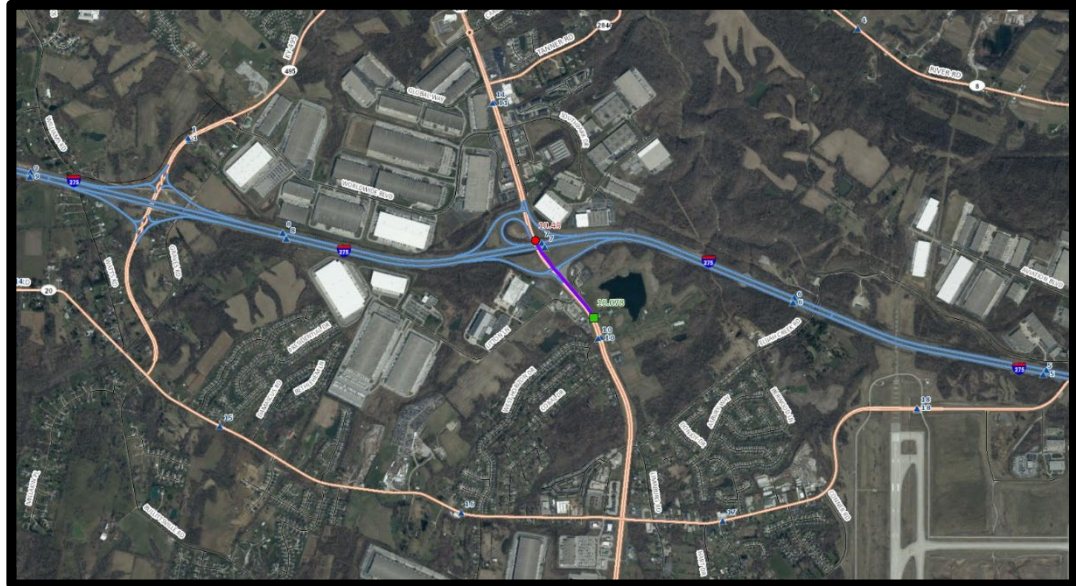


Data

Needs

Analysis



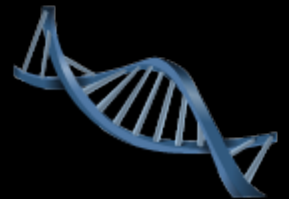
Scoping Study



Boone County
KY 237
From MP 10.250 to 10.450
Item No. 6-80209

Prepared by
KYTC District 6

January 2023



I. PRELIMINARY PROJECT INFORMATION

County:	Boone	Item No.:	6-80209
Route Number(s):*	KY-237	Road Name:	North Bend Road
Program No.:		UPN:	FD04 008 0237 000-002
Federal Project No.:		Type of Work:	Reconstruction

N/A **Highway Plan Project Description:**

Improve access to KY 237 for Litton Lane. (2022CCN)

Beginning MP:	10.25	Ending MP:	10.45	Project Length:	0.2
In TIP:	<input checked="" 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 checked="" type="checkbox"/> NHS <input checked="" type="checkbox"/> NN <input type="checkbox"/> Ext Wt		
Functional Class.:	<input checked="" type="checkbox"/> Urban <input type="checkbox"/> Rural <input type="text" value="Local"/>	Truck Class.:	<input type="text"/>	% Trucks:	5.591
MPO Area:	Cincinnati/Northern Kentucky (OKI)	Terrain:	Rolling		
ADT (current):	24,221	2017			
Access Control:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Permit <input type="checkbox"/> Fully Controlled <input type="checkbox"/> Partial	Spacing:	<input type="text"/>		
Median Type:	<input type="checkbox"/> Undivided <input checked="" type="checkbox"/> Divided (Type):	Flush			
Existing Bike Accommodations:	None	Ped:	<input checked="" type="checkbox"/> Sidewalk		
Posted Speed:	<input type="checkbox"/> 35 mph <input checked="" type="checkbox"/> 45 mph <input type="checkbox"/> 55 mph <input type="checkbox"/> Other (Specify):				
KYTC Guidelines Preliminarily Based on :	45 MPH Proposed Design Speed				

