

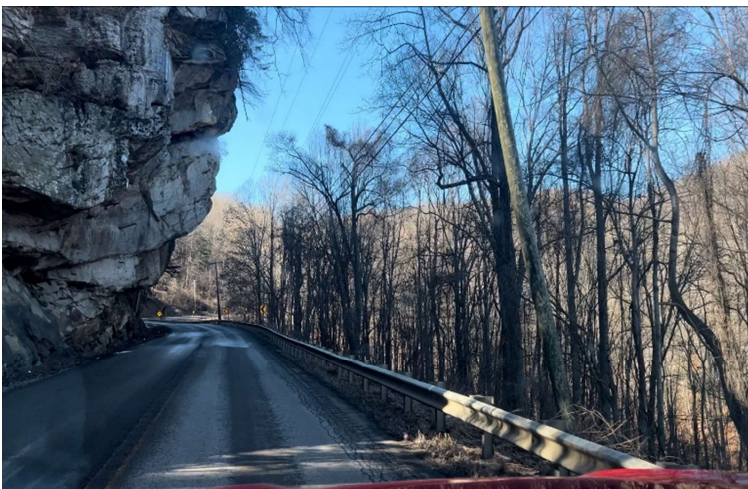
Data

Needs

Analysis



Scoping Study



US 421 Harlan County
MP 17.2 – 23.0
Item No. 11-80259

Prepared by the KYTC
Division of Planning and
KYTC District 11

February 2023



I. PRELIMINARY PROJECT INFORMATION

County:	Harlan	Item No.:	11-80259
Route Number(s):*	US421	Road Name:	Pine Mountain Road
Program No.:		UPN:	048 US421 17.2 - 23
Federal Project No.:		Type of Work:	Safety

2022 **Highway Plan Project Description:**

SPOT IMPROVEMENTS TO IMPROVE GEOMETRICS AT PARTICULAR LOCATIONS OF US421 OVER PINE MOUNTAIN BETWEEN US119 AND KY221 IN HARLAN COUNTY TO ADDRESS SAFETY CONCERNS

Beginning MP:	17.2	Ending MP:	23	Project Length:	5.8
In TIP:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Use PDP/CHAF to Verify Project Data			
State Class.:	<input checked="" type="checkbox"/> Primary <input type="checkbox"/> Secondary	Route is on:	<input type="checkbox"/> NHS <input type="checkbox"/> NN <input type="checkbox"/> Ext Wt		
Functional Class.:	<input type="checkbox"/> Urban <input checked="" type="checkbox"/> Rural Arterial	Truck Class.:	AAA	% Trucks:	8.21
MPO Area:	Not Applicable	Terrain:	Mountainous		
ADT (current):	1,581	2021			
Access Control:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Permit <input type="checkbox"/> Fully Controlled <input type="checkbox"/> Partial	Spacing:			
Median Type:	<input checked="" type="checkbox"/> Undivided <input type="checkbox"/> Divided (Type):				
Existing Bike Accommodations:	Shared Lane	Ped:	<input type="checkbox"/> Sidewalk		
Posted Speed:	<input type="checkbox"/> 35 mph <input type="checkbox"/> 45 mph <input checked="" type="checkbox"/> 55 mph <input type="checkbox"/> Other (Specify):				
KYTC Guidelines Preliminarily Based on :	35 MPH Proposed Design Speed				

COMMON GEOMETRIC

Roadway Data:	EXISTING	PRACTICES**	
No. of Lanes	2	2	Existing Rdwy. Plans available?
Lane Width	10'-12'	11'	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Shoulder Width	0'-10'	6'	Year of Plans: 1954
Max. Superelevation***	Unknown	8%	<input type="checkbox"/> Traffic Forecast Requested
Minimum Radius***	~100'	314'	Date Requested:
Maximum Grade	3.8%-17.2%	9%	<input type="checkbox"/> Mapping/Survey Requested
Minimum Sight Dist.	Unknown	250'	Date Requested:
Sidewalk Width(urban)	N/A		Type:
Clear-zone [†]			
Project Notes/Design Exceptions?			

