00055L	47.76	KY 151	Bridge Rating & Within Widening Section
037B00055R	47.77	KY 151	Bridge Rating & Within Widening Section
037B00056L	49.8	KY 1665 (EVERGREEN RD)	Bridge Rating & Within Widening Section
037B00056R	49.8	KY 1665 (EVERGREEN RD)	Bridge Rating & Within Widening Section
037B00057L	51.54	KY 2817	Bridge Rating & Within Widening Section
037B00057R	51.55	KY 2817	Bridge Rating & Within Widening Section
037B00058L	55.01	KY 1263	Bridge Rating
037B00058R	54.95	KY 1263	Bridge Rating

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
037B00059L	47.19	BENSON CREEK	Bridge Rating
037B00059R	47.23	BENSON CREEK	Bridge Rating
037B00060L	49.14	S BENSON CREEK	Bridge Rating & Within Widening Section
037B00060R	49.15	S BENSON CREEK	Bridge Rating & Within Widening Section
037B00061N	51.49	TRIB TO S BENSON CREEK	Bridge Rating & Within Widening Section
	51.52	TRIB TO S BENSON CREEK	Bridge Rating & Within Widening Section
037B00062N	59.22	HICKMAN CREEK	Bridge Rating & Within Widening Section
	59.24	HICKMAN CREEK	Bridge Rating & Within Widening Section
106B00059L	45.51	BARDSTOWN TRL, GOOSE CRK	Bridge Rating
106B00059R	45.52	BARDSTOWN TRL, GOOSE CRK	Bridge Rating
106B00066L	36.97	GUIST CREEK	Bridge Rating
106B00066R	36.94	GUIST CREEK	Bridge Rating
120B00021L	61.75	WOODLAKE ROAD	Within Widening Section
120B00021R	61.73	WOODLAKE ROAD	Within Widening Section
120B00022L	64.98	US 421	Within Widening Section
120B00022R	65	US 421	Within Widening Section
120B00023N	61.72	BEALS RUN	Within Widening Section
	61.7	BEALS RUN	Within Widening Section
120B00024L	67.1	SOUTH ELKHORN CREEK	Within Widening Section
120B00024R	67.1	SOUTH ELKHORN CREEK	Bridge Rating
120B00025N	64.82	LEE BRANCH	Bridge Rating
	53.82	LEE BRANCH	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
None			

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.392). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor

mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Entire corridor	Congestion/incidents	Traffic Incident Management, Dynamic Message Signs (DMS) and CCTV cameras
CAT2: Other major clusters of safety issues	KY 53 to I-64/I-75 Split	Weather Conditions	Variable Speed Limits
CAT3: Spot locations with history of severe crashes	East of Rest Stop (MP 61.00)	Parking on Shoulder	Add truck parking

Proposed Phasing: The proposed I-64 widening can be split into two phases geographically (one for the section between KY 151 and US 127, and another for the section between US 60 and I-71/I-64 north split). The proposed spot improvements at interchanges (e.g., ramp improvement at I-64/I-75 north split, DMS, etc.) within the corridor widening can be done at the same time the roadway is widened. The other spot improvement at interchanges (e.g., interchange ramp improvement at KY 53, DMS, etc.) can be grouped into one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

Common features throughout the corridor include hazardous waste sites (south of Frankfort), underground storage tank sites (throughout corridor), three oil/gas wells, karts (south to southeast of Frankfort). One wellhead protection area is west of Lexington. One blue water trail, Kentucky River, Pool 4, is south of Frankfort and one Kentucky frontier trail, Harrods Old Trace – 1779, is south of Shelbyville. National Register of Historic Places Locations (point and polygon) are common adjacent to north of Midway, south to southeast of Frankfort, south of Georgetown, and south of Shelbyville. Wooded area can be found along the corridor. Maturity and Reproductive Records and Other Records can be found for the Gray bat in Franklin, Scott, Shelby, and Woodford Counties and there is Known Summer 1 habitat for the Indiana bat in Kentucky and along the corridor. There is one census tracts with greater than 25% of the population living at or below the poverty level, and four census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns				
Environmental Red Flag Features	**I-64 Mainline from KY 151 to US 127**	**I-64 Mainline from US 60 to I-75**	**I-64/KY 53 Interchange**	**I-64/I-75 North Split Interchange**
Superfunds	N	N	N	N
Special Waters[1]	N	N	N	N
Forested Areas	Y	Y	N	N
NLEB Habitat Priority	N	Y	N	Y
IB Habitat Priority Area	N	N	Y	N
FAA Airport Runways	N	N	N	N
Public Hunting Areas	N	N	N	N
Wildlife Management Areas	N	N	N	N
Local Parks	N	N	N	N
State/ National Parks	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N
Land and Water Conservation Fund	N	Y	N	N
Area Landmarks	Y	Y	N	Y
Point Landmarks	Y	N	N	Y
National Register of Historic Places Location (Point)	N	N	N	N
National Register of Historic Places Location (Polygon)	N	Y	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-64 Mainline from KY 151 to US 127	Widening to 6 lanes	Likely Not
I-64 Mainline from US 60 to I-75	Widening to 6 lanes	Likely Not
I-64/KY 53 Interchange	Adding a lane on EB off-ramp	Likely Not
I-64/I-75 North Split Interchange	Adding a lane on SB to EB & WB to NB ramps	Yes
Entire Corridor	DMS and CCTV cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
Entire Corridor	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	17.2 ($M)
ROW:	1.0 ($M)
Utility:	0.5 ($M)
Construction:	369.9 ($M)
Subtotal:	**388.7 ($M)**

TSMO Strategies

Dynamic Message Sign:	5.2 ($M)
Subtotal:	**5.2 ($M)**

TOTAL COST = 393.8 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-264
Segment ID: 10A
From: I-64 (West)
To: I-65
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 10A on I-264 extends from I-64 (west) to I-65 in Jefferson County. The corridor is approximately 12.4 miles long and contains 13 interchanges.

The corridor passes through a mix of suburban, urban, and dense urban areas (according to the KYSTMv19 data). The urban portion from I-64 to Cane Run Rd passes through moderately dense residential and industrial areas of western Louisville. From there until the Taylor Blvd interchange is considered suburban by the KYSTMv19 data, being surrounded by moderately dense residential areas. The corridor then transitions to urban areas going east until the Louisville International Airport. The remainder of the corridor passes through dense urban areas including the northern end of the airport and adjacent highway commercial uses.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-64 (west) to KY 1865 (Taylor Blvd)	Interstate	6, 12’	10’	Concrete Barrier (18’)	55 mph
From KY 1865 (Taylor Blvd) to I-65	Interstate	7-8, 12’	10’	Concrete Barrier (27’)	55 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-65	KY 1934 (Cane Run Rd)	235’ - 265'
KY 1934 (Cane Run Rd)	Virginia Ave	280’ - 300'
Virginia Ave	I-64	245’ - 260'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.142, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-64 (west)	Three Leg Directional
Bank St	Half Cloverleaf
W Muhammad Ali Blvd/ River Park Dr	Split Diamond
Virginia Ave/ Dumesnil St	Split Diamond
Bells Ln	Diamond
Ralph Ave	Half Diamond
KY 1934 (Cane Run Rd)	Partial Cloverleaf
US 31 W (Dixie Hwy)	Semi Directional
KY 1865 (Taylor Blvd)	Partial Cloverleaf
KY 1020 (Southern Pkwy)/ S 3rd St	Split Diamond
Crittenden Dr	Partial Cloverleaf
Freedom Way/ Terminal Dr	Partial Cloverleaf and Directional
I-65	Semi Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00227L	Route On Structure	0.38	KY 3082 (BANK ST)	Fair	82.7	No	5	6	5	40	N
056B00227R	Route On Structure	0.34	KY 3082 (BANK ST)	Fair	94.7	No	6	6	6	30	N
056B00228N	1st Non-Card Route On	6.75	SAVAGE DR	Fair	93.7	No	5	6	6	30	N
	Route On Structure	6.73	SAVAGE DR	Fair	93.7	No	5	6	6	30	N
056B00229N	1st Non-Card Route On	6.40	GARRS LN	Fair	82.3	No	5	6	5	30	N
	Route On Structure	6.37	GARRS LN	Fair	82.3	No	5	6	5	36	N
056B00230N	Route On Structure	5.98	CRUMS LN	Fair	90.4	No	5	6	6	36	N
	1st Non-Card Route On	6.00	CRUMS LN	Fair	90.4	No	5	6	6	41	N
056B00231N	Route On Structure	5.47	FARNSLEY RD	Fair	81	No	6	6	6	41	N
	1st Non-Card Route On	5.47	FARNSLEY RD	Fair	81	No	6	6	6	24	N
056B00234N	Route On Structure	4.57	KY 2051 (CAMPGROUND RD)	Fair	73	No	5	5	6	24	N
	1st Non-Card Route On	4.56	KY 2051 (CAMPGROUND RD)	Fair	73	No	5	5	6	68	N
056B00250N	1st Non-Card Route On	4.65	P&L RAILWAY	Poor	63.2	No	5	5	4	68	N
	Route On Structure	4.64	P&L RAILWAY	Poor	63.2	No	5	5	4	42	N