COMMON GEOMETRIC

Roadway Data:	EXISTING	PRACTICES**	
No. of Lanes	4-5	4-5	Existing Rdwy. Plans available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Lane Width	12'	10-12'	
Shoulder Width	0-10'	10'	Year of Plans: 2011
Max. Superelevation***	9.30%	8-10	<input type="checkbox"/> Traffic Forecast Requested
Minimum Radius***	1,432.40'	710-748'	Date Requested: _____
Maximum Grade	2%	6%	<input type="checkbox"/> Mapping/Survey Requested
Minimum Sight Dist.	Adequate	360'	Date Requested: _____
Sidewalk Width(urban)	8'	8'	Type: <input type="text"/>
Clear-zone [†]	Unknown	24'	

Project Notes/Design Exceptions?

Bridge No.: [‡]	N/A	
Sufficiency Rating		Existing Geotech Data Available? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Total Length		
Width, curb to curb		
Span Lengths		
Year Built		
Posted Weight Limit		Detour Length(s): 4 mi
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.

I. PRELIMINARY PROJECT INFORMATION (cont.)			
County:	Boone	Item No.:	6-80209
Route Number(s):*	CR-1050	Road Name:	Litton Lane
Program No.:		UPN:	
Federal Project No.:		Type of Work:	Reconstruction
<p>N/A Highway Plan Project Description:</p> <p>Improve access to KY 237 for Litton Lane. (2022CCN)</p>			
Beginning MP:	0	Ending MP:	0.25
		Project Length:	0.25
In TIP:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use PDP/CHAF to Verify Project Data	
State Class.:	<input 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 checked="" type="checkbox"/> Urban <input type="checkbox"/> Rural <input type="text" value="Local"/> ▼	Truck Class.:	<input type="text" value=""/> ▼ % Trucks: 31.088
MPO Area:	Cincinnati/Northern Kentucky (OKI) ▼	Terrain:	Rolling ▼
ADT (current):	<u>6,392</u> 2021		
Access Control:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Permit <input type="checkbox"/> Fully Controlled <input type="checkbox"/> Partial	Spacing:	<input type="text" value=""/> ▼
Median Type:	<input checked="" type="checkbox"/> Undivided <input type="checkbox"/> Divided (Type):		
Existing Bike Accommodations:	None ▼	Ped:	<input checked="" type="checkbox"/> Sidewalk
Posted Speed:	<input type="checkbox"/> 35 mph <input type="checkbox"/> 45 mph <input type="checkbox"/> 55 mph	<input checked="" type="checkbox"/> Other (Specify):	25
KYTC Guidelines Preliminarily Based on :		25 MPH Proposed Design Speed	
COMMON GEOMETRIC			
Roadway Data:	EXISTING	PRACTICES**	
No. of Lanes	<u>2</u>	<u>2</u>	<p>Existing Rdwy. Plans available?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Year of Plans: <u>2011</u></p> <p><input type="checkbox"/> Traffic Forecast Requested</p> <p>Date Requested: _____</p> <p><input type="checkbox"/> Mapping/Survey Requested</p> <p>Date Requested: _____</p> <p>Type: <input type="text" value=""/> ▼</p>
Lane Width	<u>11-12'</u>	<u>12</u>	
Shoulder Width	<u>2'</u>	<u>8'</u>	
Max. Superelevation***	<u>2.00%</u>	<u>8%</u>	
Minimum Radius***	<u>150'</u>	<u>134'</u>	
Maximum Grade	<u>1%</u>	<u>7%</u>	
Minimum Sight Dist.	<u>Adequate</u>	<u>155'</u>	
Sidewalk Width(urban)	<u>5'</u>	<u>4-8'</u>	
Clear-zone [†]	<u>Unknown</u>	<u>7-10'</u>	
Project Notes/Design Exceptions?			
Bridge No.:#	N/A		
Sufficiency Rating			
Total Length			
Width, curb to curb			
Span Lengths			
Year Built			
Posted Weight Limit			
Structurally Deficient?			
Functionally Obsolete?			
Existing Bridge Type			
<p>*If more than one road is included in the project, include additional sheets.</p> <p>**Based on proposed Design Speed</p> <p>***AASHTO's A Policy on Geometric Design of Highways and Streets</p> <p>+AASHTO's Roadside Design Guide</p> <p>#If more than two bridges are located on the project, include additional sheets.</p>			