Bridge No.:#	N/A	
Sufficiency Rating		
Total Length		Existing Geotech Data Available?
Width, curb to curb		<input type="checkbox"/> Yes <input type="checkbox"/> No
Span Lengths		
Year Built		
Posted Weight Limit		Detour Length(s):
Structurally Deficient?		
Functionally Obsolete?		
Existing Bridge Type		

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

II. PROJECT PURPOSE AND NEED

A. Legislation

The project appears in the 2022-2028 Enacted Highway Plan.

<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
STP	D	2023	\$750,000
SPP	R	2025	\$500,000
SPP	U	2026	\$500,000
SPP	C	2027	\$8,200,000

B. Project Status

11-80259 is in the planning stages to determine what spot improvements could be made at which locations to improve safety along the route. There are three locations where curves have been widened or the mountain has been cut back (~MP 18.0, 20.5, 20.8)

C. System Linkage

US 421 is a rural arterial road that connects Leslie and Harlan County. This road is the main route of travel for any workers traveling to or from work in Harlan or Leslie County.

D. Modal Interrelationships

This portion of US 421 has nearly 9% large truck traffic due to an asphalt plant and rock quarry located in the middle of these mile points. The truck traffic flows consistently both directions. There are no sidewalks and no notable pedestrian traffic in the area. This project will not address Modal Interrelationships.

E. Social Demands & Economic Development

The purpose of this project is to improve the safety of US 421 and improve the geometry of certain spots to allow for safer travel, especially for the large truck traffic that flows daily along this route. This will allow the residents along this route to move safely to and from work, school, or local businesses. The project will not address Social Demands or Economic Development.

II. PROJECT PURPOSE AND NEED (cont.)

F. Transportation Demand

The ADT along this portion of US 421 in 2021 was 1,581 cars per day with 8.21% large truck traffic. Traffic has not increased in the last 30 years.

G. Capacity

The capacity of this two-lane undivided road is acceptable for the rural area it serves.

H. Safety

The primary purpose of this project will be to address safety along the corridor. From 2017 to 2021 there was a total of 56 crashes from mile marker 17.2-23.0. Of these 56 crashes, 40 were single vehicle crashes. 8 were side swipes, 5 were rear ends, 1 head on, 1 backing, and 1 angle collision.

KAB EEC: 1, LOSS: 3.

CO EEC: 12.9, LOSS: 3.

I. Roadway Deficiencies

Another primary purpose of the project is to address geometric deficiencies. US 421 across Pine Mountain has 6 hair pin curves where most accidents take place. Advisory speed limits in these curves are as low as 15mph. These curves could use improved geometry or improved safety measures to insure that drivers have more visibility while traversing the route. This portion of US 421 contains little to no shoulders for vehicles to pull off in case of emergencies.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: Page 64, Hwy Imp Proj.

TIP Pg.#:

Project is listed on page 64 of 152, Highway Improvement Project Listing, 2022 - 2028 Enacted Highway Plan. TIP is not applicable because it is not in an MPO. Harlan County is attainment for all monitored air pollutants. If the project receives federal funding and it significantly changes or increases traffic, or adds additional lanes, it may require MSAT analysis. If structures are impacted they will need to be inspected for asbestos containing materials, and KY DAQ will require advanced notification prior to demolition, if applicable.

B. Archeology/Historic Resources

Known Archeological or Historic Resources are present

Several structures along the route appear > 50 years old. If federal funding is applied to the project, then investigations of archeological and historic resources will be required for the entire APE. Even with SPP funds, investigation within USACE Jurisdictional Areas will most-likely be required for Corps permitting, if required.