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00251N	Route On Structure	4.17	P&L RAILWAY	Fair	94	No	5	6	6	66	N
	3rd Non-Card Route On	4.18	P&L RAILWAY	Fair	94	No	5	6	6	50	N
056B00252N	1st Non-Card Route On	3.68	P&L RAILWAY	Fair	73	No	5	6	6	34	N
	Route On Structure	3.67	P&L RAILWAY	Fair	73	No	5	6	6	34	N
056B00263R	Route On Structure	7.71	P&L RAILWAY	Fair	83.3	No	6	5	6	62.08	N
056B00264N	Route On Structure	7.61	US 31W (DIXIE HWY)	Fair	69.6	No	6	6	6	57	N
056B00265L	Route On Structure	7.82	P&L RAILWAY	Fair	80.3	No	5	5	6	57	N
056B00266N	Route On Structure	7.48	US 31W (DIXIE HWY)	Fair	85.2	No	5	6	6	38	N
056B00267N	Route On Structure	7.63	I-264 WB ON RAMP	Poor	66.1	No	4	6	6	42	N
056B00268N	Route On Structure	7.71	I-264 WB ON RAMP	Fair	67.3	No	5	6	6	68	N
056B00269N	Route On Structure	7.41	I-264 WB OFF RAMP	Poor	58.1	No	6	6	4	44.33	N
056B00270N	Route On Structure	7.41	I-264 EB ON RAMP	Fair	59.2	No	6	6	5	48	N
056B00407R	Route On Structure	10.92	KY 1631 (CRITTENDEN DR)	Fair	91.9	No	7	6	6	23.95	N
056B00408L	Route On Structure	10.98	KY 1631 (CRITTENDEN DR)	Fair	90.9	No	6	6	6	27.89	N
056B00411N	1st Non-Card Route On	9.23	KY 1865 (TAYLOR BLVD)	Fair	83	No	6	7	7	39	N
	Route On Structure	9.13	KY 1865 (TAYLOR BLVD)	Fair	83	No	6	7	7	39	N
056B00414N	Route On Structure	10.05	KY 1020 (SOUTHERN PKWY)	Fair	82	No	5	6	5	27.56	N
	1st Non-Card Route On	10.15	KY 1020 (SOUTHERN PKWY)	Fair	82	No	5	6	5	27.56	N
056B00415N	1st Non-Card Route On	10.25	KY 1020 (S 3RD ST)	Fair	93	No	5	6	6	39.25	N
	Route On Structure	10.15	KY 1020 (S 3RD ST)	Fair	93	No	5	6	6	39.25	N
056B00426L	Route On Structure	10.74	CSX RR & CRITTENDEN DR	Fair	81	No	6	6	6	40	N
056B00427R	Route On Structure	10.65	CSX RR & CRITTENDEN DR	Fair	79.9	No	5	6	6	39.04	N
056B00465N	Route On Structure	0.85	34TH ST & DUNCAN ST	Fair	80.2	No	6	7	5	46.92	N
	1st Non-Card Route On	0.85	34TH ST & DUNCAN ST	Fair	80.2	No	6	7	5	46.92	N
056B00466N	Route On Structure	1.16	US 31E (W MARKET ST)	Fair	81	No	7	7	6	46.92	N
	1st Non-Card Route On	1.17	US 31E (W MARKET ST)	Fair	81	No	7	7	6	46.92	N
056B00467N	1st Non-Card Route On	1.46	W MUHAMMAD ALI BLVD	Fair	96	No	7	7	6	46.92	N
	Route On Structure	1.46	W MUHAMMAD ALI BLVD	Fair	96	No	7	7	6	39	N
056B00468N	1st Non-Card Route On	1.54	VERMONT AVE	Fair	84	No	7	7	6	39.04	N
	Route On Structure	1.53	VERMONT AVE	Fair	84	No	7	7	6	39	N
056B00469N	Route On Structure	1.61	RIVER PARK DR	Fair	96	No	7	7	6	39.04	N
	1st Non-Card Route On	1.61	RIVER PARK DR	Fair	96	No	7	7	6	39	N
056B00470N	Route On Structure	1.92	US 150 (W BROADWAY)	Fair	81	No	7	7	6	39.04	N
	1st Non-Card Route On	1.92	US 150 (W BROADWAY)	Fair	81	No	7	7	6	39.04	N

Mainline Bridge Information											
Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00471N	1st Non-Card Route On	2.10	34TH ST	Fair	84	No	7	7	6	39.04	N
	Route On Structure	2.08	34TH ST	Fair	84	No	7	7	6	36.75	N
056B00472N	1st Non-Card Route On	2.26	GARLAND AVE	Fair	88	No	7	7	6	36.75	N
	Route On Structure	2.26	GARLAND AVE	Fair	88	No	7	7	6	27.56	N
056B00473N	1st Non-Card Route On	2.49	GREENWOOD AVE	Fair	79	No	7	7	6	25	N
	Route On Structure	2.49	GREENWOOD AVE	Fair	79	No	7	7	6	49.5	N
056B00474N	1st Non-Card Route On	2.75	VIRGINIA AVE	Fair	97	No	6	6	6	39.25	N
	Route On Structure	2.74	VIRGINIA AVE	Fair	97	No	6	6	6	39.25	N
056B00475N	Route On Structure	2.89	DUMESNIL ST	Fair	85	No	6	7	5	27.23	N
	1st Non-Card Route On	2.89	DUMESNIL ST	Fair	85	No	6	7	5	27.23	N
056B00476N	Route On Structure	3.33	GIBSON LN & NS RAILROAD	Fair	74.2	No	6	6	5	39.04	N
	1st Non-Card Route On	3.33	GIBSON LN & NS RAILROAD	Fair	74.2	No	6	6	5	39.04	N
056B00477N	1st Non-Card Route On	3.81	KY 2054 (ALGONQUIN PKWY)	Fair	84.2	No	7	7	6	23.95	N
	Route On Structure	3.81	KY 2054 (ALGONQUIN PKWY)	Fair	84.2	No	7	7	6	23.95	N
056B00478N	1st Non-Card Route On	4.02	KY 2056 (BELLS LN)	Fair	97	No	7	7	6	39.04	N
	Route On Structure	4.02	KY 2056 (BELLS LN)	Fair	97	No	7	7	6	39.04	N
056B00479N	Route On Structure	5.04	RALPH AVE	Fair	83	No	6	8	6	27.89	N
	1st Non-Card Route On	5.05	RALPH AVE	Fair	83	No	6	8	6	27.89	N
056B00480N	Route On Structure	5.24	KY 1934 (CANE RUN RD)	Fair	96	No	7	7	6	27.89	N
	1st Non-Card Route On	5.23	KY 1934 (CANE RUN RD)	Fair	96	No	7	7	6	40.17	N
056B00537R	Route On Structure	0.17	KY 3064 (NORTHWESTERN)	Fair	87.2	No	6	8	8	21	N

Structures Crossing Over the Corridor				
Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00391N	2nd Route Under	I-65 & RAMP	16.38	28
	2nd Non-Card Route On	I-65 & RAMP	16.38	28
	1st Route Under	I-65 & RAMP	17	39.04
	3rd Route Under	I-65 & RAMP	16.92	40.25
	Route On Structure	I-65 & RAMP	14.42	39.37
	1st Non-Card Route On	I-65 & RAMP	15	39.37
	4th Route Under	I-65 & RAMP	19.75	40
	1st Non-Card Route Under	I-65 & RAMP	19.75	40
056B00394N	2nd Route Under	I-65 NB RAMP	16.08	38.06
	4th Route Under	I-65 NB RAMP	16.5	31.17
	Route On Structure	I-65 NB RAMP	14.6	39.04

