Appendix D – Meeting Summaries

Meeting Minutes

TO:

Stephen De Witte
Co-Project Manager
KYTC Central Office
200 Mero Street
Frankfort, KY 40622

Jeff Dick
Co-Project Manager
KYTC District Office #8
1660 US 27
Somerset, KY 42501

FROM: Dan O'Dea
Project Manager
Stantec Consulting Services Inc.

DATE: February 4, 2022

SUBJECT: KY 90 Corridor Study
KY 90 (MP 12.931 – MP 15.617)
Wayne County
KYTC Item No. 08-80105
Project Team Meeting No. 1

The first Project Team Meeting for the subject project was held via Microsoft Teams on January 27, 2022, at 10:30 a.m. EST. The following individuals were in attendance:

Mark Boston	KYTC – District 8
Jeff Dick	KYTC – District 8
Mark Foster	KYTC – District 8
Stewart Gilreath	KYTC – District 8
Joe Gossage	KYTC – District 8
Amber Hale	KYTC – District 8
Dave Heil	KYTC – Central Office Planning
Jacob Huber	KYTC – Central Office Planning
Kasey Hoskins	Lake Cumberland Area Development District (LCADD)
James Jones	KYTC – District 8
Conley Moren	KYTC – District 8
David Souleyrette	KYTC – Central Office Planning
Brian Aldridge	Stantec Consulting Services Inc.
Dan O'Dea	Stantec Consulting Services Inc.
Len Harper	Stantec Consulting Services Inc.
Graham Winchester	Stantec Consulting Services Inc.

Dan O'Dea welcomed everyone and led introductions. The purpose of the meeting was to discuss the progress to-date for the KY 90 Corridor Study. Dan then delivered a presentation. The following enumerated items were discussed.

1. The purpose of the meeting is to present the results from the existing conditions analysis and to get feedback from the project team on transportation issues in the study area.

2. This project is state funded with State Priority Project (SPP) funds. It is listed in Kentucky's *FY 2020 – FY 2026 Highway Plan* as 08-80105.00 and has $1.568 million in Design (2021), $6.078 million in Right-of-Way (2023), $2.92 million in Utilities (2024), and $22.143 million in Construction (2025).

3. There is one KY 90 project to the east of the study area listed in *Kentucky's FY 2020 – 2026 Highway Plan*:

    - KYTC Item No. 08-109.10 includes improving KY 90 from Old Mill Springs Road to the bridge at MP 19.5 (R = $2.6 million, U = $7.7 million, C = $9.1 million). This project includes minor realignment, minor widening, construction of right- and left-turn lanes, and drainage improvements.
        i. It was noted that this project is currently under construction.

4. The goal of this study is to identify and evaluate the need for and scope of potential options to improve safety, mobility, and capacity on KY 90 between KY 90X/KY 1275 and KY 3106 near Monticello, Kentucky.

5. Highlights from the existing conditions analysis were discussed. The study portion of KY 90 is 2.686 miles in length with a posted speed limit of 55 miles per hour (MPH). This two-lane urban minor arterial has 12-foot lanes and six-inch edgelines and has been recently re-paved. The section of KY 90 near the KY 1275 intersection has paved 10-foot shoulders while other sections have gravel shoulders or guardrail.

    - Question: Should we pave 10-foot paved shoulders for the entire corridor so that through traffic can pass turning vehicles on the shoulder?

      Answer: Paved shoulders may be a good safety improvement, but we also do not want to encourage passing on the shoulder. There are signs posted on the study portion of KY 90 that passing on the shoulder is not allowed.

6. Crash data from the Kentucky State Police database indicates that in the five years between January 1, 2016 and December 31, 2020, a total of 56 crashes were reported on the study portion of KY 90. Of the 56 crashes, there were 19 injury collisions (34%), and 37 property damage only collisions (66%) during this five-year period. Compared to other urban minor arterials in Kentucky, KY 90 has a higher percentage (34%) of injury collisions than average (17%). Rear-end crashes (59 percent) and single vehicle crashes (18 percent) were the most prominent types of collisions as shown in **Figure 1**.

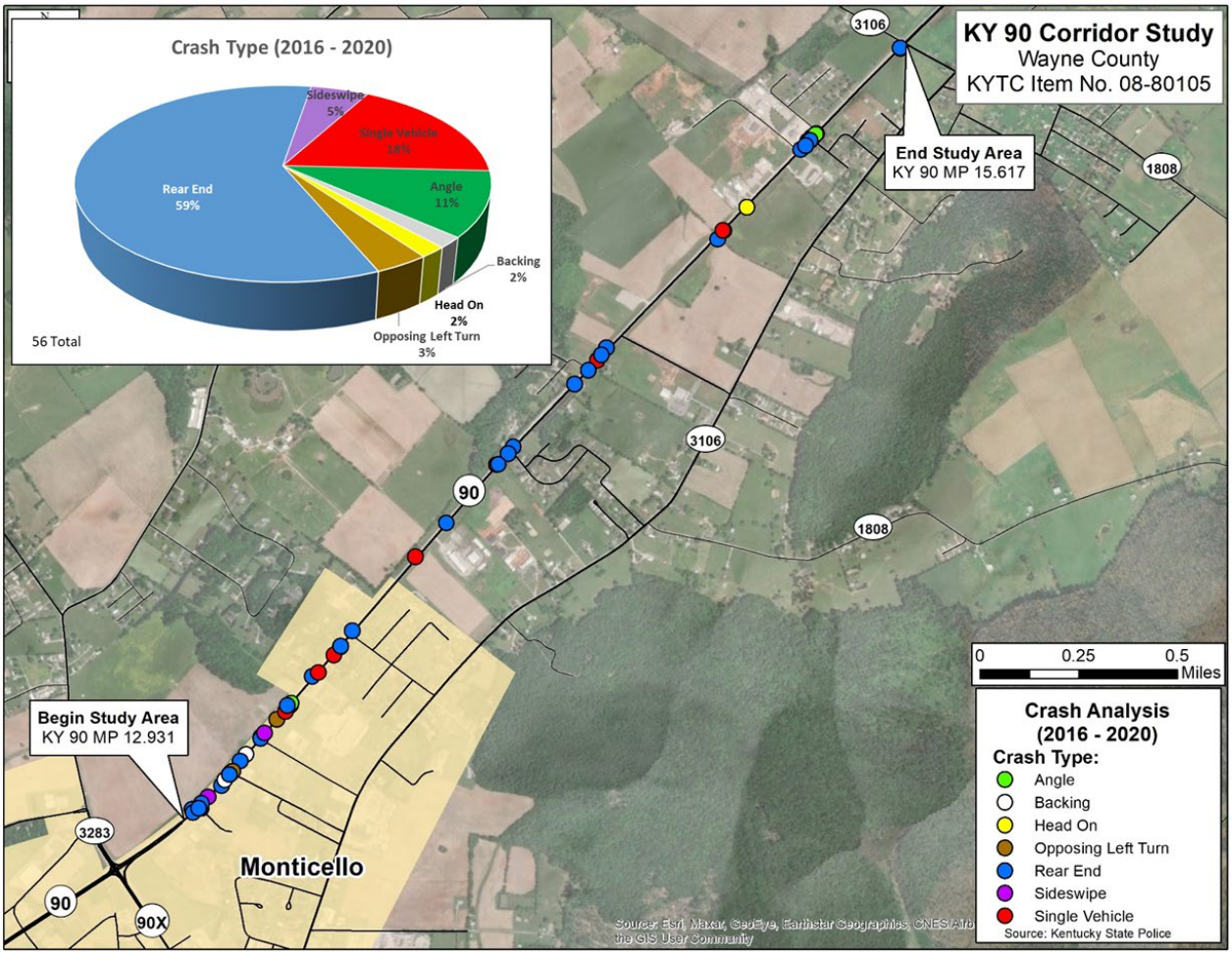


Figure 1: KY 90 Crash Type

- It was noted that there was a general upward trend over the five-year period where crashes increased each year except for 2020, which was likely due to reduced traffic from Covid-19. There were 6 crashes in 2016, 9 crashes in 2017, 13 crashes in 2018, 17 crashes in 2019, and 11 crashes in 2020. It was noted that crashes may decrease due to the new pavement, striping, and rumble strips placed earlier this year.
- It was also noted that there were more collisions traveling eastbound.

A more detailed analysis was performed for the injury collisions. While 39 percent of all crashes occurred on wet pavement, 58 percent of injury crashes occurred on wet pavement.

- Time of day did not seem to impact the number of crashes. For the most part, injury crashes were evenly distributed throughout the day.
- It was noted that wet pavement crashes could decrease due to the new pavement.

The Crash Data Analysis Tool (CDAT) was used to perform an Excess Expected Crashes (EEC) analysis. EEC is a measure of the crash frequency at a given site compared to what is expected based on current conditions (geometrics, traffic, etc.). A positive EEC indicates more crashes are occurring than should be expected. Results from this analysis showed the study portion of KY 90 with an EEC of -4 crashes per year, indicating that the route is performing better than expected. Two of eleven intersections on KY 90, Franklin Road/Tate Drive and Cumberland Drive, have slightly positive EECs.

7. Historical KYTC traffic volumes show an Annual Average Daily Traffic (AADT) of 9,600 vehicles per day (VPD) on the study portion of KY 90 with 11.3 percent trucks.