C. Threatened and Endangered Species

USFWS IPaC report generated for this location lists Gray Bat, Indiana Bat, Northern Long-eared Bat, Kentucky Arrow Darter and Spectaclecase mussel. There is no critical habitat in the project area. Several trees and wooded areas are adjacent to the roadway. Nolan Branch, Sam Howard Branch, an un-named tributary of Poor Fork Cumberland River, French Branch, Tom Jones Branch, and an un-named tributary of Beech Fork are within the project area.

If federal funds are applied to the project, then future review will have to address the requirements of USFWS to prevent detriment to the protected species. Even with SPP funds, investigation within USACE Jurisdictional Areas will most-likely be required for Corps permitting. A habitat assessment, biological assessment or mitigation measures will address potential impacts.

D. Hazardous Materials

Potentially Contaminated Sites are present Potential Bridge or Structure Demolition

No obvious sites noted from aerial photography, however a UST/HAZMAT SME should review the project for issues such as prior fuel stations or known monitoring wells. Structures requiring demolition will need to be inspected for asbestos.

E. Permitting

Check all that may apply: Waters of the US MS4 area Floodplain Impacts Navigable Waters of the US Impacts
Are 401/404 Permits likely to be required? Yes No Impacts to: Wetlands Stream/Lake/Pond
 ACE LON ACE NW ACE IP DOW IWQC Special Use Waters

404 and 401 permit requirements TBD based upon impacts from alternatives and improvements selected. A KYR10 Construction permit will likely be required. A floodplain permit may be required.

F. Noise

Are existing or planned noise sensitive receptors adjacent to the proposed project? Yes No
Is this considered a "Type I Project" according to [KYTC Noise Analysis and Abatement Policy?](#) Yes No

Several noise sensitive receptors are along the route; however, based on the initial project description, it does not appear to be a Type I project.

G. Socioeconomic

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

There are several residences and businesses close to the existing roadway. According to the "Demographic Indicators 2020" layer available through the KYTC mapping tools, over 80% of the population along the route may qualify as Low Income. Relocations are not known at this time. The project should not pose hardships to the community during construction provided that traffic access is maintained during construction.

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

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

No known 4(f) resources, however potential for historic resources exist pending eligibility determination, if required, for Corps permitting or if Federal funding is applied. No known 6(f) resources are in the project area.

[Anticipated Environmental Document:](#)

None (Completely State funded) ▼

IV. PROJECT NEED, PURPOSE & SCOPE

A. Need:

This route is in need of spot improvements to geometry for improved safety along the corridor. Currently 40 crashes out of 56 in 4 years were single vehicle accidents that likely could have been reduced with improved geometry along some of the substandard curves. There is also large truck traffic along the route due to the rock quarry and asphalt plant at the top of the mountain.

B. Purpose:

The purpose of the project is to improve geometrics and address safety concerns.

C. Scope:

US 421 is the main rural arterial for residents that travel between Leslie County and Harlan County. Truck traffic is also constant along this route due to the rock quarry and asphalt plants that are on top on Pine Mountain. There are several single vehicle crashes that could likely be eliminated with improved geometry to several hair pin curves along this mountainous route.