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	3rd Route Under	I-65 NB RAMP	15.5	39.04
	5th Route Under	I-65 NB RAMP	16.23	29.86
	1st Non-Card Route Under	I-65 NB RAMP	16.23	29.86
056B00395N	Route On Structure	I-65 NB OFF RAMP	16.38	27.89
	1st Route Under	I-65 NB OFF RAMP	16.38	27.89
	2nd Route Under	I-65 NB OFF RAMP	16	39.04
	4th Route Under	I-65 NB OFF RAMP	16.02	43.96
	5th Route Under	I-65 NB OFF RAMP	16.02	43.96
	1st Non-Card Route Under	I-65 NB OFF RAMP	16.27	27.89
	3rd Route Under	I-65 NB OFF RAMP	16	39.04
056B00403N	4th Route Under	FREEDOM WAY NB	16.58	40.03
	1st Route Under	FREEDOM WAY NB	19.9	54
	2nd Route Under	FREEDOM WAY NB	19.9	54
	3rd Route Under	FREEDOM WAY NB	19.9	54
	1st Non-Card Route On	FREEDOM WAY NB	19.9	54
	Route On Structure	FREEDOM WAY NB	16.58	40.03
	1st Non-Card Route Under	FREEDOM WAY NB	14.9	39.04
056B00404N	1st Route Under	FREEDOM WAY SB	14.9	32.58
	2nd Route Under	FREEDOM WAY SB	16.75	39.04
	Route On Structure	FREEDOM WAY SB	16.75	39.04
	3rd Route Under	FREEDOM WAY SB	16.42	39.04
	1st Non-Card Route Under	FREEDOM WAY SB	16.42	39.04
056B00413N	One Route Under	KY 1931	16.08	39.7
	1st Non-Card Route Under	KY 1931	16.5	39.7
056B00420N	4th Route Under	I-65 SB RAMP	15.83	27.89
	Route On Structure	I-65 SB RAMP	16.42	38.39
	1st Non-Card Route Under	I-65 SB RAMP	16.5	29.53
	3rd Route Under	I-65 SB RAMP	15.83	27.89
056B00421N	4th Route Under	I-65 SB RAMP	16.5	38.5
	Route On Structure	I-65 SB RAMP	16.5	29.53
	1st Non-Card Route Under	I-65 SB RAMP	15.83	25.92
	3rd Route Under	I-65 SB RAMP	15.83	25.92
	2nd Route Under	I-65 SB RAMP	16.5	38.5
056B00410N	One Route Under	PEDESTRIAN BRIDGE	16.08	25.26
	1st Non-Card Route Under	PEDESTRIAN BRIDGE	16.08	25.26
056B00412N	1st Non-Card Route Under	PEDESTRIAN BRIDGE	22.6	39.37
	One Route Under	PEDESTRIAN BRIDGE	21.7	39.37

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-64 (West) to Bank St	50,000	3,000	5%
From Bank St to W Muhammad Ali Blvd	44,000	2,000	5%
From W Muhammad Ali Blvd to River Park Dr	38,000	2,000	6%
From River Park Dr to Virginia Ave	56,000	4,000	8%
From Virginia Ave to Dumesnil St	52,000	4,000	8%
From Dumesnil St to Bells Ln	65,000	5,000	8%
From Bells Ln to Ralph Ave	70,000	5,000	7%
From Ralph Ave to KY 1934	60,000	3,000	5%
From KY 1934 to US 31W	56,000	2,000	4%
From US 31W to KY 1865	84,000	5,000	5%
From KY 1865 to KY 1020	98,000	5,000	5%
From KY 1020 to Crittenden Dr	120,000	7,000	6%
From Crittenden Dr to I-65	77,000	4,000	5%

1,2) Rounded to the nearest thousand.

Mobility: There are two potential traffic bottleneck sections along this corridor. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) Typical roadway attributes of the potential bottleneck area can be found in the table below.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Major Bottleneck 1: from Bells Ln to KY 1934	Interstate	6, 12’	18’	10’	70,000
Major Bottleneck 2: from Dixie Highway to I-65	Interstate	6-8, 12’	27’	10’	120,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 8.9% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently ten CCTV cameras and three Dynamic Message Signs (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts

Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From US 31W to KY 1865 (MP 7.8 to 8.8)	Ramp Metering at all non-system interchanges. Collector Distributor System.	The Collector Distributor System will use one of the existing lanes with improved pavement markings and signages	Improve safety and mobility along I-264.	D	D	C	C
From KY 1865 to KY 1020 (MP 9.1 to 9.8)				C	C	C	C
From KY 1020 to Crittenden Dr (MP 10.4 to 10.7)				D	D	D	C
From Crittenden Dr to I-65 (MP 11.0 to 11.6)				C	C	C	C
Entire Corridor (MP 0.0 to 12.4)	Traffic incident management, Queue warning and Comparative Travel Times	N/A	Improve safety and mobility along I-264.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00227L	0.38	KY 3082 (BANK ST)	Bridge Rating
056B00228N	6.75	SAVAGE DR	Bridge Rating
	6.73	SAVAGE DR	Bridge Rating
056B00229N	6.4	GARRS LN	Bridge Rating
	6.37	GARRS LN	Bridge Rating
056B00230N	5.98	CRUMS LN	Bridge Rating
	6	CRUMS LN	Bridge Rating
056B00234N	4.57	KY 2051 (CAMPGROUND RD)	Bridge Rating
	4.56	KY 2051 (CAMPGROUND RD)	Bridge Rating
056B00251N	4.17	P&L RAILWAY	Bridge Rating
	4.18	P&L RAILWAY	Bridge Rating
056B00252N	3.68	P&L RAILWAY	Bridge Rating
	3.67	P&L RAILWAY	Bridge Rating
056B00263R	7.71	P&L RAILWAY	Bridge Rating
056B00265L	7.82	P&L RAILWAY	Bridge Rating
056B00266N	7.48	US 31W (DIXIE HWY)	Bridge Rating
056B00267N	7.63	I-264 WB ON RAMP	Bridge Rating
056B00268N	7.71	I-264 WB ON RAMP	Bridge Rating
056B00270N	7.41	I-264 EB ON RAMP	Bridge Rating
056B00414N	10.05	KY 1020 (SOUTHERN PKWY)	Bridge Rating
	10.15	KY 1020 (SOUTHERN PKWY)	Bridge Rating
056B00415N	10.25	KY 1020 (S 3RD ST)	Bridge Rating
	10.15	KY 1020 (S 3RD ST)	Bridge Rating

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00427R	10.65	CSX RR & CRITTENDEN DR	Bridge Rating
056B00465N	0.85	34TH ST & DUNCAN ST	Bridge Rating
	0.85	34TH ST & DUNCAN ST	Bridge Rating
056B00475N	2.89	DUMESNIL ST	Bridge Rating
	2.89	DUMESNIL ST	Bridge Rating
056B00476N	3.33	GIBSON LN & NS RAILROAD	Bridge Rating
	3.33	GIBSON LN & NS RAILROAD	Bridge Rating

- **Bridges for Replacement:** The table below shows the bridges that are recommended for replacement. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Replacement**
056B00250N	4.65	P&L RAILWAY	Bridge Rating
	4.64	P&L RAILWAY	Bridge Rating
056B00269N	7.41	I-264 WB OFF RAMP	Bridge Rating

Pavement Treatment: The overall pavement condition is good (average PDI = 0.142). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	Dixie Highway to I-65	Congestion, high truck volumes, weaving	Ramp Metering, CD System, Queue Warning, Comparative Travel Time, Incident Management
CAT2: Other major clusters of safety issues	I-64 to I-65	Collisions on Shoulders	Continuous Rumble Strips
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed ramp metering and CD system (with improved pavement markings and signages) from Dixie Highway to I-65 can be one phase. The remaining spot improvements (Queue Warning and continuous rumble strips) can be another phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of hazardous waste sites and underground storage tank sites, clusters can be found near interchanges. Historic districts and properties listed on the National Register of Historic Places are common near Portland, Parkland, Beechmont, Wilder Park, and Highland Park neighborhoods. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County. Two Land and Water Conservation Fund places, Leeds Park and Wyandotte Park, are adjacent to the corridor. There are 14 census tracts with greater than 25% of the population living at or below the poverty level, and 18 census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The critical red flag concern table is not included for this corridor since the proposed mobility improvements are TSMO solutions that are not likely to have impact on the existing right-of-way.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
At all non-system interchanges from Dixie Highway to I-65	Ramp Metering	No
I-264 mainline from Dixie Highway to I-65	Collector Distributor System through elongated pavement markings and improved signages)	No
Entire Corridor	Queue Warning and Comparative Travel Time/Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0.0 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	0.0 ($M)
Subtotal:	**0.0 ($M)**

TSMO Strategies

Ramp Metering - Traffic Responsive Centralized:	2.3 ($M)
Queue Warning:	5.8 ($M)
Elongated Pavement Markings:	0.5 ($M)
Improved Signage:	1.0 ($M)
Subtotal:	**9.5 ($M)**

TOTAL COST = 9.5 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-264
Segment ID: 10B
From: I-65
To: I-64 (East)
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 10B on I-264 extends from I-65 to I-64 (east) in Jefferson County. The corridor is approximately 6.3 miles long and includes seven interchanges.