   Level of service (LOS), a qualitative measure describing operational conditions, was used to evaluate the adequacy of the existing roadway. In urban areas such as this, LOS D or better is acceptable. Results from a Highway Capacity Software (HCS) analysis revealed that the corridor operates at a LOS B during the AM peak and a LOS C during the PM peak hour, as shown in **Table 1**. (Note: D/C = Demand/Capacity)

   - Question: Traffic increases during the summer due to travelers visiting Lake Cumberland. How would an increase in traffic impact the capacity analysis? Answer: A 25 percent increase to PM peak traffic would result in LOS C and a 50 percent increase in traffic would result in LOS D.

Table 1: KY 90 Capacity Analysis

Peak Hour	Direction	Avg. LOS	Avg. D/C
AM	NB	B	0.22
	SB	B	0.22
PM	NB	C	0.29
	SB	C	0.32

Turning movement counts were collected by Stantec at 11 intersections and show peak hour volumes up to 883 vehicles per hour (vph) on KY 90. HCS was used to analyze the intersections, as shown in **Table 2**. All intersections operate at LOS C or better during both peak hours.

Table 2: KY 90 Intersection Capacity Analysis

Intersection	Approach	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
KY 90 at Access Dr.	Access Dr.	B	12.2	C	17.3
KY 90 at Tate Dr.	EB Tate Dr.	B	13.1	C	15.7
	WB Tate Dr.	B	10.8	C	18.4
KY 90 at Cumberland Dr.	Cumberland Dr.	B	12.6	C	18.7
KY 90 at Guinn Dr.	Guinn Dr.	B	13.3	B	12.1
KY 90 at Francie Blvd.	Francie Blvd.	B	12.6	B	10.5
KY 90 at Eastview Sub Rd.	Eastview Sub Rd.	B	13.1	B	14.3
KY 90 at Kings Hwy.	Kings Hwy.	A	9.2	B	13.6
KY 90 at Sunstar Blvd.	Sunstar Blvd.	A	8.9	B	11.2
KY 90 at Farmington Rd.	Farmington Rd.	B	11.7	A	9.5
KY 90 at Industry Dr.	Industry Dr.	B	12.3	B	14.9
KY 90 at Cooley Ln.	EB Cooley Ln.	B	10.5	B	12.0
	WB Cooley Ln.	B	13.8	C	18.0

8. Preliminary growth rates were developed using the Kentucky Statewide Travel Demand Model (KYSTM), historical KYTC traffic counts, and population projections from the Kentucky State Data Center. While historical traffic trends and Wayne County population projections show slight declines, the KYSTM shows slight growth over the next 25 years. An annual growth rate of 0.3% per year will be used to develop traffic forecasts

    - Comment: The study portion of KY 90 has the potential for development which is why the model is showing a positive growth rate.

9. Left-turn analyses were performed for the 11 intersections on the study portion of KY 90. Based on Highway Design Manual criteria, the KYTC criteria for left-turn lanes are not satisfied for any of the intersections on KY 90 at this time.

10. There was a discussion of preliminary improvement concepts. Both short-term and long-term improvements will be considered based on results from the existing conditions analysis and feedback from the project team and stakeholders.

    - Question: Should we consider drainage improvements:
      Answer: We will consider all possibilities to improve KY 90. However, drainage does not seem to be an issue.

Short-Term Improvements

- Intersection improvements
- Minor widening
- Transportation Systems Management and Operations (TSMO)

Long-Term Improvements

- Major widening

11. The next steps are to develop traffic forecasts, analyze results from the local officials/stakeholder MetroQuest survey, and begin the improvement concept development process.

The meeting ended at approximately 11:30 a.m. EST.

Meeting Minutes

TO: Stephen De Witte
Co-Project Manager
KYTC Central Office
200 Mero Street
Frankfort, KY 40622

Jeff Dick
Co-Project Manager
KYTC District Office #8
1660 US 27
Somerset, KY 42501

FROM: Dan O'Dea
Project Manager
Stantec Consulting Services Inc.

DATE: February 4, 2022

SUBJECT: KY 90 Corridor Study
KY 90 (MP 12.931 – MP 15.617)
Wayne County
KYTC Item No. 08-80105
Local Officials/Stakeholder Meeting No. 1

The first Local Official/Stakeholder Meeting for the subject project was held via Microsoft Teams on January 27, 2022, at 1:30 p.m. EST. The following individuals were in attendance:

Justin Alley	Wayne County Public Schools
Mike Anderson	Wayne County Judge Executive
Jeff Dick	KYTC – District 8
Mark Foster	KYTC – District 8
Stewart Gilreath	KYTC – District 8
Joe Gossage	KYTC – District 8
Amber Hale	KYTC – District 8
Gabe Heatherly	Monticello Fire Chief
Dave Heil	KYTC – Central Office Planning
Jacob Huber	KYTC – Central Office Planning
Kasey Hoskins	Lake Cumberland Area Development District (LCADD)
James Jones	KYTC – District 8
Conley Moren	KYTC – District 8
Amanda Parmley	KYTC – District 8
Ken Upchurch	Kentucky House of Representatives
Tracie Sexton	Mayor of Monticello
Randy Turner	KYTC – Central Office Location Engineer
Brian Aldridge	Stantec Consulting Services Inc.
Dan O'Dea	Stantec Consulting Services Inc.
Len Harper	Stantec Consulting Services Inc.
Graham Winchester	Stantec Consulting Services Inc.

Dan O'Dea welcomed everyone and led introductions. The purpose of the meeting was to discuss the progress to-date for the KY 90 Corridor Study. Dan then delivered a presentation. The following enumerated items were discussed.

1. The purpose of the meeting is to present the results from the existing conditions analysis and to get feedback from the local officials/stakeholders on transportation issues in the study area.

2. This project is state funded with State Priority Project (SPP) funds. It is listed in Kentucky's *FY 2020 – FY 2026 Highway Plan* as 08-80105.00 and has $1.568 million in Design (2021), $6.078 million in Right-of-Way (2023), $2.92 million in Utilities (2024), and $22.143 million in Construction (2025).

3. There is one KY 90 project to the east of the study area listed in *Kentucky's FY 2020 – 2026 Highway Plan*:

    - KYTC Item No. 08-109.10 includes improving KY 90 from Old Mill Springs Road to the bridge at MP 19.5 (R = $2.6 million, U = $7.7 million, C = $9.1 million). This project includes minor realignment, minor widening, construction of right- and left-turn lanes, and drainage improvements.

4. The goal of this study is to identify and evaluate the need for and scope of potential options to improve safety, mobility, and capacity on KY 90 between KY 90X/KY 1275 and KY 3106 near Monticello, Kentucky.

5. Highlights from the existing conditions analysis were discussed. The study portion of KY 90 is 2.686 miles in length with a posted speed limit of 55 miles per hour (MPH). This two-lane urban minor arterial has 12-foot lanes and 10-foot shoulders. KY 90 was repaved in 2021 with six-inch edgelines using thermoplastic paint as well as rumble strips on both the centerline and edgelines. The section of KY 90 near the KY 1275 intersection has paved shoulders while other sections have gravel shoulders or guardrail.

6. Crash data from the Kentucky State Police database indicates that in the five years between January 1, 2016 and December 31, 2020, a total of 56 crashes were reported on the study portion of KY 90. Of the 56 crashes, there were 19 injury collisions (34%), and 37 property damage only collisions (66%) during this five-year period. Compared to other urban minor arterials in Kentucky, KY 90 has a higher percentage (34%) of injury collisions than average (17%). Rear-end crashes (59 percent) and single vehicle crashes (18 percent) were the most prominent types of collisions. A crash density map was developed to highlight areas with crash clusters. As shown in **Figure 1**, there are high densities of crashes near Access Drive and near Industry Drive.