II. PROJECT PURPOSE AND NEED

A. Legislation

This project first appeared in the 2022 Highway Plan with the description "Improve access to KY 237 for Litton Lane. (2022CCN)". All phases of the project have state funds allocated in the Highway Plan, as shown in this table.

<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
STP	D	2022	\$541,000
SPP	R	2024	\$2,894,000
SPP	U	2025	\$337,000
SPP	C	2026	\$3,581,600

B. Project Status

This project was entered into the CHAF database as an identified need in 2019. The project was scored in the 2022 SHIFT cycle as IP20190060 and received a score of 9.9 out of 100. This project was not boosted by OKI or KYTC District 6. Design funding is currently programmed for Fiscal Year 2022 and is expected to be authorized in the near future.

As part of a Local Road Safety Plan, Boone County identified and rated 29 County Roads considered part of the "County Collector" system. These roads were evaluated for safety based on two metrics: crashes and hazard rating. According to the County's composite ranking, Litton Lane was deemed to be the most in need of significant safety improvements. As a result, the County has submitted a Safe Streets for All (SS4A) grant application to improve Litton Lane to a three-lane typical section with 10' wide multi-use path on one side and 6' sidewalk on the other.

C. System Linkage

KY 237 is an urban south-to-north route in Boone County just short of 15 miles long. KY 237 connects KY 536 (Mount Zion Road) in the south near Union to KY 8 (River Road) in the north near the Ohio River. From Minor Collector to Principal Arterial, KY 237 spans the range of functional classification. From KY 536 (mile point 0.000) to US 42 (mile point 1.588), the route is classified as a Major Collector. From US 42 to I-275 (mile point 10.410), it is classified as a Principal Arterial. From I-275 to Global Way (mile point 11.075), it is classified as a Minor Arterial. From Global Way to Conway Hills Drive (mile point 13.586), it is classified as a Major Collector. From Conway Hills Drive to its terminus at KY 8 (mile point 14.646), it is classified as a Minor Collector. Along the project limits at the intersection with Litton Lane (CR-1050) at mile point 10.309, KY 237 is functionally classified as a Principal Arterial.

Land use in the project vicinity is largely industrial, consisting of an urban five-lane typical section with additional turning lanes on rolling terrain. A third southbound through-lane runs from the I-275 westbound offramp at KY 237 to Litton Lane, where it drops just south of the intersection.

KY 237 is a vital corridor in the area, providing large distribution facilities, including Amazon and Ryder, with direct connections to I-275 just to the north of this intersection. This segment of KY 237 is traveled by passenger cars and commercial vehicles alike, providing access to numerous distribution facilities, healthcare, childcare, banking, gas stations, and restaurants.

D. Modal Interrelationships

There is a growing amount of truck traffic traveling through this intersection daily with the expansion of Amazon and other industrial distribution facilities in the footprint of the project. KY 237 is a state-designated truck route from KY 18 to I-275 and has a Truck Weight Classification rating of AAA (80,000 lbs gross vehicle weight). Sidewalk facilities currently exist within the project limits; however, there are currently no dedicated bike lanes or shared-use paths. Boone County is scheduled to begin construction in Summer 2023 on a 10' wide multi-use path on the east side of KY 237 from KY 20 to Medical Arts Drive. Construction of this path should be complete by Winter 2024. There are no railroads in the vicinity of this project area. Due to its proximity and easy access to I-275 and the Cincinnati-Northern Kentucky International Airport (CVG), this corridor has become vital for freight moving by truck.