The western portion of the corridor (from I-65 to Newburg Rd) abuts a mix of residential and commercial uses on the northern side of the corridor, and industrial and commercial areas on the southern side. The remainder of the corridor is flanked by dense residential areas, with some commercial areas clustered around the interchanges. These areas are categorized as dense urban by the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	8-10, 12’	12’	Concrete Barrier (27’)	55 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-65	KY 155 (Taylorsville Rd)	225’ - 275'
KY 155 (Taylorsville Rd)	I-64	220’ - 300'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.339, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-65	Semi Directional
KY 864 (Poplar Level Rd)	Single-point Urban Interchange (SPUI)
KY 1703 (Newburg Rd)	Partial Cloverleaf
US 150 (Bardstown Rd)	Single-point Urban Interchange (SPUI)
KY 155 (Taylorsville Rd)	Partial Cloverleaf
KY 1932 (Breckenridge Ln)	Partial Cloverleaf
I-64	Semi Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00260N	1st Non-Card Route On	18.12	WEICHER CREEK	Fair	66	No	N	N	N	60	6
	Route On Structure	18.17	WEICHER CREEK	Fair	66	No	N	N	N	24	6
056B00424L	Route On Structure	12.89	CURTIS AVE & NS RR	Fair	72	No	5	5	6	27.89	N
056B00425R	Route On Structure	12.89	CURTIS AVE & NS RR	Fair	81	No	6	6	6	40	N
056B00436N	1st Non-Card Route On	15.01	S FK BEARGRASS CREEK	Fair	84	No	5	6	6	39.04	N
	Route On Structure	15.01	S FK BEARGRASS CREEK	Fair	84	No	5	6	6	39.04	N
056B00437N	Route On Structure	15.67	US 31E (BARDSTOWN RD)	Fair	52.9	No	6	6	5	37.73	N
	1st Non-Card Route On	15.67	US 31E (BARDSTOWN RD)	Fair	52.9	No	6	6	5	37.73	N
056B00438N	Route On Structure	16.99	KY 155 (TAYLORSVILLE RD)	Fair	77	No	5	7	6	37	N
	1st Non-Card Route On	16.98	KY 155 (TAYLORSVILLE RD)	Fair	77	No	5	7	6	38	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00429N	One Route Under	KY 864	15.75	39.04
	1st Non-Card Route Under	KY 864	15.75	39.04
056B00434N	1st Route Under	KY 1932	16.08	27.23
	3rd Route Under	KY 1932	16	27.23
	2nd Route Under	KY 1932	16.08	27.23
	1st Non-Card Route Under	KY 1932	16	27.23
056B00435N	2nd Route Under	KY 1703	17.83	59.71
	2nd Non-Card Route On	KY 1703	17.83	59.71
	1st Route Under	KY 1703	14.92	37.73
	1st Non-Card Route Under	KY 1703	14.67	37.73
056B00439N	1st Route Under	BROWNS LN	16	37
	3rd Route Under	BROWNS LN	19.83	40.25

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	1st Non-Card Route Under	BROWNS LN	19.83	50.13
	2nd Route Under	BROWNS LN	16.25	37
056B00342N	1st Route Under	KY 61	34.83	55.92
	2nd Route Under	KY 61	34.83	55.92
	4th Route Under	KY 61	34.67	41.08
	3rd Route Under	KY 61	34.67	41.08
	1st Non-Card Route Under	KY 61	35.42	29
	5th Route Under	KY 61	35.42	29
056B00391N	2nd Route Under	I-65 & RAMP	16.38	28
	2nd Non-Card Route On	I-65 & RAMP	16.38	28
	1st Route Under	I-65 & RAMP	17	39.04
	3rd Route Under	I-65 & RAMP	16.92	40.25
	Route On Structure	I-65 & RAMP	14.42	39.37
	1st Non-Card Route On	I-65 & RAMP	15	39.37
	4th Route Under	I-65 & RAMP	19.75	40
	1st Non-Card Route Under	I-65 & RAMP	19.75	40
056B00394N	2nd Route Under	I-65 NB RAMP	16.08	38.06
	4th Route Under	I-65 NB RAMP	16.5	31.17
	Route On Structure	I-65 NB RAMP	14.6	39.04
	3rd Route Under	I-65 NB RAMP	15.5	39.04
	5th Route Under	I-65 NB RAMP	16.23	29.86
	1st Non-Card Route Under	I-65 NB RAMP	16.23	29.86
056B00395N	Route On Structure	I-65 NB OFF RAMP	16.38	27.89
	1st Route Under	I-65 NB OFF RAMP	16.38	27.89
	2nd Route Under	I-65 NB OFF RAMP	16	39.04
	4th Route Under	I-65 NB OFF RAMP	16.02	43.96
	5th Route Under	I-65 NB OFF RAMP	16.02	43.96
	1st Non-Card Route Under	I-65 NB OFF RAMP	16.27	27.89
	3rd Route Under	I-65 NB OFF RAMP	16	39.04
056B00420N	4th Route Under	I-65 SB RAMP	15.83	27.89
	Route On Structure	I-65 SB RAMP	16.42	38.39
	1st Non-Card Route Under	I-65 SB RAMP	16.5	29.53
	3rd Route Under	I-65 SB RAMP	15.83	27.89
056B00421N	4th Route Under	I-65 SB RAMP	16.5	38.5
	Route On Structure	I-65 SB RAMP	16.5	29.53
	1st Non-Card Route Under	I-65 SB RAMP	15.83	25.92
	3rd Route Under	I-65 SB RAMP	15.83	25.92
	1st Route Under	I-64 WB OFF RAMP	18.92	39.04
056B00446L	2nd Route Under	I-64 WB	16.67	87.93

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	Route On Structure	I-64 WB	16.67	87.93
	3rd Route Under	I-64 WB	16.25	43.96
	1st Non-Card Route Under	I-64 WB	16.25	43.96
056B00446R	1st Non-Card Route On	I-64 EB	16.5	27.89
	1st Non-Card Route Under	I-64 EB	16.5	29.53

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-65 to KY 864	173,000	12,000	7%
From KY 864 to KY 1703	166,000	10,000	6%
From KY 1703 to US 150	162,000	12,000	7%
From US 150 to KY 155	156,000	11,000	7%
From KY 155 to KY 1932	142,000	11,000	8%
From KY 1932 to I-64	154,000	11,000	7%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	8-10, 12’	27’	12’	173,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is

broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently six CCTV cameras and one Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts

Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From I-65 to KY 864 (MP 12.7 to 13.0)	Ramp Metering at all non-system interchanges.	N/A	Improve safety and mobility along I-264.	D	D	D	D
From KY 864 to KY 1703 (MP 13.7 to 14.3)				E	F	E	E
From KY 1703 to US 150 (MP 14.8 to 15.3)				D	D	D	D
From US 150 to KY 155 (MP 15.9 to 16.7)				D	D	D	D
From KY 155 to KY 1932 (MP 17.3 to 17.7)	Collector Distributor System. Ramp Metering at all non-system interchanges.	The Collector Distributor System will use one of the existing lanes with improved pavement markings and signages.	Improve safety and mobility along I-264.	C	E	C	D
From KY 1932 to I-64 (MP 18.2 to 18.5)				E	F	D	F
Entire Corridor (MP 12.4 to 18.7)	Queue Warning, Comparative Travel Time, Incident Management.	N/A	Improve safety and mobility along I-264.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** The table below shows the bridges that are recommended for rehab/widening. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
056B00260N	18.12	WEICHER CREEK	Bridge Rating
	18.17	WEICHER CREEK	Bridge Rating
056B00424L	12.89	CURTIS AVE & NS RR	Bridge Rating
056B00436N	15.01	S FK BEARGRASS CREEK	Bridge Rating
	15.01	S FK BEARGRASS CREEK	Bridge Rating
056B00437N	15.67	US 31E (BARDSTOWN RD)	Bridge Rating
	15.67	US 31E (BARDSTOWN RD)	Bridge Rating
056B00438N	16.99	KY 155 (TAYLORSVILLE RD)	Bridge Rating
	16.98	KY 155 (TAYLORSVILLE RD)	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the

replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement
None

Pavement Treatment: The overall pavement condition is good (average PDI = 0.339). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-65 to I-64 (entire corridor)	Congestion, weaving	Ramp Metering, CD System, Queue Warning, Comparative Travel Time, Incident Management
CAT2: Other major clusters of safety issues	N/A	N/A	N/A
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed spot improvements (ramp metering, improved pavement marking and signages for CD System, and queue warning) can be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tanks. Hazardous waste sites are common around interchanges, and four potential locations were identified in this corridor. A Land and Water Conservation Fund place, Farnsley Park, is located east of Bon Air Estates neighborhood. One local park, Camp Taylor, is located in the southernmost section of the Audubon Park neighborhood. Two National Register of Historic Places, Farmington Historic Plantation, located in Wellington neighborhood, and Oxmoor Farm, located in the northeast quadrant of the corridor, are located along the corridor. Wooded area can be found northwest of the Newburg Road/I-264 interchange. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County and there is Known Summer 1 habitat in Kentucky and along the corridor. There are two census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, airports, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The critical red flag concern table is not included for this corridor since the proposed mobility improvements are TSMO solutions that are not likely to have impact on the existing right-of-way.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
I-264 mainline from Taylorsville Road to I-64	Collector Distributor System (using one of the existing lanes with improved pavement markings and signages)	No
At all non-system interchanges	Ramp Metering	No
Entire Corridor	Queue Warning and Comparative Travel Time, Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements	
Design:	0.0 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	0.0 ($M)
Subtotal:	**0.0 ($M)**
TSMO Strategies	
Ramp Metering - Traffic Responsive Centralized:	2.8 ($M)
Queue Warning:	3.3 ($M)
Elongated Pavement Markings:	0.5 ($M)
Subtotal:	**6.5 ($M)**
TOTAL COST =	**6.5 ($M)**