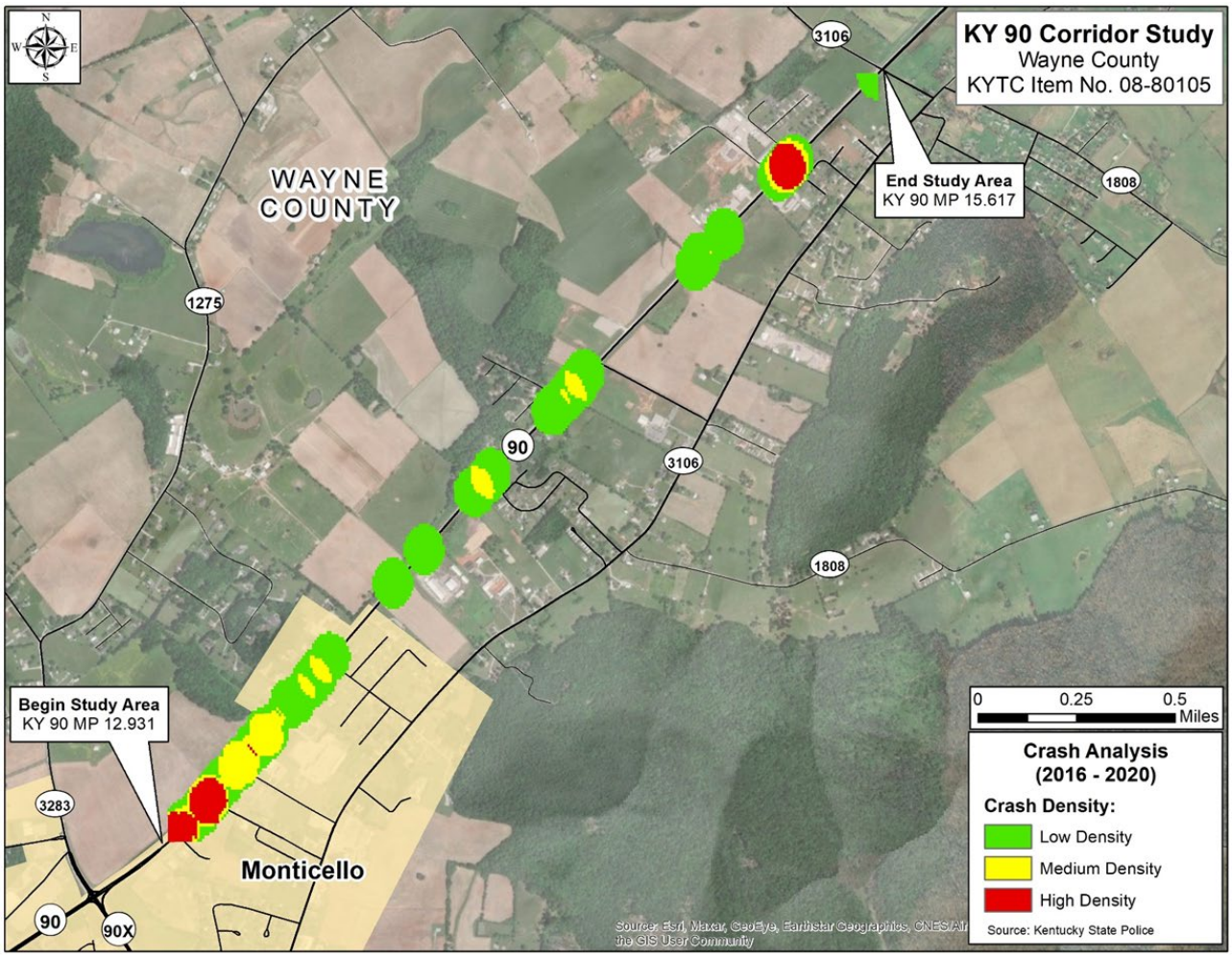


Figure 1: KY 90 Crash Density

- It was noted that there was a general upward trend over the five-year period where crashes increased each year except for 2020, which was likely due to reduced traffic from Covid-19. There were 6 crashes in 2016, 9 crashes in 2017, 13 crashes in 2018, 17 crashes in 2019, and 11 crashes in 2020. It was noted that crashes could decrease due to the new pavement, striping, and rumble strips placed earlier this year.

A more detailed analysis was performed for the injury collisions. While 39 percent of all crashes occurred on wet pavement, 58 percent of injury crashes occurred on wet pavement.

The Crash Data Analysis Tool (CDAT) was used to perform an Excess Expected Crashes (EEC) analysis. EEC is a measure of the crash frequency at a given site compared to what is expected based on current conditions (geometrics, traffic, etc.). A positive EEC indicates more crashes are occurring than should be expected. Results from this analysis showed the study portion of KY 90 with an EEC of -4 crashes per

year, indicating that the route is performing better than expected. Two of eleven intersections on KY 90, Franklin Road/Tate Drive and Cumberland Drive, have slightly positive EECs.

7. Historical KYTC traffic volumes show an Annual Average Daily Traffic (AADT) of 9,600 vehicles per day (VPD) on the study portion of KY 90 with 11.3 percent trucks.

   Level of service (LOS), a qualitative measure describing operational conditions, was used to evaluate the adequacy of the existing roadway. In urban areas like this, LOS D or better is acceptable. Results from a Highway Capacity Software (HCS) analysis revealed that the corridor operates at a LOS B during the AM peak and a LOS C during the PM peak hour, as shown in **Table 1**. (Note: D/C = Demand/Capacity)

   - Question: Is increased summer traffic being considered?
     Answer: While the peak period analyses are based on the October traffic counts for typical weekdays, the project team will take the increased summer and weekend traffic due to Lake Cumberland tourism into consideration.

Table 1: KY 90 Capacity Analysis

Peak Hour	Direction	Avg. LOS	Avg. D/C
AM	NB	B	0.22
	SB	B	0.22
PM	NB	C	0.29
	SB	C	0.32

   Turning movement counts were collected by Stantec at 11 intersections and show peak hour volumes up to 883 vehicles per hour (vph) on KY 90. HCS was also used to analyze peak hour traffic at the intersections, as shown in **Table 2**. All intersections operate at LOS C or better.

8. Preliminary growth rates were developed using the Kentucky Statewide Travel Demand Model (KYSTM), historical KYTC traffic counts, and population projections from the Kentucky State Data Center. While historical traffic trends and Wayne County population projections show slight declines, the KYSTM shows slight growth over the next 25 years. An annual growth rate of 0.3% per year will be used to develop traffic forecasts.

   - Comment: There is potential for development on the western side of the study area behind the Don Franklin car dealership. This property has been purchased and will likely be developed into an industrial park. This will increase traffic at the KY 90 intersection with KY 1275 and the new entrance on KY 90 at Franklin Drive.
   - Comment: A funeral home is also being built on the study corridor and may increase traffic.

Table 2: KY 90 Intersection Capacity Analysis

Intersection	Approach	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
KY 90 at Access Dr.	Access Dr.	B	12.2	C	17.3
KY 90 at Tate Dr.	EB Tate Dr.	B	13.1	C	15.7
	WB Tate Dr.	B	10.8	C	18.4
KY 90 at Cumberland Dr.	Cumberland Dr.	B	12.6	C	18.7
KY 90 at Guinn Dr.	Guinn Dr.	B	13.3	B	12.1
KY 90 at Francie Blvd.	Francie Blvd.	B	12.6	B	10.5
KY 90 at Eastview Sub Rd.	Eastview Sub Rd.	B	13.1	B	14.3
KY 90 at Kings Hwy.	Kings Hwy.	A	9.2	B	13.6
KY 90 at Sunstar Blvd.	Sunstar Blvd.	A	8.9	B	11.2
KY 90 at Farmington Rd.	Farmington Rd.	B	11.7	A	9.5
KY 90 at Industry Dr.	Industry Dr.	B	12.3	B	14.9
KY 90 at Cooley Ln.	EB Cooley Ln.	B	10.5	B	12.0
	WB Cooley Ln.	B	13.8	C	18.0

9. A MetroQuest survey was developed to solicit feedback from the local officials and stakeholders. This survey is intended to give local officials/stakeholders the opportunity to identify KY 90 transportation issues and to provide potential improvement ideas. **Figure 2** presents the opening page of the online survey.

10. The next steps are to develop traffic forecasts, analyze results from the local officials/stakeholder MetroQuest survey, and begin the improvement concept development process.
    - Question: Have improvement concepts already been developed?
      Answer: No, improvement concepts will be developed based on results from the existing conditions analyses and feedback from the project team and local officials.
    - Comment: The soccer field on KY 90 will no longer be used by Wayne County schools in 3-5 years. The fields, however, could be used for youth soccer events.
    - It was noted that Senator Rick Girdler's re-districted area, if approved, will include Wayne County and he should be sent the MetroQuest survey link. He will also be invited to the second local officials/stakeholder meeting.

The meeting ended at approximately 2:30 p.m. EST.

Figure 2: MetroQuest Survey

Meeting Minutes

TO:

Stephen De Witte
Co-Project Manager
KYTC Central Office
200 Mero Street
Frankfort, KY 40622

Jeff Dick
Co-Project Manager
KYTC District Office #8
1660 US 27
Somerset, KY 42501

FROM: Dan O'Dea
Project Manager
Stantec Consulting Services Inc.

DATE: June 29, 2022

SUBJECT: KY 90 Corridor Study
KY 90 (MP 12.931 – MP 15.617)
Wayne County
KYTC Item No. 08-80105
Project Team Meeting No. 2

The second Project Team Meeting for the subject project was held in person at the KYTC District 8 office in Somerset, KY and virtually via Microsoft Teams on May 24, 2022, at 1:00 p.m. EST. The following individuals were in attendance:

Jeff Dick	KYTC – District 8
Mark Foster	KYTC – District 8
Stewart Gilreath	KYTC – District 8
Mallory Frye	KYTC – District 8
Joe Gossage	KYTC – District 8
James Jones	KYTC – District 8
Conley Moren	KYTC – District 8
Amanda Parmley*	KYTC – District 8
David Souleyrette*	KYTC – Central Office Planning
Scott Thomson*	KYTC – Central Office Planning
Brian Aldridge*	Stantec Consulting Services Inc.
Hayden Chism	Stantec Consulting Services Inc.
Dan O'Dea	Stantec Consulting Services Inc.
Len Harper	Stantec Consulting Services Inc.
Graham Winchester	Stantec Consulting Services Inc.

*Joined via Microsoft Teams

Dan O'Dea welcomed everyone and delivered a presentation on the progress to-date for the KY 90 Corridor Study. The following enumerated items were discussed:

1. The purpose of this meeting is to present the results from the first round of public involvement and to get feedback from the project team on preliminary involvement concepts.

2. This project is state funded with State Priority Project (SPP) funds. It is listed in Kentucky's *FY 2020 – FY 2026 Highway Plan* as 08-80105.00 and has $1.568 million in Design (2021), $6.078 million in Right-of-Way (2023), $2.92 million in Utilities (2024), and $22.143 million in Construction (2025).

3. The goal of this study is to identify and evaluate the need for and scope of potential improvement options to improve safety, mobility, and capacity of KY 90 in the study area.

4. Highlights from the existing conditions analysis were discussed. The study portion of KY 90 is 2.686 miles in length and begins at MP 12.931 and ends at MP 15.617. Turning movement counts were conducted at each of the 11 intersections with public streets along the study corridor. There are no signalized intersections along the study portion of KY 90.

5. Existing KYTC traffic counts show the study portion of KY 90 carries 9,600 vehicles per day (VPD) with 11.3 percent trucks. Future year (2045) traffic forecasts were developed using historical KYTC traffic counts, population data from the KY State Data Center, and the Kentucky Statewide Travel Demand Model (KYSTM). Based on these data sources, an annual growth rate of 0.3 percent per year was used to forecast traffic on the corridor. Daily traffic on the study portion of KY 90 is anticipated to be 10,500 VPD in 2045.