II. PROJECT PURPOSE AND NEED (cont.)

E. Social Demands & Economic Development

Boone County is extremely attractive to freight logistics and distribution industries, due to its close proximity to major interstates, CVG, railyards, and ports that allow freight distribution on a local, regional, national, and global scale. The industrial population is growing rapidly along the KY 237 corridor near Litton Lane with multiple industries expanding in the area. This type of industrial growth in the area is expected to continue for the foreseeable future.

F. Transportation Demand

There is one KYTC traffic count station and two OKI Metropolitan Planning Organization (MPO) stations located within the project limits. The two most recent counts were performed by OKI in 2021. The first OKI count station (BOO1003) is located on Litton Lane just west of KY 237. This station had an overall AADT of 6,392 in 2021, with trucks accounting for 31.09% of the traffic volume. The second OKI count station (BOO0129) is located on KY 237 south of Litton Lane. This station had an AADT of 33,362 in 2021, with trucks accounting for 8.82% of the traffic volume. KYTC's most recent traffic count in the area is located south of Litton Lane near OKI Station BOO0129 and had an AADT of 24,221 in 2017, with truck traffic accounting for 5.59% of the total traffic volume. This increase from the KYTC count in 2017 to the more recent OKI count would seem to indicate traffic volume has increased by over 35% in the area within the last five years; that volume is expected to continue to increase for the foreseeable future given the amount of residential and industrial growth in this area.

G. Capacity

This portion of KY 237 has 4-5 through-lanes as well as additional turning lanes, providing adequate capacity to handle current traffic volume throughout much of the day. However, during peak AM and PM travel times, heavy traffic congestion occurs along Litton Lane and KY 237 alike. Because of its proximity to distribution facilities, this congestion intensifies in November and December due to the increased demand of consumer goods moving through these warehouses during the holiday season. During peak travel times, the Boone County Sheriff's Department deploys an officer to manually control the light for the majority of these two months. During these times of high travel demand, many motorists traveling eastbound on Litton Lane seek to bypass the intersection by exiting southbound through the parking lots near Waffle House and Burger King, just south of the intersection. Capacity is mostly hindered by the intersection's close proximity to I-275, a distance which does not meet modern design criteria.

H. Safety

The intersection of KY 237 at Litton Lane/Medical Arts Drive had a total of 254 collisions in the five-year period beginning June 17, 2017. Thirty-three of the collisions resulted in injuries. The other 221 collisions resulted in property damage only. Fifty-three of the collisions involved commercial vehicles. The common manner of collision were rear-end collisions (93 total) followed by sideswipe collisions (61 total). The EEC on mainline KY 237 in the project area (MP 10.25 to MP 10.45) is 17.9. The EEC at the intersection of Litton Lane and Medical Arts Drive is 21.607.

I. Roadway Deficiencies

Sight distance and roadway pavement conditions are adequate for the current roadway speed of 45 mph. However, this intersection's proximity to I-275 does not meet modern design standards. Combined this substandard design with Boone County's rapidly growing residential population and number of industrial facilities, and the result is increased travel delays during peak AM and PM traffic periods and a higher number of crashes than expected. These deficiencies will only worsen with time unless the intersection is reconstructed and shifted further south of Interstate 275.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: TIP Pg.#: Amend 14 in OKI TIP*

Maintenance for ozone. * FY21-24 OKI TIP

B. Archeology/Historic Resources

Known Archeological or Historic Resources are present

No known historic or archaeological resources are present in project area. Confirmation with DEA Section 106 SMEs required if project advanced to design.