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: I-264
Segment ID: 10C
From: I-64 (East)
To: I-71
Counties: Jefferson
Highway District(s): 5

CORRIDOR SEGMENT OVERVIEW

Corridor 10C on I-264 extends from I-64 to I-71 in Jefferson County. The corridor is approximately 4.5 miles long and includes five interchanges.

The southern portion of the corridor (from I-64 to north of US 60) is surrounded by apartment complexes and large shopping centers. These areas are considered dense urban according to the KYSTMv19 data. The remainder of the corridor is flanked on both sides by moderately dense detached housing, with some commercial uses around the Brownsboro Rd interchange. These areas are categorized as suburban by the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
From I-64 to KY 1447	Interstate	4-6, 12’	10’	Concrete Barrier (27’)	55 mph
From KY 1447 to I-71	Interstate	4-6, 12’	10’	Depressed (40’)	55 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-64	US 60 (Shelbyville Rd)	310’ - 340'
US 60 (Shelbyville Rd)	I-71	200’ - 275'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.495, which indicates an overall fair pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-64 (east)	Semi Directional
US 60 (Shelbyville Rd)	Semi Directional /Partial Cloverleaf
KY 1447 (Westport Rd)	Single-point Urban Interchange (SPUI)
US 42 (Brownsboro Rd)	Diamond
I-71	Three Leg Directional

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
056B00057N	Route On Structure	22.92	I-71 NB & I-71 SB RAMP	Fair	62	No	8	6	6	40.03	N
056B00447L	Route On Structure	19.75	US 60 (SHELBYVILLE RD)	Fair	98	No	7	6	7	29.53	N
056B00447R	Route On Structure	19.77	US 60 (SHELBYVILLE RD)	Fair	98	No	7	6	7	43.96	N
056B00450N	Route On Structure	19.34	MID FK BEARGRASS CREEK	Good	86.9	No	7	8	7	27.89	N
	2nd Non-Card Route On	19.34	MID FK BEARGRASS CREEK	Good	86.9	No	7	8	7	27.89	N
	1st Non-Card Route On	19.33	MID FK BEARGRASS CREEK	Good	86.9	No	7	8	7	39.04	N
056B00451L	Route On Structure	20.51	CSX RAILROAD	Good	96	No	7	8	7	39.04	N
056B00451R	Route On Structure	20.54	CSX RAILROAD	Good	97	No	7	7	7	46.92	N
056B00489N	Route On Structure	20.90	KY 1447 (WESTPORT RD)	Fair	84	No	6	7	7	52	N
	1st Non-Card Route On	20.87	KY 1447 (WESTPORT RD)	Fair	84	No	6	7	7	53.63	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
056B00442N	4th Route Under	I-64 WB OFF RAMP	16.75	43.96
	Route On Structure	I-64 WB OFF RAMP	16.75	43.96
056B00446L	2nd Route Under	I-64 WB	16.67	87.93
	Route On Structure	I-64 WB	16.67	87.93
	3rd Route Under	I-64 WB	16.25	43.96
	1st Non-Card Route Under	I-64 WB	16.25	43.96
056B00446R	1st Non-Card Route On	I-64 EB	16.5	27.89
056B00446R	1st Non-Card Route Under	I-64 EB	16.5	29.53

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-64 to US 60	52,000	6,000	12%
From US 60 to KY 1447	82,000	11,000	14%
From KY 1447 to US 42	72,000	11,000	15%
From US 42 to I-71	61,000	7,000	12%

1,2) Rounded to the nearest thousand.

Mobility: The entirety of this corridor is a potential traffic bottleneck. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.) See the table below for details.

Existing Typical Roadway Attributes at Potential Traffic Bottlenecks					
Locations	**Functional Classification**	**Number & Width of Lanes**	**Median Width**	**Shoulder Width**	**2019 AADT[1]**
Entire Corridor	Interstate	4-6, 12’	27’ or 40’	10’	82,000

1) The highest traffic volume within the bottleneck based on v8_KYSTMv19 data (rounded to the nearest thousand).

Safety: 0.0% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently three CCTV cameras along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the

reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts	Notes	Reason for Improvement	Level of Service (LOS)[1]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From I-64 to US 60 (MP 19.1 to 19.6)	Ramp Metering at all non-system interchanges.	N/A	Improve safety and mobility along I-264.	C	D	C	C
From US 60 to KY 1447 (MP 20.3 to 20.6)				C	E	C	E
From KY 1447 to US 42 (MP 21.1 to 21.7)				D	D	D	D
From US 42 to I-71 (MP 22.4 to 22.7)				C	D	C	D
Entire Corridor (MP 19.1 to 22.7)	Queue Warning, Comparative Travel Time, Incident Management.	N/A	Improve safety and mobility along I-264.	N/A	N/A	N/A	N/A

1) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: None.

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** No Bridge Rehab/Widening is recommended for the corridor. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening
None

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement
None

Pavement Treatment: The overall pavement condition is fair (average PDI = 0.495). Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-64 to I-71 (entire corridor)	Congestion	Ramp Metering, Queue Warning, Comparative Travel Time, Incident Management
CAT2: Other major clusters of safety issues	N/A	N/A	N/A
CAT3: Spot locations with history of severe crashes	N/A	N/A	N/A

Proposed Phasing: The proposed spot improvements (ramp metering and queue warning) can be one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated within a well-developed urban area resulting in a high frequency of underground storage tank sites, common around the interchanges. One karst feature is in the Northfield neighborhood. National Register of Historic Places are common; Herr-Rudy Family Houses, Oxmoor, and Zachary Taylor National Cemetery are located along the corridor. One Land and Water Conservation Fund place, St. Matthews Community Center Park, is adjacent to the corridor. Wooded area can be found along the corridor. Maturity and Reproductive Records can be found for the Gray bat in Jefferson County. There are no special use or outstanding resource waters in the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The critical red flag concern table is not included for this corridor since the proposed mobility improvements are TSMO solutions that are not likely to have impact on the existing right-of-way.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
At all non-system interchanges	Ramp Metering	No
Entire Corridor	Queue Warning and Comparative Travel Time/Incident Management	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	0.0 ($M)
ROW:	0.0 ($M)
Utility:	0.0 ($M)
Construction:	0.0 ($M)
Subtotal:	**0.0 ($M)**

TSMO Strategies

Ramp Metering - Traffic Responsive Centralized:	1.8 ($M)
Queue Warning:	2.0 ($M)
Subtotal:	**3.8 ($M)**

TOTAL COST = 3.8 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.

Kentucky Statewide Interstate and Parkway Plan (Linking Kentucky)

Route: Pennyrile Parkway (Future I-169)
Segment ID: 15
From: I-24
To: I-69/Western Kentucky Parkway
Counties: Christian, Hopkins
Highway District(s): 2

CORRIDOR SEGMENT OVERVIEW

Corridor 15 on Pennyrile Parkway (Future I-169, I-169(F)) extends from I-24 in Christian County to I-69/Western Kentucky Parkway in Hopkins County. The corridor is approximately 34.7 miles long and contains 11 interchanges.

The southern portion (from I-24 to north of Hopkinsville) passes through farmland and large-lot agriculture residential areas, and then through residential, commercial, and industrial areas along the eastern edge of Hopkinsville in Christian County. These areas are considered rural town/exurban according to the KYSTMv19 data. The remainder of the corridor passes through farmland in Christian County and undeveloped/uncultivated areas of Hopkins County. These areas are categorized as rural by the KYSTMv19 data.

EXISTING FACILITY

The table below outlines the typical roadway attributes for this corridor.

Typical Roadway Attributes					
Sub-segment	**Functional Classification**	**Number & Width of Lanes**	**Shoulder & Width**	**Median Type & Width**	**Posted Speed Limit**
Entire Corridor	Interstate	4, 12’	10’	Depressed (36’)	70 mph

Right of Way: The table below outlines the general width of existing right of way within the corridor.