   The Highway Capacity Software (HCS) Two-Lane Highway and Stop-Controlled Intersection Modules were used to analyze existing and future traffic. Based on results from the analyses, the corridor and all intersections are currently operating at Level of Service (LOS) C or better. Existing peak hour traffic would have to increase by 50 percent for mainline KY 90 to operate at LOS D. In 2045, KY 90 and the study are intersections are still expected to operate at LOS C or better, as shown in **Table 1** and **Table 2**. Based on the 2045 HCS Intersection Analysis, an annual growth rate of 1.8 percent would be required for the study area corridor to operate at LOS D, and an annual growth rate of 3.1 percent would be required for the study area corridor to operate at LOS E.

   - It was noted that Tate Drive is a four-way intersection where the Industrial Park is currently being developed.

Table 1: 2045 HCS KY 90 Corridor Analysis

Peak Hour	Direction	Avg. LOS	Avg. Demand-to-Capacity Ratio
AM	NB	B	0.24
	SB	B	0.23
PM	NB	C	0.31
	SB	C	0.33

Table 2: 2045 HCS KY 90 Intersection Analysis

Intersection	Approach	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
KY 90 at Access Dr.	Access Dr.	B	12.8	B	14.8
KY 90 at Tate Dr.	EB Tate Dr.	B	11.2	C	16.4
	WB Tate Dr.	B	13.9	C	19.1
KY 90 at Cumberland Dr.	Cumberland Dr.	B	13.5	C	20.9
KY 90 at Guinn Dr.	Guinn Dr.	B	14.0	B	13.1
KY 90 at Francie Blvd.	Francie Blvd.	B	13.5	B	10.9
KY 90 at Eastview Sub Rd.	Eastview Sub Rd.	B	13.6	C	15.1
KY 90 at Kings Hwy.	Kings Hwy.	A	9.5	B	14.6
KY 90 at Sunstar Blvd.	Sunstar Blvd.	A	9.1	B	12.1
KY 90 at Farmington Rd.	Farmington Rd.	B	12.2	B	10.0
KY 90 at Industry Dr.	Industry Dr.	B	13.0	C	15.8
KY 90 at Cooley Ln.	EB Cooley Ln.	B	11.0	B	12.6
	WB Cooley Ln.	B	14.7	C	20.4

6. There was a discussion related to the feedback from the first round of public outreach. A MetroQuest online survey was made available to local officials and stakeholders after the first Advisory Committee Meeting. The survey asked participants to rank their top five transportation concerns along the KY 90 corridor. The top five concerns among the collective responses include: 1) lack of turn lanes, 2) safety issues (tied), 2) lack of passing opportunities (tied), 4) too many entrances/driveways, and 5) traffic congestion (tied), 5) excessive speeds (tied) as shown in **Figure 1**.

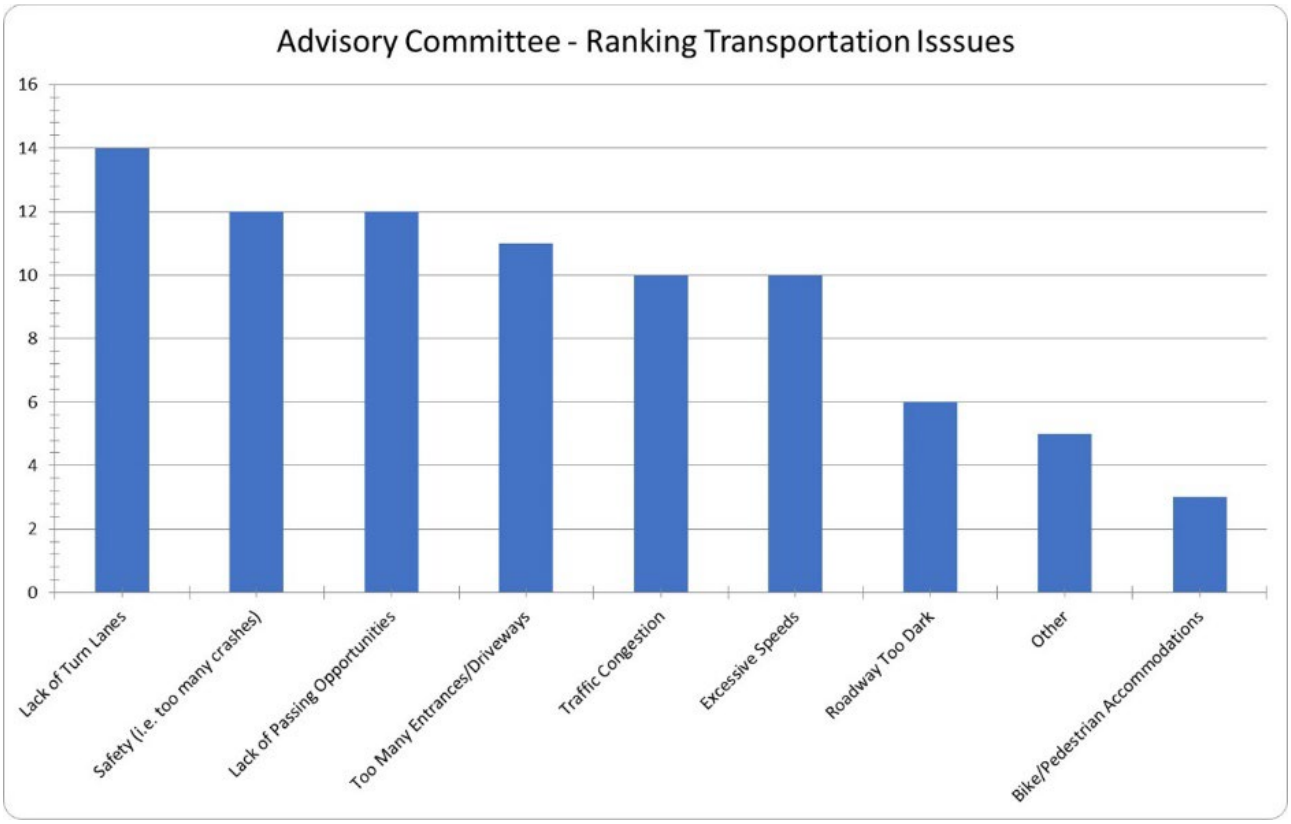


Figure 1: Online Survey "Ranking Transportation Issues"

Respondents of the online survey were asked to indicate concerns and potential improvements related to safety and congestion along the corridor. **Figure 2** presents the locations of safety concerns along the corridor. Most of the intersections were highlighted as needing turn lanes and it was noted that it is difficult to enter/exit KY 90 at several of the intersections. **Figure 3** presents the locations of congestion concerns as noted by the Advisory Committee. Most of the congestion-related issues were due to stopped (left-turning) vehicles blocking through traffic on KY 90 and drivers having trouble turning onto KY 90 from side streets.

The Advisory Committee was then asked to identify potential improvement ideas along KY 90. **Figure 4** shows the locations of the identified improvements.