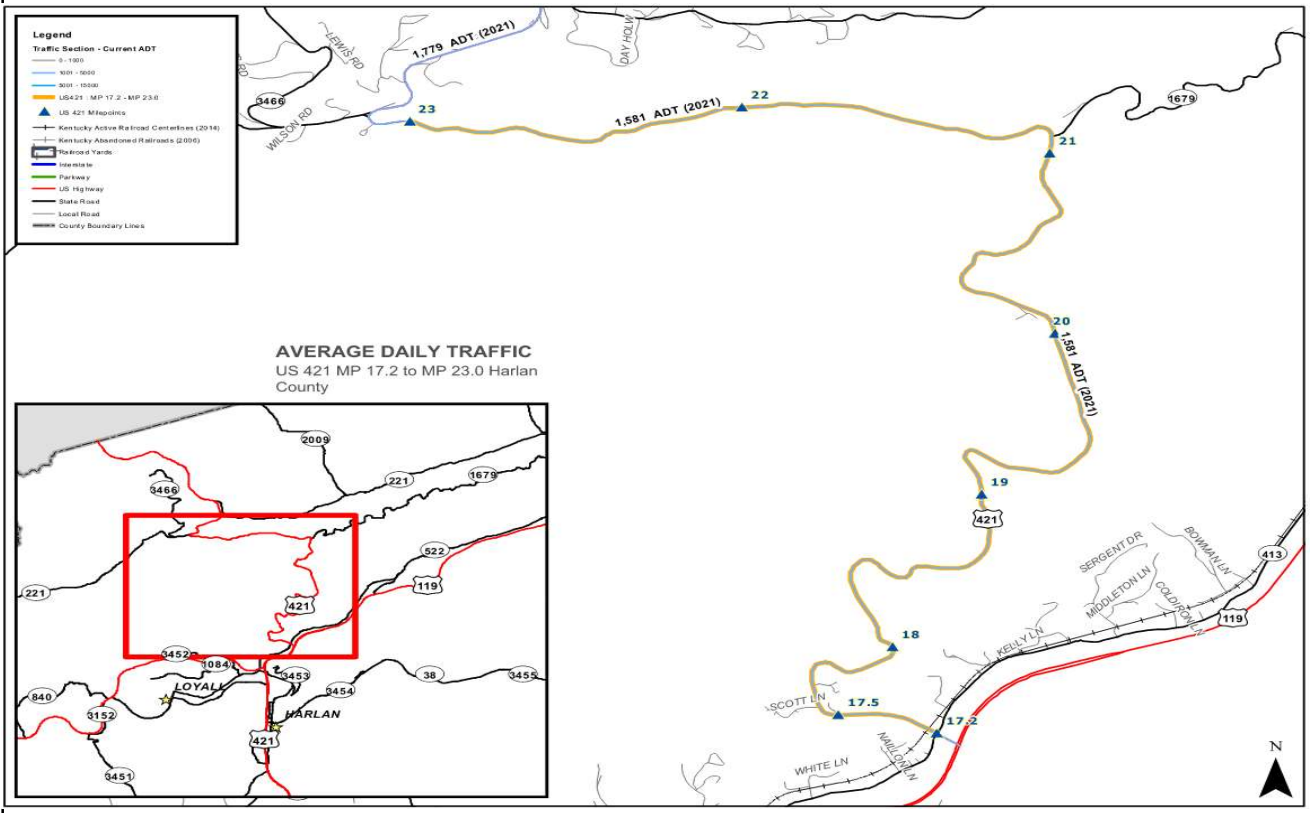