General Existing Right of Way Widths		
From	**To**	**General Ex. R/W Width**
I-24	Dogwood Kelly Rd in Hopkinsville	240’ - 285'
Dogwood Kelly Rd in Hopkinsville	I-69/Western Kentucky Pkwy	160’ - 210'

Pavement: The average PDI (Pavement Distress Index) for this corridor is 0.290, which indicates an overall good pavement condition according to KYTC criteria (Good: 0.00 – 0.35; Fair: 0.36 – 0.65; Poor: 0.66 – 0.99).

Interchanges: The table below outlines the existing interchanges on the corridor.

Interchanges	Interchange Type
I-24	Trumpet
KY 1613 (Lovers Ln)	Partial Cloverleaf
US 68 (Eagle Way)	Diamond
US 41A (Fort Campbell Blvd)	Diamond
US 41 (Pembroke Rd)	Diamond
US 68 (McLean Ave)	Diamond
KY 1682 (Dr Martin Luther King Jr Way)	Former Tollbooth Interchange
KY 800 (Crofton-Fruit Hill Rd)	Diamond
US 41 (Hopkinsville Rd)	Bifurcation
US 62 (Greenville Rd)	Diamond
I-69/Western KY Pkwy	Partial Cloverleaf

Bridges: The tables below outline the detailed bridge information for existing bridges on or over this corridor.

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
024B00177L	Route On Structure	0.31	Interstate 24	Good	99	No	7	7	7	38	N
024B00177R	Route On Structure	0.3	Interstate 24	Good	98	No	7	7	7	30	N
024B00176L	Route On Structure	1.1	Beverly Branch	Fair	100	No	7	7	6	60	N
024B00176R	Route On Structure	1.09	Beverly Branch	Fair	100	No	6	6	6	60	N
024B00173R	Route On Structure	4.37	Rock Bridge Branch	Good	100	No	7	7	8	60.42	N
024B00173L	Route On Structure	4.37	Rock Bridge Branch	Good	100	No	8	8	7	38	N
024B00167L	1st Non-Card Route Under	6.47	US 68 By-Pass	Fair	100	No	6	7	7	55.72	N
	Route On Structure	5.78	US 68 By-Pass	Fair	100	No	6	7	7	53.34	N
	One Route Under	6.47	US 68 By-Pass	Fair	100	No	6	7	7	38	N
024B00167R	One Route Under	6.48	US 68 By-Pass	Good	100	No	7	8	7	38	N
	Route On Structure	5.81	US 68 By-Pass	Good	100	No	7	8	7	42.08	N
	1st Non-Card Route Under	6.48	US 68 By-Pass	Good	100	No	7	8	7	38	N
024B00166L	Route On Structure	6.56	Sivley Rd	Good	100	No	7	8	7	49	N
024B00166R	Route On Structure	6.57	Sivley Rd.	Fair	99	No	6	8	6	49	N
024B00165R	Route On Structure	6.86	US 41A	Good	100	No	7	8	7	30	N
024B00165L	Route On Structure	6.89	US 41A	Fair	100	No	7	7	6	63	N
024B00102L	Route On Structure	7.53	CSX RAILROAD	Fair	99.6	No	6	7	6	29.86	N

Mainline Bridge Information

Bridge ID	On_Under	Mile Point	Feature Intersect	NBIS Classification	Sufficiency Rating	Substandard	Deck Rating	Superstructure Rating	Substructure Rating	Horizontal Clearance (feet)	Culvert Rating
024B00102R	Route On Structure	7.51	CSX RAILROAD	Fair	99.6	No	6	6	6	29.86	N
024B00103N	3rd Non-Card Route On	7.66	CALVIN DRIVE	Fair	74.8	No	N	N	N	29.86	6
	Route On Structure	7.66	CALVIN DRIVE	Fair	74.8	No	N	N	N	29.86	6
	1st Non-Card Route On	7.66	CALVIN DRIVE	Fair	74.8	No	N	N	N	37.73	6
024B00104L	Route On Structure	7.94	US41	Fair	97.2	No	6	6	7	29.86	N
024B00104R	Route On Structure	7.94	US41	Fair	97.2	No	6	6	6	36.75	N
024B00105L	Route On Structure	8.64	SOUTH FORK LITTLE RIVER	Fair	99.2	No	6	7	6	29.86	N
024B00105R	Route On Structure	8.64	SOUTH FORK LITTLE RIVER	Good	99.2	No	7	7	7	29.86	N
024B00106N	1st Non-Card Route On	9.01	KY.2629,QUARRY ROAD	Fair	58.7	No	N	N	N	29.86	6
	Route On Structure	9.01	KY.2629,QUARRY ROAD	Fair	58.7	No	N	N	N	27.89	6
024B00118L	Route On Structure	9.73	FIRST STREET	Fair	95.3	No	6	7	7	37.73	N
024B00118R	Route On Structure	9.73	FIRST STREET	Good	95.3	No	7	7	7	36.75	N
024B00092N	Route On Structure	10.77	NORTH FORK LITTLE RIVER	Fair	58.8	No	N	N	N	30	6
	1st Non-Card Route On	10.77	NORTH FORK LITTLE RIVER	Fair	58.8	No	N	N	N	30	6
054B00014L	Route On Structure	29.46	DRAKES CREEK	Fair	99.5	No	7	6	6	67	N
054B00014R	Route On Structure	29.45	DRAKES CREEK	Fair	99.5	No	6	6	6	67	N
054B00106L	Route On Structure	30.34	CRAB ORCHARD CREEK	Fair	93.3	No	7	6	6	78	N
054B00106R	Route On Structure	30.33	CRAB ORCHARD CREEK	Fair	90.3	No	7	6	6	78	N
054B00098L	Route On Structure	31.37	PLEASANT HILL CHURCH ROA	Fair	81.2	No	6	5	5	99.9	N
054B00098R	Route On Structure	31.36	PLEASANT HILL CHURCH ROA	Fair	81.2	No	6	5	5	46.11	N
054B00097R	Route On Structure	32.29	OLD WHITE PLAINS RD&CREE	Fair	88.1	No	6	6	6	55	N
054B00097L	Route On Structure	32.29	OLD WHITE PLAINS RD&CREE	Fair	90.8	No	6	6	6	40	N
054B00099L	Route On Structure	32.62	PLSNT RUN CR	Fair	93.3	No	7	6	7	57.16	N
054B00099R	Route On Structure	32.62	PLEASANT RUN CREEK	Fair	93.7	No	7	6	7	41	N

Structures Crossing Over the Corridor

Bridge ID	On_Under	Facility Carried	Under Clearance (feet)[1]	Horizontal Clearance (feet)
024B00093L	3rd Route Under	KY-1682-10 NC	15.58	30
	Route On Structure	KY-1682-10 NC	15.58	30
	1st Non-Card Route Under	KY-1682-10 NC	15.58	30
	1st Route Under	KY-1682-10 NC	15.58	30

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
	2nd Route Under	KY-1682-10 NC	15.58	30
024B00093R	3rd Route Under	CONCORD ROAD	15.58	40
	2nd Route Under	CONCORD ROAD	15.58	30
	Route On Structure	CONCORD ROAD	15.58	41.99
	1st Non-Card Route Under	CONCORD ROAD	15.58	41.99
	1st Route Under	CONCORD ROAD	15.58	40
024B00094N	1st Non-Card Route Under	CR-1009	15.94	30.18
	Route On Structure	CR-1009	15.94	30.18
	One Route Under	CR-1009	17.58	30.18
024B00095N	One Route Under	KY-2641	17.58	30.18
	Route On Structure	KY-2641	27.08	28
	1st Non-Card Route Under	KY-2641	27.08	28
024B00096N	1st Non-Card Route Under	KY-2636	19.58	30.18
	One Route Under	KY-2636	19.58	30.18
	Route On Structure	KY-2636	16.9	25.92
024B00097N	Route On Structure	KY-2640	17.67	29.86
	One Route Under	KY-2640	17.67	29.86
	1st Non-Card Route Under	KY-2640	16.9	23.95
024B00098N	1st Non-Card Route Under	KY-2638	18	25.92
	One Route Under	KY-2638	18	25.92
	Route On Structure	KY-2638	12.5	36.75
024B00099N	1st Non-Card Route Under	KY-800	15.75	21.33
	One Route Under	KY-800	15.64	27.89
	Route On Structure	KY-800	16.91	36.75
024B00100N	Route On Structure	KY-2637	20.7	36.75
	One Route Under	KY-2637	17.58	25.92
	1st Non-Card Route Under	KY-2637	17.58	25.92
024B00116N	1st Non-Card Route Under	US-68	40.6	25.92
	Route On Structure	US-68	16.75	25.92
	One Route Under	US-68	16.75	25.92
	1st Non-Card Route On	US-68	18.67	37.73
024B00117N	3rd Route Under	KY 107 7th Street	15.75	37.73
	1st Non-Card Route Under	KY 107 7th Street	23.15	37.73
	Route On Structure	KY 107 7th Street	21.52	37.73
	1st Route Under	KY 107 7th Street	20.04	37.73
	2nd Route Under	KY 107 7th Street	17.75	37.73
024B00168N	1st Non-Card Route Under	Lovers Lane	16	75.5
	Route On Structure	Lovers Lane	16	75.5
	1st Route Under	Lovers Lane	48.75	41
	2nd Route Under	Lovers Lane	48.75	41
	Route On Structure	Locust Gr. Church	23.08	38