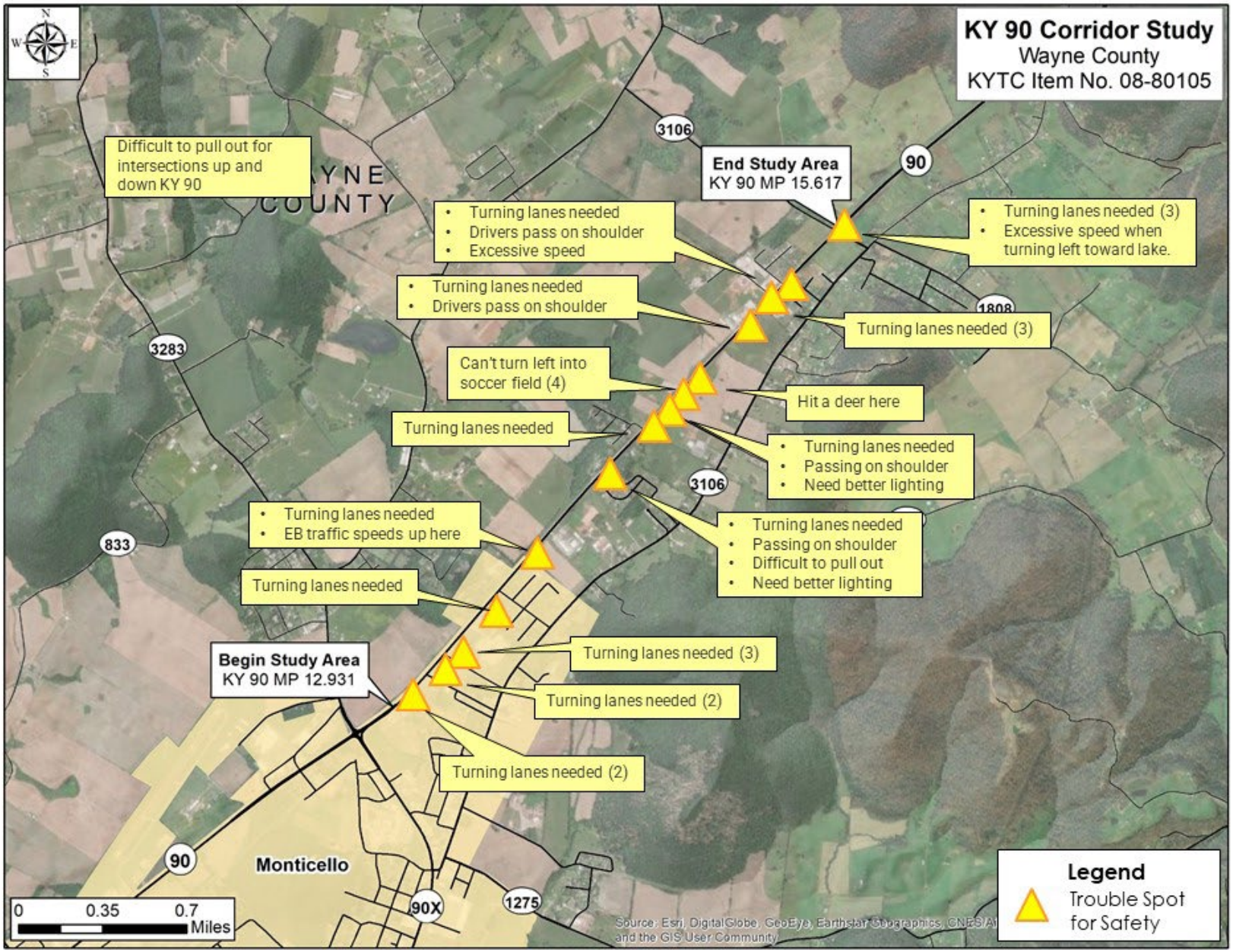


Figure 2: Safety Concerns from Online Survey

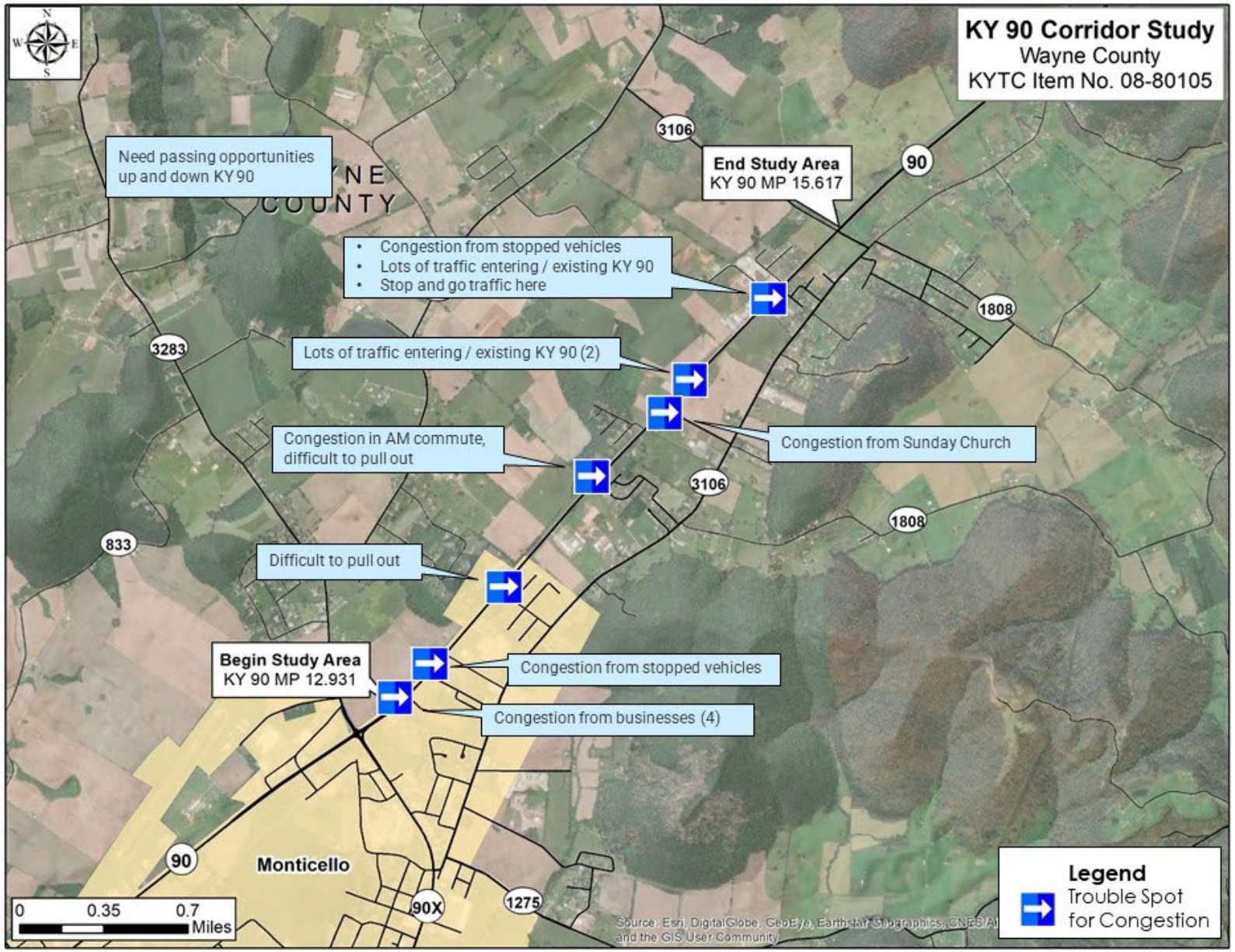


Figure 3: Congestion Concerns from Online Survey

Stantec

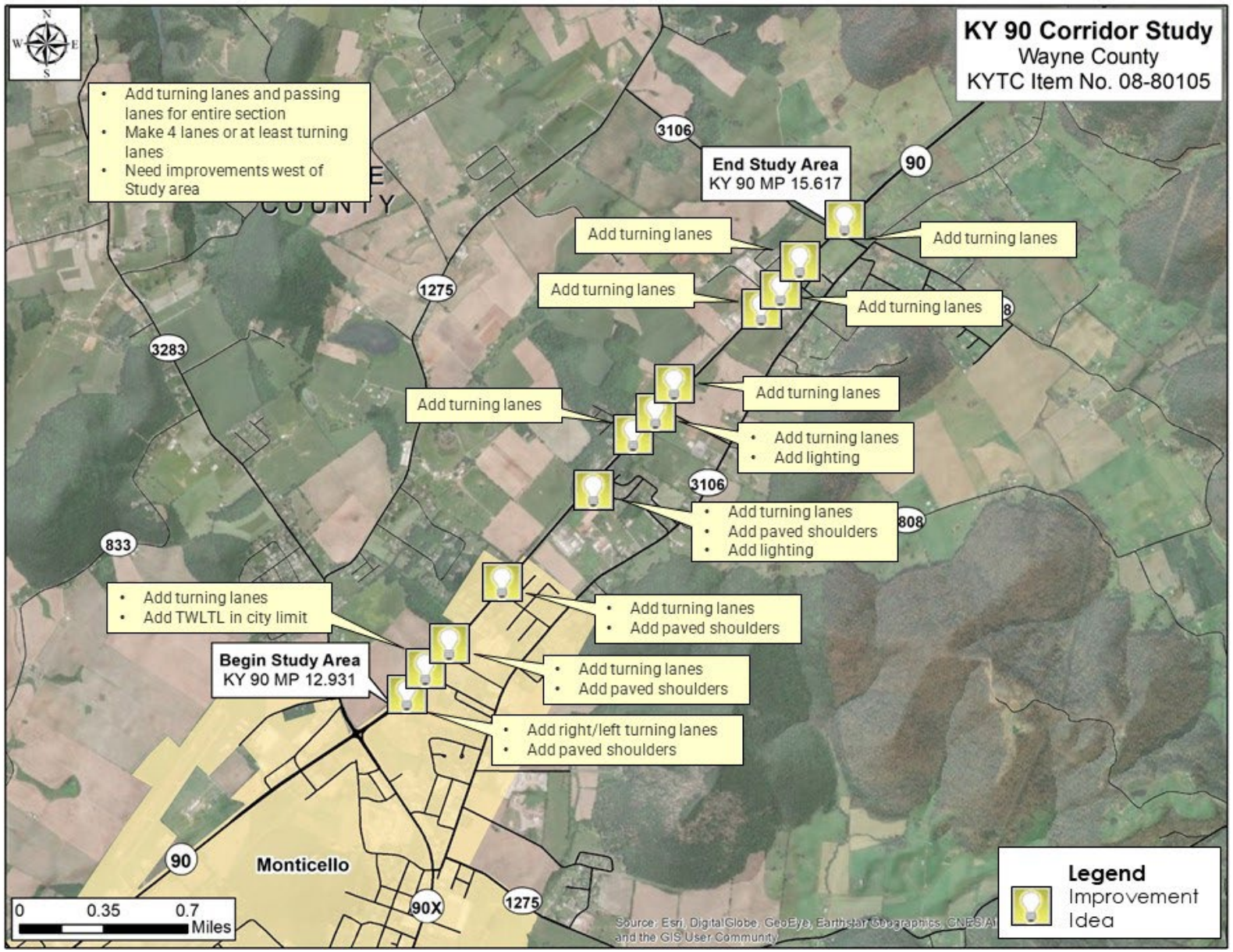


Figure 4: Improvement Ideas from Online Survey

Stantec

Results from the Advisory Committee survey revealed that most of the safety and congestion issues along KY 90 are at the intersections. Drivers are particularly concerned with the lack of turning and passing opportunities, peak hour congestion, excessive speeds along the corridor, inadequate lighting, and difficulty exiting intersections onto KY 90. The key suggested improvements from the survey results are additional turning lanes, paved shoulders to pass vehicles turning left, and additional lighting at some intersections. The following provides a summary of concerns and suggested improvements at each of the 11 intersections.