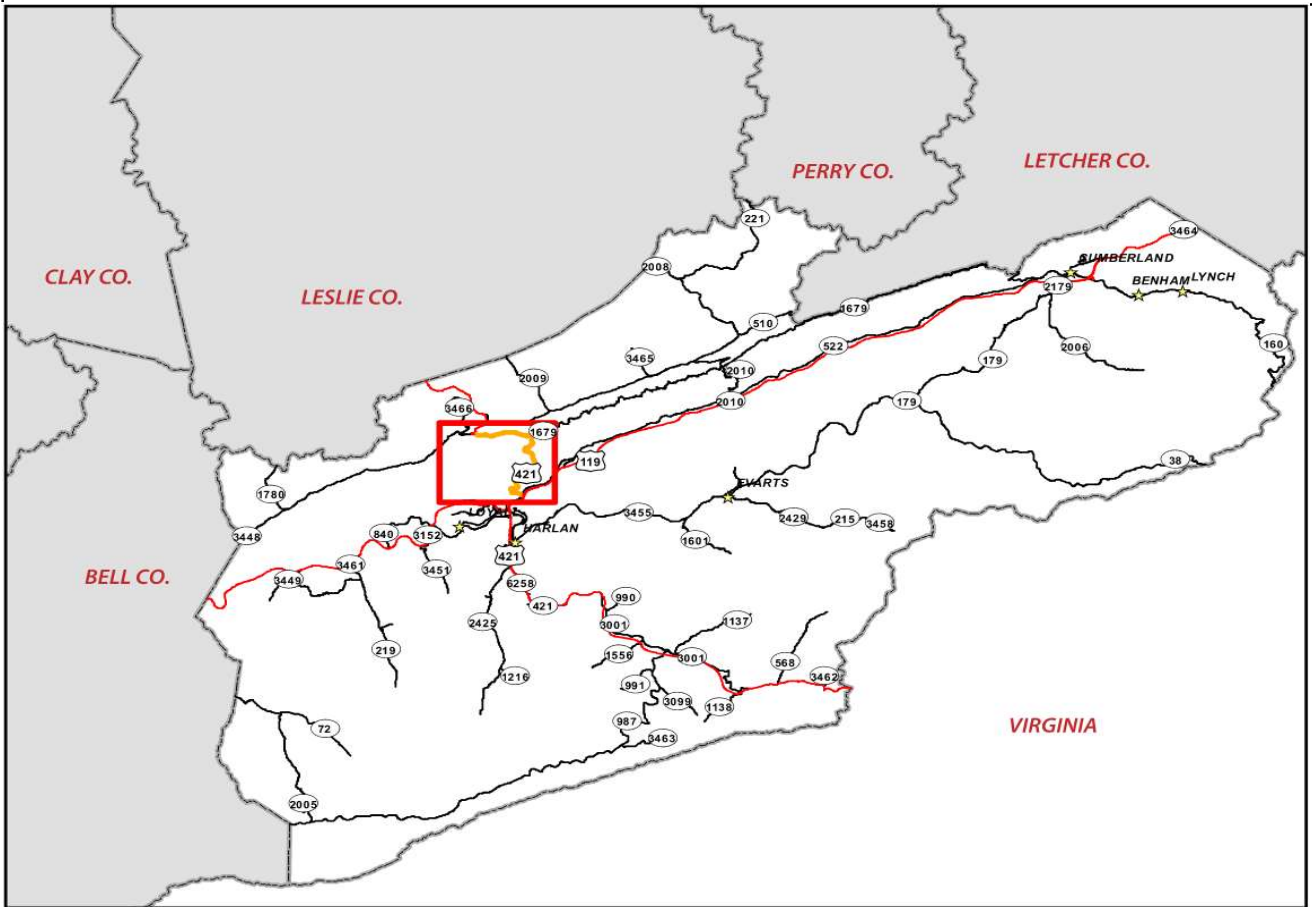
V. PROJECT ESTIMATE & METHODOLOGY