C. Threatened and Endangered Species

USFWS IPAC tool lists 3 bats and 10 mussel species as Threatened or Endangered. Habitat is not likely for any mussel species within the project area, however any trees would be potential habitat for the imperiled bats. Tree removals would be permitted at certain times of the year if the IBPCMOA is followed and impacts are compensated.

D. Hazardous Materials

Potentially Contaminated Sites are present Potential Bridge or Structure Demolition

Several EPA regulated facilities are within project area. UST Hazmat Phase 1 study would need to be conducted with possibility for a Phase 2 evaluation once an alignment is selected.

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

USACE and DOW permitting required if ponds on the agricultural parcels are impacted and determined to be a waterway of US. Project is in close proximity to Woolpert Creek.

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

Coordination with DEA Noise SME to determine applicability of noise study from roadway realignments.

G. Socioeconomic

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

Agricultural parcels exists in the area that would require conversion to accommodate the relocation of Litton Lane and Medical Arts. Would need to coordinate with NRCS for farmland impacts.

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

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

No 4(f) or 6(f) resources appear to be within the boundary of the project area.

[Anticipated Environmental Document:](#)

CE Level 2



IV. PROJECT NEED, PURPOSE & SCOPE

A. Need:

Heavy travel demand, combined with suboptimal intersection distance from I-275, contribute to high levels of congestion during peak AM and PM travel times at the intersection of KY 237 and Litton Lane/Medical Arts Drive. This congestion leads to a significantly higher number of crashes within the project limits when compared to similar intersections, raising safety concerns. Due to the growing number of distribution warehouses in the vicinity of These issues become exacerbated during the months of November and December, when truck traffic increases as the demand for consumer goods peaks during the holiday season.

B. Purpose:

The purpose of this project is to increase safety, reduce congestion, and improve access to businesses and industry for motorists utilizing the intersection of KY 237 and Litton Lane/Medical Arts Drive.

C. Scope:

The intersection of KY 237 and Litton Lane/Medical Arts Drive is located approximately 600 feet from the ramps on the south side of I-275, which does not meet modern design criteria for urban interchanges. While various stipulations exist, intersections adjacent to urban interchanges such as this one should be a minimum of 1,200 feet from ramp terminals. The most logical design concept for reconfiguring this intersection would be to extend Litton Lane and Medical Arts Drive to the south, with enough distance from I-275 to meet modern design criteria. Reconnecting Litton Lane and Medical Arts Drive to the Burger King/Domino's access road and Orchid Drive (respectively) should provide the necessary distance from the interchange at I-275. This concept would likely require parking lot reconfiguration (or total takes) of the two aforementioned businesses along with two residential relocations on the east side of KY 237. Design considerations should also include proper access management for all businesses and industry located in direct proximity of the project area while accommodating for bicycle and pedestrian traffic.

V. PROJECT ESTIMATE & METHODOLOGY

Estimate Methodology:

A planning-level estimate was completed when the project was on the unscheduled needs list in the CHAF database, prior to the 2022 SHIFT project prioritization cycle. This estimate was reassessed for this study and the programmed funding was found to be within reason.

Current Estimate	
<u>Phase</u>	<u>Estimate</u>
Planning	--
Design	\$541,000
R/W	\$2,894,000
Utilities	\$337,000
Const	\$3,581,600
Total	\$7,353,600

VI. UTILITIES POTENTIALLY AFFECTED - CONTACT INFORMATION

Company Name - **altafiber**
Contact - Al Phinney
Address - 221 E 4th St, Cincinnati, OH 45202
Phone No. - (513) 608-7628

Company Name - **Duke Energy - Electric**
Contact - Craig Hutchison
Address - 2010 Dana Ave, Cincinnati OH 45207
Phone No. - (513) 458-3847

Company Name - **Duke Energy - Gas**
Contact - Scott Pfefferman
Address - 1262 Cox Ave, Erlanger KY 41018
Phone No. - (513) 315-4593