Structures Crossing Over the Corridor				
Bridge ID	**On_Under**	**Facility Carried**	**Under Clearance (feet)[1]**	**Horizontal Clearance (feet)**
024B00174N	One Route Under	Locust Gr. Church	16.67	30
	1st Non-Card Route Under	Locust Gr. Church	16.5	74
024B00175N	Route On Structure	Masonville-Beverly	23.08	38
	One Route Under	Masonville-Beverly	17.26	38
	1st Non-Card Route Under	Masonville-Beverly	17.26	38
054B00013N	1st Non-Card Route Under	KY-2647	16	35
	Route On Structure	KY-2647	16	35
	One Route Under	KY-2647	16	35
054B00015N	One Route Under	Northbound on Ramp	16.92	67
	Route On Structure	Northbound on Ramp	16.92	67
	1st Non-Card Route Under	Northbound on Ramp	16.25	40
054B00048N	One Route Under	US-62	16.83	54.25
	1st Non-Card Route Under	US-62	16.17	54.25
	Route On Structure	US-62	16.33	55.5
054B00145L	One Route Under	WENDELL H FORD WES	18.75	39.7
	Route On Structure	WENDELL H FORD WES	18.75	39.7
	1st Non-Card Route Under	WENDELL H FORD WES	19.83	58
	Route On Structure	WENDELL H FORD WES	19.83	58
054B00145R	One Route Under	WK-9001	17.67	58
	Route On Structure	WK-9001	17.67	58

1) According to KYTC Highway Design Manual, the minimum under-clearance should be 16.5 feet for interstate, federal aid primary in rural areas, and Strategic Highway Network. For rehabilitation/reconstruction work involving existing bridges, the clearance can be reduced by 0.5 feet from the minimum clearance.

Other Noteworthy Conditions: None.

Tunnels: None.

TRAFFIC & OPERATIONS

AADT & AADTT: The table below summarizes the mainline 2019 AADT and daily truck volumes.

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From I-24 to KY 1613	11,000	3,000	25%
From KY 1613 to US 68	10,000	2,000	26%
From US 68 to US 41A	11,000	2,000	20%
From US 41A to US 41 in Hopkinsville	20,000	3,000	15%
From US 41 in Hopkinsville to US 68	16,000	3,000	21%
From US 68 to KY 1682	15,000	3,000	21%
From KY 1682 to KY 800	25,000	4,000	15%

Traffic Volumes			
Sub-segment	**AADT[1]**	**AADTT[2]**	**Truck Percentage**
From KY 800 to US 41	13,000	3,000	25%
From US 41 to US 62	13,000	3,000	25%
From US 62 to I-69/Western KY Pkwy	16,000	3,000	18%

1,2) Rounded to the nearest thousand.

Mobility: There's no major potential traffic bottleneck sections along this corridor segment. (Note: potential bottlenecks are identified by Level of Travel Time Reliability (LOTTR) > 1.5 or 2045 volume/capacity (v/c) > 0.6.).

Safety: 18.4% of the corridor mileage has a Level of Service of Safety (LOSS) of 4, meaning these links have the highest potential to decrease crashes. (Note: LOSS indicates the potential for crash reduction and is broken up into four categories based on Safety Performance Functions (SPFs): LOSS 4 = high; LOSS 3 = moderate to high; LOSS 2 = low to moderate; LOSS 1 = low.) See the table under **Potential Safety Improvement** section for details of locations with LOSS =4, possible causes, and potential safety improvements.

Existing TSMO Elements & Strategies: There are currently one CCTV cameras and zero Dynamic Message Sign (DMS) along this corridor.

PROPOSED IMPROVEMENT CONCEPTS

The improvement options noted in this report are not intended to be all-encompassing. Other potential improvements are possible, including innovative solutions that could be cost-effective and address the reasons for improvement. Further study may be needed as part of any future project development process.

Potential Mobility Improvement: The table below describes the proposed improvement concepts for corridor mobility, including improvements at identified critical bottlenecks. (Note: critical bottlenecks are identified by LOTTR > 1.5, or 2045 v/c > 0.7 in rural areas or 2045 v/c > 0.85 in urban areas.) The proposed improvements expect to maintain an overall acceptable traffic condition through 2045 (v/c < 0.85 in urban areas and v/c < 0.7 in rural areas) and address concurrent safety issues.

Proposed Improvement Concepts							
Locations	Improvement Concepts[1]	Notes[2]	Reason for Improvement	Level of Service (LOS)[3]			
				2045 No Build		2045 Build	
				EB	WB	EB	WB
From US 62 to Western KY Pkwy (MP 33.0 to 34.4)	Complete Collector-Distributor System as per the Pennyrile Upgrade Study	1, 15-foot lane with 4-foot left shoulder and 6-foot right shoulder.	N/A	B	B	B	B
Entire Corridor (MP 0.0 to 34.4)	Dynamic Message Signs and CCTV cameras at all interchanges; Traffic Incident Management throughout	N/A	Improve mobility and safety along the Pennyrile Parkway.	N/A	N/A	N/A	N/A

1) The proposed roadway widening concept includes spot improvements at interchanges as needed (see details in the Potential New Interchanges and Interchanges for Potential Modification sections below).
2) Typical sections are proposed based on KYTC Highway Design Manual.
3) LOS is estimated at planning level using a methodology described in the FDOT Quality / Level of Service Handbook (2020). LOS for 2045 Build is estimated by accounting for traditional capacity improvements and TSMO (Transportation Systems Management and Operations) solutions with significant mobility and/or safety benefits where applicable (e.g., managed lanes, ramp metering, hard shoulder riding, and truck climbing lanes). EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound. All existing and committed (E+C) projects have been considered in LOS analysis. Please refer to Appendices B and F in the final report for details of the E+C projects.

Potential New Interchanges: None.

Interchanges for Potential Modification: As per the Pennyrile Upgrade Study, the following interchanges are recommended for potential modification.

Interchanges for Potential Modification
KY 1613 to US 68 (SB Braided Ramp)
I-169(F)/KY 1682 Interchange
I-169(F)/US 41 Interchange
I-169(F)/Western Kentucky Pkwy Interchange

Bridges: Bridge recommendations are based on ratings of substructure, superstructure and deck using the following methodology.

Methodology for Replacement/Rehabilitation Recommendation					
Structures	Substructure Rating	Superstructure Rating	Deck Rating	Culvert Rating	Recommendations
Bridges	<=4	Any	Any	/	Replacement
	=5	Any	Any	/	Rehabilitation
	>=6	<=5	Any	/	Rehabilitation
	>=6	Any	<=5	/	Rehabilitation
	>=6	>=6	>=6	/	None[1]
Culverts	/	/	/	<=4	Replacement
	/	/	/	5 or 6	Rehabilitation
	/	/	/	>=7	None

1) If the bridge is on a corridor with a recommendation of widening, it will be widened (considered as rehabilitation) as necessary to accommodate the additional proposed lanes.

- **Bridges for Rehab/Widening:** No Bridge Rehab/Widening is recommended for the corridor. Note that the bridge rehab is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge has a good condition but is within a bottleneck location with recommended widening, it will be widened as necessary to accommodate the additional proposed lanes and the cost of widening is assumed to be the same as bridge rehab for the planning-level cost estimation purpose.

Bridges for Rehab/Widening			
Bridge ID	**Mile Point**	**Feature Intersect**	**Reason for Rehab/Widening**
024B00103N	7.66	CALVIN DRIVE	Bridge Rating
	7.66	CALVIN DRIVE	Bridge Rating
	7.66	CALVIN DRIVE	Bridge Rating
024B00106N	9.01	KY.2629,QUARRY ROAD	Bridge Rating
	9.01	KY.2629,QUARRY ROAD	Bridge Rating
024B00092N	10.77	NORTH FORK LITTLE RIVER	Bridge Rating
	10.77	NORTH FORK LITTLE RIVER	Bridge Rating
054B00098L	31.37	PLEASANT HILL CHURCH ROA	Bridge Rating
054B00098R	31.36	PLEASANT HILL CHURCH ROA	Bridge Rating

- **Bridges for Replacement:** No Bridge Replacement is recommended for the corridor. Note that the bridge replacement is determined based on the "Methodology for Replacement/Rehabilitation Recommendation" table above. If the bridge needs replacement and is within a bottleneck location with recommended widening, it will be widened during the replacement to accommodate the additional proposed lanes and the cost of bridge replacement is used for the planning-level cost estimation purpose.