Estimate Methodology:	Current Estimate	
	Phase	Estimate
	Planning	
	Design	\$ 750,000
	R/W	\$ 500,000
	Utilities	\$ 500,000
	Const	\$ 8,200,000
	Total	\$ 9,950,000

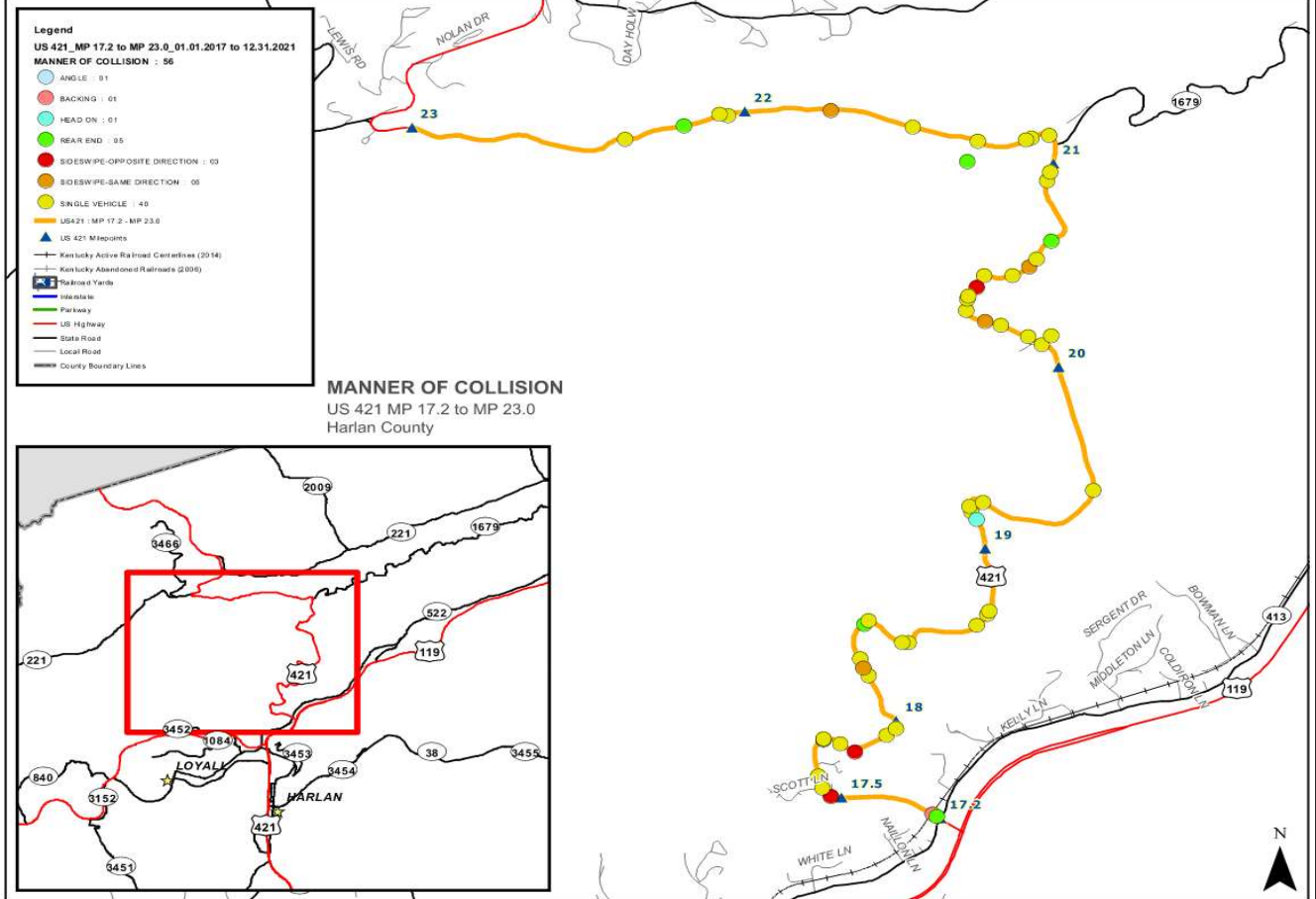
VI. UTILITIES POTENTIALLY AFFECTED - CONTACT INFORMATION

Company Name -	Harlan Municipal Water Works
Contact -	Otis Lewis
Address -	
Phone No. -	(606) 573-1540
Company Name -	Appalachian Wireless
Contact -	Jamie Thacker
Address -	
Phone No. -	(606) 791-3032
Company Name -	Cumberland Valley Rural Electric
Contact -	Mark Abner
Address -	
Phone No. -	(606) 546-9295
Company Name -	Windstream
Contact -	Tommy Lewis
Address -	
Phone No. -	(606) 309-2279
Company Name -	KU
Contact -	Chad Francisco
Address -	
Phone No. -	(606) 864-2821
Company Name -	TDS Telecom
Contact -	Shera Purdy
Address -	
Phone No. -	(608) 215-0290

VII. TABLES AND EXHIBITS



VII. TABLES AND EXHIBITS (cont.)







Harlan