- **KY 90 at Access Dr**
    - Concerns: congestion, lack of turning lanes68
    - Suggested Improvements: additional turn lanes, paved shoulders
- **KY 90 at Tate Dr**
    - Concerns: congestion, lack of turning lanes
    - Suggested Improvements: additional turn lanes, paved shoulders, two-way left-turn lane within city limit
- **KY 90 at Cumberland Dr**
    - Concerns: congestion, lack of turning lanes
    - Suggested Improvement: additional turn lanes, two-way left-turn lane within city limit
- **KY 90 at Guinn Dr**
    - Concerns: difficulty turning onto KY 90, lack of turning lanes, eastbound traffic speeds up
    - Suggested Improvement: additional turn lanes, paved shoulders
- **KY 90 at Hill and Dale Sub**
    - Concerns: congestion during AM Peak, difficulty turning onto KY 90, lack of turning lanes, inadequate lighting, illegal passing
    - Suggested Improvement: additional turn lanes, paved shoulder, additional lighting
- **KY 90 at Flint Ridge Rd/Sumac Rd**
    - Concerns: congestion during AM Peak, difficulty turning onto KY 90, lack of turning lanes
    - Suggested Improvement: additional turn lanes
- **KY 90 at The Kings Hwy**
    - Concerns: congestion, difficulty entering/exiting, inadequate lighting, illegal passing, animals on roadway
    - Suggested Improvement: additional turn lanes, additional lighting
- **KY 90 at Sunstar Blvd**
    - Concerns: congestion, difficulty entering/exiting, excessive speeds, illegal passing, lack of turn lanes
    - Suggested Improvement: additional turn lanes
- **KY 90 at Farmington Square**

    - Concerns: congestion, difficulty entering/exiting, excessive speeds, illegal passing, lack of turn lanes
    - Suggested Improvement: additional turn lanes
- **KY 90 at Industry Dr**
    - Concerns: congestion, difficulty entering/exiting, excessive speeds, illegal passing, lack of turn lanes
    - Suggested Improvement: additional turn lanes
- **KY 90 at Cooley Ln**
    - Concerns: lack of turning lanes, excessive speeds
    - Suggested Improvement: additional turn lanes

7. Dan then led a discussion on the use of paved shoulders within the KY 90 study corridor. Per KYTC Highway Design Geometric Guidelines HD-702.10.2, the shoulder is a portion of roadway contiguous to the travel way and is only meant for use by stopped vehicles, emergency vehicles, lateral support of the pavement, and bicycle traffic.

   Although paving the gravel shoulder along KY 90 was a popular improvement idea by the Advisory Committee, the project team determined that the paved shoulders will not be widened as a stand-alone project, as this would encourage drivers to use it to pass turning vehicles. Paving the shoulders will, however, still be considered as part of other improvement options.

   - It was noted that paved shoulders would allow for more efficient passage of Emergency Vehicles. Currently, cars do not move to the gravel shoulder to let the Emergency Vehicles pass.
   - KYTC Maintenance would prefer to eliminate gravel shoulders from the corridor and use either pavement or dirt shoulders.
   - Question: How many crashes were due to passing vehicles?
     Answer: Of the 56 crashes that occurred along the KY 90 corridor from 2016 to 2020, two of the crashes were sideswipes collisions where both vehicles were moving in the same direction.

8. Turning lane evaluations were performed using 2021 turning movement counts for the 11 intersections (**Appendix A**) by using the KYTC Turn Lane Warrant Spreadsheet which is based on guidelines in the Highway Design Manual (Sections HD-902.11.3 and HD-92.12). For the evaluation of left-turn lanes, the spreadsheet plots the intersection of the advancing and opposing volumes as well as a line (L%) corresponding to the percent of left turns of advancing traffic. If the point of intersection of advancing and opposing volumes is located to the right of line (L%), then there is a greater than 1% chance of an advancing vehicle arriving at the intersection while it is blocked by a turning vehicle, indicating the value of providing a left turn lane. Warrants for left-turn lanes are not satisfied for any of the intersections on KY 90 as shown is **Table 3.**

   The percentage of advancing, opposing, and left-turn traffic on KY 90 would need to increase significantly to warrant a left-turn lane, as shown in **Table 4.**

Alternatively, left-turn lanes would be warranted if the number of left-turning vehicles increased, as shown in **Table 5**. This additional turning traffic could be prompted by additional developments along the corridor.

Similarly, for the evaluation of right-turn lanes, the KYTC Turn Lane Warrant Spreadsheet plots the intersection of the advancing volumes and the right-turn percentage. If the intersection of the advancing volumes and right-turn percentage is to the right of the corresponding line, then there is an increased probability of an advancing vehicle arriving at the intersection while it is blocked by a turning vehicle, indicating the value of providing a right turn lane. Warrants for left-turn lanes are not satisfied for any of the intersections on KY 90 as shown is **Table 6**.

Table 3: KY 90 Hourly Left Turn Evaluations (HD-902.11.3)

Intersection	Direction	Advancing (L+T+R)	Lefts	%Lefts	Opposing (L+T+R)	Graph intersect on right side of L% Line?
KY 90 at Access Dr.	Northbound	448	NA	NA	456	
	Southbound	456	10	2.2%	448	N
KY 90 at Tate Dr.	Northbound	447	0	0.0%	455	N
	Southbound	455	2	0.4%	447	N
KY 90 at Cumberland Dr.	Northbound	445	NA	NA	439	
	Southbound	439	5	1.1%	445	N
KY 90 at Guinn Dr.	Northbound	425	NA	NA	432	
	Southbound	432	6	1.4%	425	N
KY 90 at Francie Dr.	Northbound	431	NA	NA	437	
	Southbound	437	9	2.1%	431	N
KY 90 at Flint Rd.	Northbound	400	4	1.0%	429	N
	Southbound	429	NA	NA	400	
KY 90 at Kings Highway	Northbound	399	NA	NA	432	
	Southbound	432	12	2.8%	399	N
KY 90 at Sunstar Blvd.	Northbound	381	4	1.0%	421	N
	Southbound	421	NA	NA	381	
KY 90 at Farmington Ave.	Northbound	373	NA	NA	420	
	Southbound	420	1	0.2%	373	N
KY 90 at Brandon Dr.	Northbound	368	5	1.4%	419	N
	Southbound	419	NA	NA	368	
KY 90 at KY 3106	Northbound	379	12	3.2%	428	N
	Southbound	428	6	1.4%	379	N

Table 4: KY 90 Hourly Left Turn Evaluations - Increase Volume (%) to Warrant LT Lane

Intersection	Direction	Advancing (L+T+R)	Lefts	%Lefts	Opposing (L+T+R)	Graph intersect on right side of L% Line?	Added Volume	Added Lefts	% DHV Increase
KY 90 at Access Dr.	Northbound	515	NA	NA	524				
	Southbound	524	12	2.2%	515	Y	68	2	15%
KY 90 at Tate Dr.	Northbound	1100	0	0.0%	1119	NA	NA		NA
	Southbound	1119	2	0.2%	1100	Y	664	0	146%
KY 90 at Cumberland Dr.	Northbound	668	NA	NA	659				
	Southbound	659	8	1.1%	668	Y	220	3	50%
KY 90 at Guinn Dr.	Northbound	604	NA	NA	613				
	Southbound	613	9	1.4%	604	Y	181	3	42%
KY 90 at Francie Dr.	Northbound	552	NA	NA	559				
	Southbound	559	12	2.1%	552	Y	122	3	28%
KY 90 at Flint Rd.	Northbound	656	7	1.0%	704	Y	256	3	64%
	Southbound	704	NA	NA	656				
KY 90 at Kings Highway	Northbound	463	NA	NA	501				
	Southbound	501	14	2.8%	463	Y	69	2	16%
KY 90 at Sunstar Blvd.	Northbound	636	7	1.0%	703	Y	255	3	67%
	Southbound	703	NA	NA	636				
KY 90 at Farmington Ave.	Northbound	933	NA	NA	1050				
	Southbound	1050	3	0.2%	933	Y	630	2	150%
KY 90 at Brandon Dr.	Northbound	615	8	1.4%	700	Y	247	3	67%
	Southbound	700	NA	NA	615				
KY 90 at KY 3106	Northbound	455	14	3.2%	514	Y	76	2	20%
	Southbound	514	7	1.4%	455	NA	NA		20%

Table 5: KY 90 Hourly Left Turn Evaluations – Increase # of Lefts To Warrant LT Lane

Intersection	Direction	Advancing (L+T+R)	Lefts	%Lefts	Opposing (L+T+R)	Graph intersect on right side of L% Line?	Added Lefts	% Left Increase
KY 90 at Access Dr.	Northbound	456	NA	NA	456			
	Southbound	456	17	3.73%	456	Y	7	70%
KY 90 at Tate Dr.	Northbound	457	17	3.72%	455	Y	17	NA
	Southbound	455	17	3.74%	457	Y	15	750%
KY 90 at Cumberland Dr.	Northbound	445	NA	NA	439			
	Southbound	439	18	4.10%	445	Y	13	260%
KY 90 at Guinn Dr.	Northbound	425	NA	NA	432			
	Southbound	432	18	4.17%	425	Y	12	200%
KY 90 at Francie Dr.	Northbound	423	NA	NA	437			
	Southbound	437	18	4.12%	423	Y	9	100%
KY 90 at Flint Rd.	Northbound	400	20	5.00%	429	Y	16	400%
	Southbound	429	NA	NA	400			
KY 90 at Kings Highway	Northbound	399	NA	NA	432			
	Southbound	432	21	4.86%	399	Y	9	75%
KY 90 at Sunstar Blvd.	Northbound	381	21	5.51%	421	Y	17	425%
	Southbound	421	NA	NA	381			
KY 90 at Farmington Ave.	Northbound	373	NA	NA	420			
	Southbound	420	22	5.24%	373	Y	21	2100%
KY 90 at Brandon Dr.	Northbound	368	21	5.71%	419	Y	16	320%
	Southbound	419	NA	NA	368			
KY 90 at KY 3106	Northbound	379	21	5.54%	428	Y	9	75%
	Southbound	428	22	5.14%	379	Y	16	267%