Company Name - **Spectrum/Charter Communications**
Contact - Chris Gapinski
Address - 10920 Kenwood Rd, Blue Ash OH 45242
Phone No. - (513) 386-5015

Company Name - **Boone County Water District**
Contact - Mike Rouse
Address - 2475 Burlington Pike, Burlington KY 41005
Phone No. - (859) 586-7270

Company Name - **Sanitation District No. 1**
Contact - Andy Aman
Address - 1045 Eaton Dr, Fort Wright KY 41017
Phone No. - (859) 578-6880

VII. TABLES AND EXHIBITS



Exhibit 1: Project Location Map

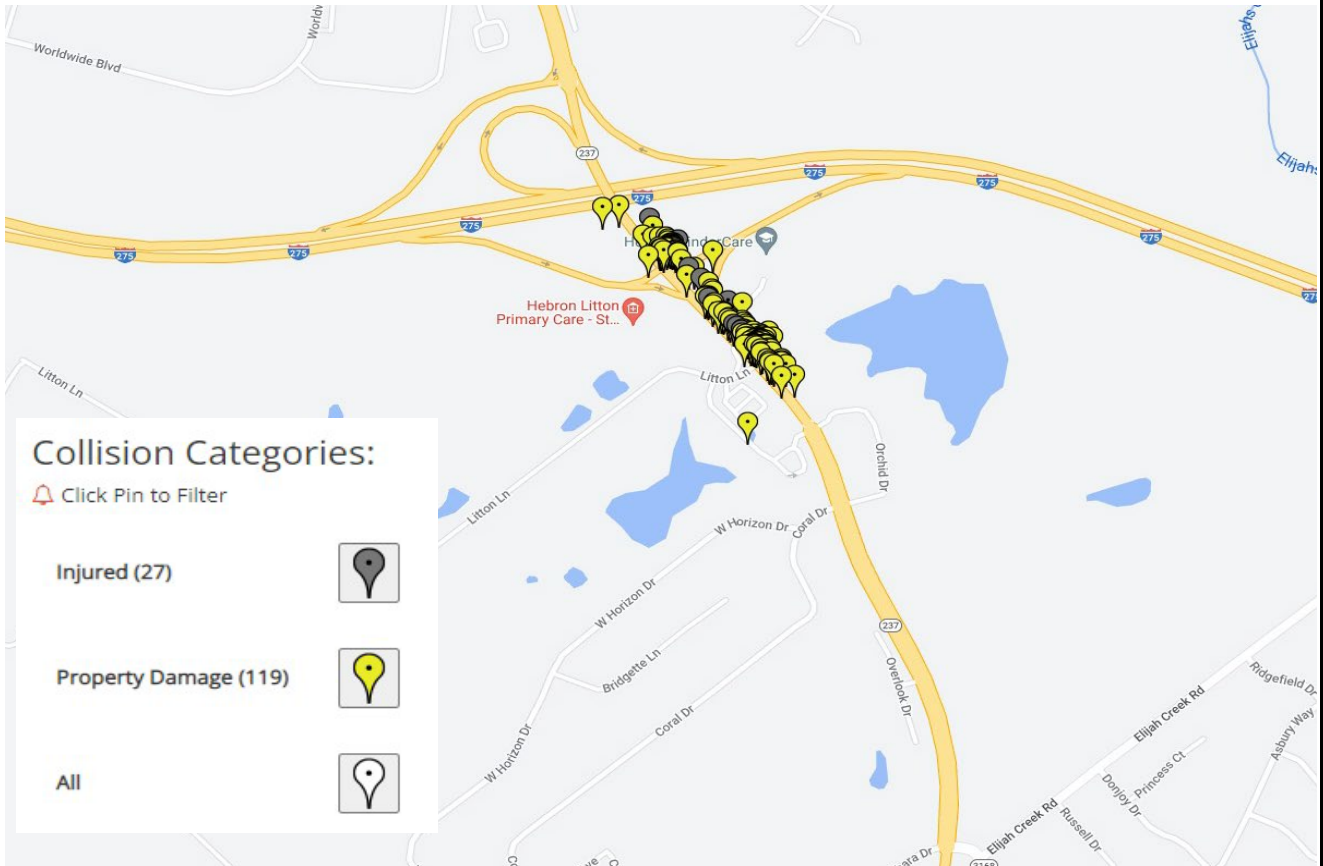


Exhibit 2: Accident Summary for KY 237 over Five-Year Period Beginning June 17, 2017

VII. TABLES AND EXHIBITS (cont.)

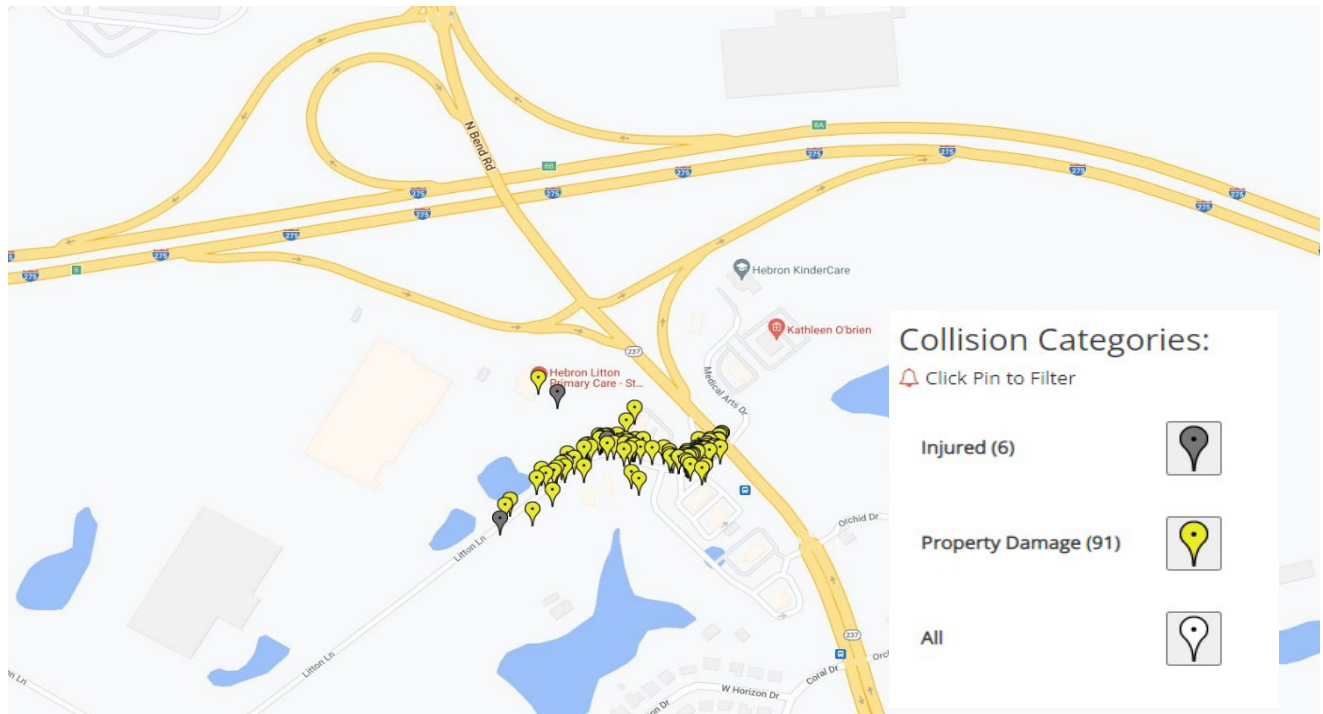


Exhibit 3: Accident Summary for Litton Lane over Five-Year Period Beginning June 17, 2017