Bridges for Replacement
None

Pavement Treatment: The overall pavement condition is good (average PDI = 0.290). Proposed additional lanes will consist of full depth asphalt pavement construction. Spot reconstruction and rehabilitation of existing asphalt pavement lanes might be needed based on more detailed evaluation of the corridor's pavement condition.

Potential Safety Improvement: The table below summarizes safety issues for the corridor and is based on KYTC safety data (LOSS = 4), as well as a cursory review of Google Aerial imagery and crash data from the Kentucky State Police. The table identifies links or clusters of links with a LOSS value of 4 based on three categories: 1) clusters located in areas where this study already recommends corridor improvements for mobility reasons; 2) clusters not located in areas previously recommended for corridor mobility improvement; and, 3) links at specific spots with a LOSS value of 4 where there is also a history of severe crashes. For Category 1, it is assumed any corridor improvement based on mobility needs will be constructed to current KYTC standards and will include the necessary safety improvements. Category 2 is intended to identify corridor segments that may warrant improvement for safety reasons, even though improvement might not be needed for mobility. Category 3 is intended to identify spot locations

with a history of severe crashes where spot safety improvements would be beneficial. There may also be isolated links with LOSS value of 4 that are not included in the table if there is not an associated history of severe crashes. Spot improvements could be warranted for those locations, but it is assumed these spot improvements do not rise to the level of a corridor improvement. Therefore, these locations are not addressed in this planning study.

Potential Safety Improvements			
Category	**Locations**	**Possible Causes**	**Recommendations**
CAT1: Major clusters of safety issues covered by proposed mobility improvement concepts	I-24 to Western KY Pkwy (entire corridor)	Congestion, incidents	C-D System, Traffic Incident Management, Dynamic Message Signs (DMS) and CCTV cameras
CAT2: Other major clusters of safety issues	I-24 to Western KY Pkwy (entire corridor)	Roadway geometrics, curvature	Cable median barrier, Continuous rumple strips
CAT3: Spot locations with history of severe crashes	I-24 Interchange and US 41 Interchange	Roadway geometrics, curvature	High Friction Surface Treatments (HFST), Lighting, Guardrail Reflectors, Curve and Speed Warning

Proposed Phasing: The proposed Collector-Distributor System can be one phase. The proposed interchange modifications at KY 1613/US 68, KY 1682, US 41, and Western KY Pkwy can be four separate phases. All the other spot improvement (e.g., DMS, lighting, etc.) can be grouped as one phase. A separate phase is reasonable for a statewide initiative of Traffic Incident Management (TIM) systematic plan along with comparative travel time.

PRELIMINARY ENVIRONMENTAL RED FLAG ANALYSIS

This corridor is situated between Hopkins and Christian Counties. There are several underground storage tank sites located throughout the corridor, most can be found in Hopkinsville. Five hazardous waste sites are located near Hopkinsville. Oil/gas wells can be found near Nortonville and east Crofton. Karsts are common around Crofton. Seven permitted mine boundaries can be found east of Nortonville. Six local trails are located northeast of Hopkinsville. There are four local parks along this corridor – Fort Campbell Memorial Park (south of Hopkinsville), Cherokee Trail of Tears Commemorative Park (east of Hopkinsville), Jeffers Bend Botanical Gardens (northeast of Hopkinsville), and Jeffers Bend Environmental Center (northeast of Hopkinsville). Four Land and Water Conservation Funds are located along the corridor, Lafayette Community Park (southeast of Hopkinsville), Cherokee Trail of Tears Commemorative Park (east of Hopkinsville), Trail of Tears (located on Trail of Tears Way), White Plains Park (northeast quadrant of I-169(F)/ Western KY Pkwy). Five National Register of Historic Places (point) are located near Hopkinsville (Fairelond, E.H. Higgins House, E.W. Walker House, Whitepath and Fly Smith Gravesite, and Frank K. Yost House). A large, wooded area can be found north of Hopkinsville. Other Records can be found for the Gray bat in Hopkins County and Maternity and Reproductive Records can be found in Christian County. There are four census tracts with greater than 25% of the population living at or below the poverty level, and

three census tracts where the minority population is more than 28%. There are no special use or outstanding resource waters along the corridor.

While major items are evident in desktop review, more detailed database and field investigations are expected to reveal other environmental considerations. For example, underground storage tanks and other hazardous material concerns, and landmarks such as courthouse squares and churches are common in developed areas such as those found along the corridor. Wetlands, streams, and other watercourses likely occur throughout the corridor and a Waters of the U.S. investigation would reveal which of those waters are jurisdictional and require permitting. Long corridors increase the chance of impacts to cultural resources such as historic or archaeological sites. The potential for impacts or mitigation to resources such as these should be expected in projects of this size.

The table below summarizes the presence of environmental critical red flag concerns identified by KYTC within 1,000 ft of proposed mobility improvement locations (Y=Yes; N=No).

Critical Red Flag Issues/Concerns					
Environmental Red Flag Features	**KY 1613 to US 68 Interchanges**	**I-169(F)/KY 1682 Interchange**	**I-169(F)/US 41 Interchange**	**I-169(F) from US 62 to Western KY Pkwy**	**I-169(F)/Western KY Pkwy Interchange**
Superfunds	N	N	N	N	N
Special Waters[1]	N	N	N	N	N
Forested Areas	N	Y	Y	Y	Y
NLEB Habitat Priority	N	N	N	N	N
IB Habitat Priority Area	N	N	N	N	N
FAA Airport Runways	N	N	N	N	N
Public Hunting Areas	N	N	N	N	N
Wildlife Management Areas	N	N	N	N	N
Local Parks	N	N	N	N	N
State/ National Parks	N	N	N	N	N
Kentucky Heritage Land Conservation Fund	N	N	N	N	N
Land and Water Conservation Fund	N	N	N	N	Y
Area Landmarks	N	N	N	N	N
Point Landmarks	Y	N	N	N	N
National Register of Historic Places Location (Point)	N	N	N	N	N
National Register of Historic Places Location (Polygon)	N	N	N	N	N

1) Special Waters are defined as Cold Water Aquatic Habitats, Outstanding State/National Resource Waters, Exceptional Waters, State Wild Rivers, and Federally Designated Wild / Scenic Rivers.

RIGHT OF WAY IMPACTS

The table below summarizes the potential needs of additional right-of-way (ROW) for proposed mobility improvement concepts.

Potential Needs of Additional Right of Way		
Locations	**Improvement Concepts**	**Additional ROW**
Between KY 1613 and US 68 Interchanges	Southbound Braided Ramp	Potentially
I-169/KY 1682 Interchange	Interchange Modification	Potentially
I-169/US 41 Interchange	Interchange Modification	Potentially
I-169 from US 62 to Western KY Pkwy	Complete Collector Distributor System	Yes
I-169/Western KY Pkwy Interchange	Interchange Modification	Potentially
Entire Corridor	DMS before interchanges and cameras at interchanges, major safety concern areas, and high traffic congestion areas	No
Entire Corridor	Traffic Incident Management throughout	No

COST ESTIMATION (IN 2021 DOLLARS)

Traditional Capacity Improvements

Design:	15.9 ($M)
ROW:	4.9 ($M)
Utility:	2.9 ($M)
Construction:	151.5 ($M)
Subtotal:	**175.2 ($M)**

TSMO Strategies

Dynamic Message Sign:	7.2 ($M)
Subtotal:	**7.2 ($M)**

TOTAL COST = 182.4 ($M)

Note:

1. The cost estimation may not include additional costs to address the potential impacts of major utilities (e.g., gas line, major water supplier, transmission line) within the proximity of the corridor, due to the lack of data when the report was prepared. Further investigation is recommended in future studies.
2. Cost estimation was based on 2021 dollars. There is a 1-3% inflation rate. Estimated cost could vary -50% to +250% of the actual number (as a rule of thumb).
3. The cost estimation does not include bridges outside of proposed widening section for mobility/safety reason, as they are not assumed to rise to the level of a corridor improvement. The cost estimation only includes necessary bridge replacement/rehab/widening costs within the bottleneck locations with proposed widening improvement.
4. Cost estimation does not account for KYTC's existing and committed (E+C) projects.
5. If multiple improvement concepts are recommended for the corridor, only the cost of the larger-scale improvement concept is estimated.