Table 6: KY 90 Hourly Right Turn Evaluations (HD-902.12.2)

Intersection	Direction	Advancing (L+T+R)	Rights	%Rights	Graph intersect above / right side of curve?
KY 90 at Access Dr.	Northbound	448	40	8.9%	N
	Southbound	456	NA	NA	
KY 90 at Tate Dr.	Northbound	447	14	3.1%	N
	Southbound	455	3	0.7%	N
KY 90 at Cumberland Dr.	Northbound	445	23	5.2%	N
	Southbound	439	NA	NA	
KY 90 at Guinn Dr.	Northbound	425	12	2.8%	N
	Southbound	432	NA	NA	
KY 90 at Francie Dr.	Northbound	431	9	2.1%	N
	Southbound	437	NA	NA	
KY 90 at Flint Rd.	Northbound	400	NA	NA	
	Southbound	429	2	0.5%	N
KY 90 at Kings Highway	Northbound	399	4	1.0%	N
	Southbound	432	24	5.6%	N
KY 90 at Sunstar Blvd.	Northbound	381	NA	NA	
	Southbound	421	2	0.5%	N
KY 90 at Farmington Ave.	Northbound	373	4	1.1%	N
	Southbound	420	NA	NA	N
KY 90 at Brandon Dr.	Northbound	368	NA	NA	
	Southbound	419	16	3.8%	N
KY 90 at KY 3106	Northbound	379	16	4.2%	N
	Southbound	428	13	3.0%	N

- Question: Is the "2100% increase" value used for the left-turn lane analysis at southbound Farmington Avenue accurate?
  Answer: Yes. There was only one left turn recorded at Farmington Avenue. To satisfy the warrants for adding a left-turn lane, a total of 22 left-turns would be needed, which is a 2100 percent increase.
- Question: Do the left-turn warrants apply to the existing conditions only?
  Answer: Yes. Turning movement forecasts are rounded and do not provide enough precision to analyze left-turn warrants for future traffic.

9. A discussion was held on intersection lighting. KYTC Traffic Operation Guidance Manual (TO-709 "Intersection Lighting") provides warrants for the installation of intersection lighting. A crash analysis was performed for all nighttime crashes between 2016 and 2020 which indicated that warrants for intersection lighting were not satisfied. KYTC Traffic Operation Guidance Manual (TO-710 "Intersection Delineation Lighting") addresses lighting which essentially illuminates an area to guide motorists of the upcoming intersection or the area that the vehicle is exiting. Intersection delineation lighting is warranted if a local agency supports the installation and is willing to install and maintain such lighting through the encroachment permit process. Delineation lighting does not need to be approved by KYTC, but funding must come from an outside source (businesses, cities, etc.). Intersection Delineation Lighting already exists at 7 of the intersections.

10. Dan then led a discussion of preliminary improvement concepts.

Short-Term Improvements

- **Intersection improvements**
  Side road signs could be installed at intersections along the study corridor to warn drivers of approaching access points and potential turning traffic particularly at locations without intersection delineation lighting. It is recommended that signs (30" x 30") are placed 325 feet in advance of an intersection with supplemental street name plaques, as shown below.

    - It was recommended that Side Road (MUTCD W2-1 or W2-2/WW2-3) signs could be installed at the 3 unlit intersections, Cooley Drive, Kings Blvd., and Francie Blvd.

- **Spot Improvements**

Although left-turn lanes are not warranted based on current vehicular traffic, turn lanes could be considered as safety improvements. Based on results from the Crash Density Heat Map, shown in **Figure 5**, there are two areas where the crash density is higher; 1. the southern area between Access Drive and Tate Drive and 2. the northern area near Sunstar Boulevard. One option is to provide a center two-way left-turn lane (TWLTL) for a section of KY 90 at each of these locations. The proposed typical section is shown in **Figure 6**.

- Comment: the transitions between typical sections could cause concerns.
- Comment: consider using positive offsets, such as a two-foot offset, for the transition areas between different typical sections.
- Comment: the use of dedicated left-turn lanes instead of a TWLTL could encourage density and remove the need for additional access points.
- Question: Should we instead consider dedicated left-turn lanes near Sunstar Boulevard?
  Answer: The spacing of the access points surrounding the gas station could make dedicated left-turn lanes difficult. It will be considered moving forward.
- Comment: It was decided that the edge of shoulder would be maintained for the TWLTL option to keep from widening the roadway. One example could be 5-foot paved shoulders, 12-foot through lanes, and 14-foot TWLTL.
- Question: Should any improvements be made at the KY 3106 intersection?
  Answer: The KY 3106 intersection did not have a high crash rate; however, it will be considered for improvements because it serves as a direct access to Lake Cumberland during.
- Question: Could any of the crashes near Sunstar Blvd be caused by glare?
  Answer: The current crash reports do not mention "glare" as a cause of any of the crashes.

Long-Term Improvements

- **Construct TWLTL through the entire KY 90 Study Corridor**

  - Comment: There was a concern that people may use the TWLTL as a passing lane. In other sections of KY 90 that have a TWLTL, using "No Passing" signs did not prevent drivers from using the center lane to pass.
  - Question: Would a 2+1 work as an improvement concept?
    Answer: A 2+1 would not work because the left-turn lane would also be the passing lane. The corridor is also too dense with too many access points and is not long enough to accommodate the extended acceleration/deceleration lanes of a 2+1.