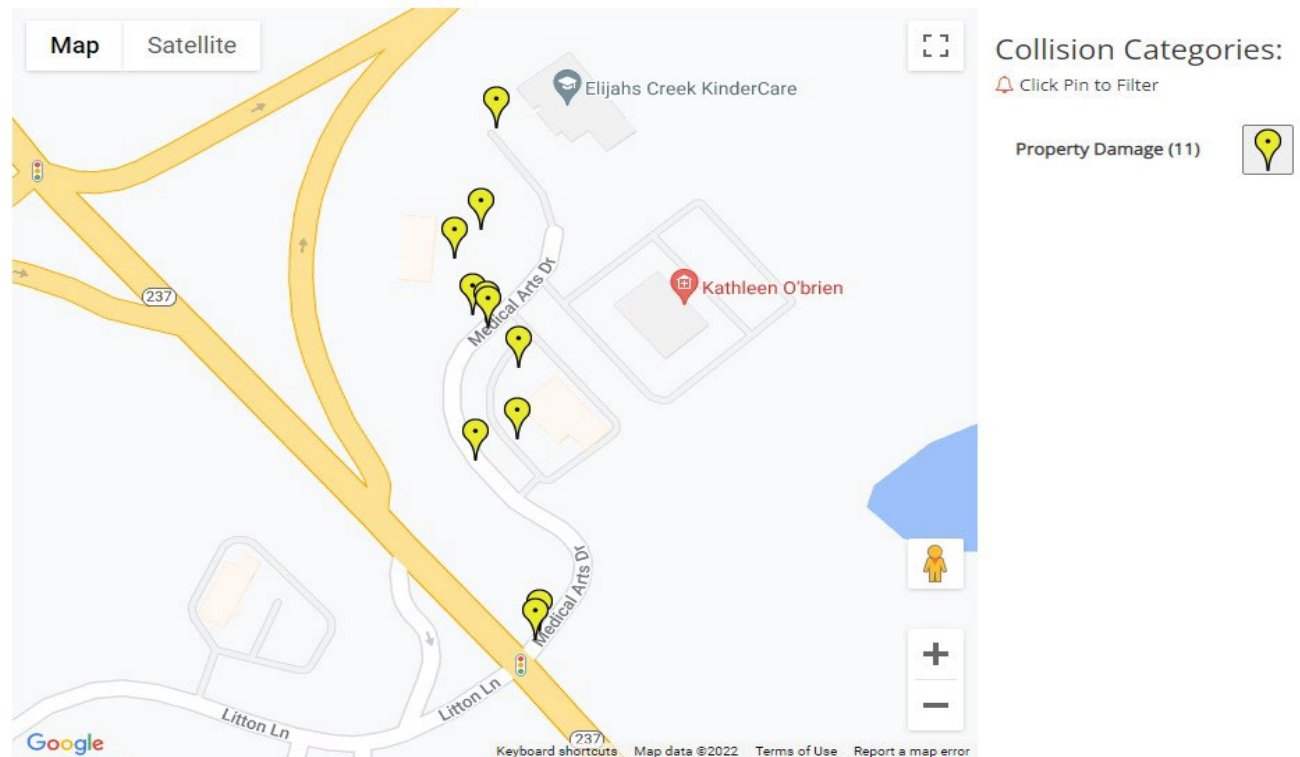


Exhibit 4: Accident Summary for Medical Arts Drive over Five-Year Period Beginning June 17, 2017

VII. TABLES AND EXHIBITS (cont.)



Exhibit 5: View of Intersection of Litton Lane and KY 237 Facing North



Exhibit 6: Additional Angle of Intersection of Litton Lane and KY 237 Facing North

VII. TABLES AND EXHIBITS (cont.)



Exhibit 7: View from Litton Lane Facing East Toward KY 237



Exhibit 8: View from KY 237 Facing North