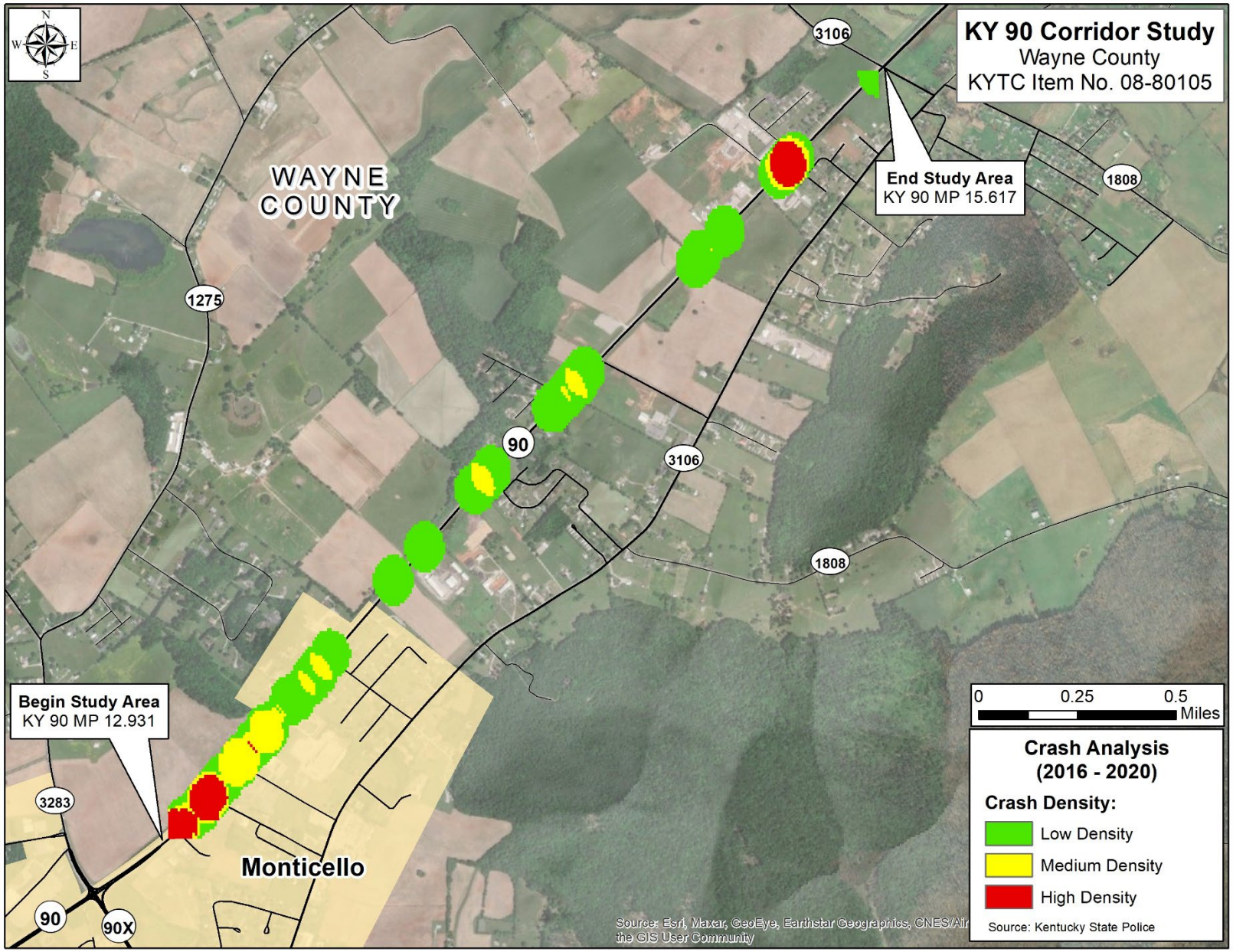


Figure 5: Crash Heat Density Map

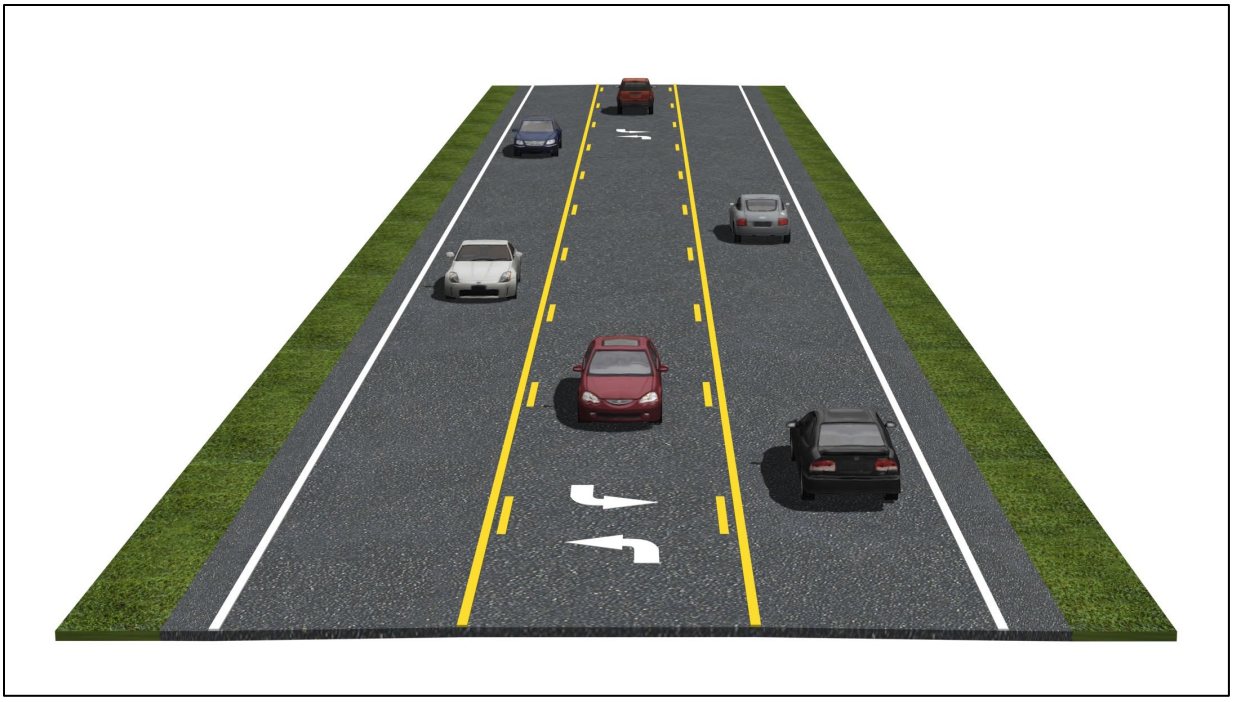


Figure 6: Proposed Typical Section

Transportation Systems Management and Operations (TSMO)

- **Driver Feedback Signs**

  Driver Feedback Signs are used to display the speed of motorists that are approaching the sign. Based on HERE speed data, the 85th percentile on the study portion of KY 90 is 56.6 mph during the AM peak, 56.9 mph during the PM peak, and 56.6 mph during the off peak. Based on a review of the crash data, June had the highest number of crashes with nine crashes, while the months of May, August, September, and October had six crashes each. June is the beginning of tourism season in Wayne County as more people travel through the county to access Lake Cumberland. Because of the increased lake traffic, the month of June would be a likely candidate for consideration for temporary placement of a portable driver feedback sign.

- **Variable Speed Limit Signs and Variable Advisory Speed Limit Signs**

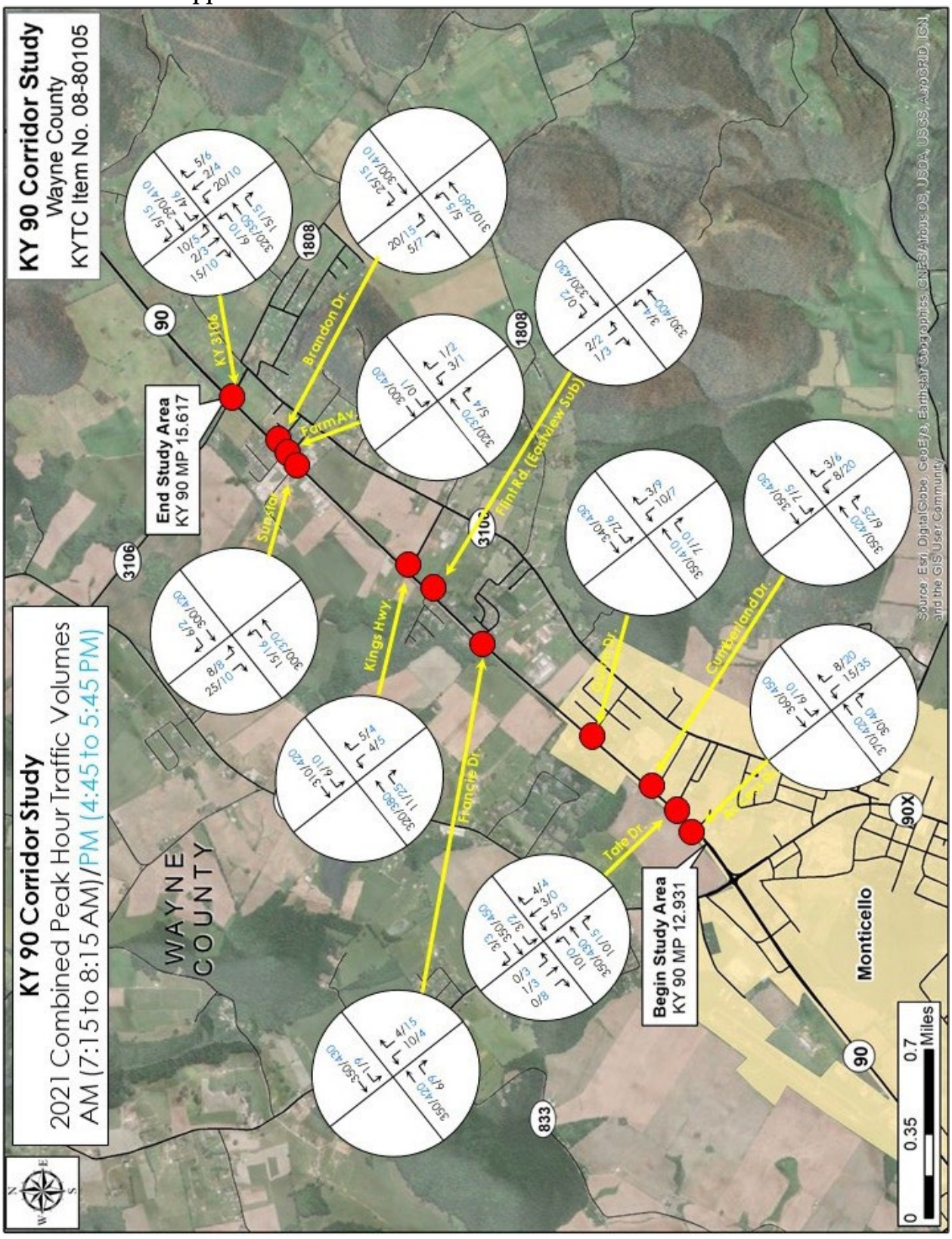
  A variable speed limit sign and a variable advisory speed limit sign are changeable message signs that are used to display speed limits that change based on ambient or operational conditions. Variable speed limits (regulatory) are currently not an option for use in Kentucky. Although not common, a variable advisory speed limit sign (warning) is a speed recommendation traffic control device for specified times. Based on a review of the crash data, 18 percent of crashes occur between 4 p.m. and 5 p.m.

Further analysis and discussion would be required to determine if the application of this warning device would be considered as a potential countermeasure to reduce crashes when activated.

11. Next Steps: Based on previous comments during the Advisory Committee Meeting, the Project Team made the decision to collect turning movement counts on KY 90 during a busy lake weekend at four intersections (Tate Drive, Sunstar Boulevard, Brandon Drive, and KY 3106 (Cooley Drive). Twelve-hour counts will be collected by Stantec on Friday June 17th and Saturday June 18th which coincides with expected higher traffic from the Thunder Run at Lake Cumberland. Stantec will coordinate with KYTC Division of Planning about a Contract Modification for these counts. Once the counts are collected, the next steps are to refine the discussed improvement concepts, acquire right-of-way and utility cost estimates from District 8 if needed, perform a Benefit/Cost Analysis (based on crash reduction), and schedule the Advisory Team Meeting No. 2 and Project Team Meeting No. 3.

The meeting ended at approximately 2:30 p.m. EST.

Appendix A – 2021 Combined Peak Hour Traffic Volumes



Meeting Minutes

TO:

Stephen De Witte
Co-Project Manager
KYTC Central Office
200 Mero Street
Frankfort, KY 40622

Jeff Dick
Co-Project Manager
KYTC District Office #8
1660 US 27
Somerset, KY 42501

FROM: Dan O'Dea
Project Manager
Stantec Consulting Services Inc.

DATE: August 22, 2022

SUBJECT: KY 90 Corridor Study
KY 90 (MP 12.931 – MP 15.617)
Wayne County
KYTC Item No. 08-80105
Follow-up Project Team Meeting

A follow-up Project Team Meeting for the subject project was held virtually via Microsoft Teams on July 18, 2022, at 2:00 p.m. EST. The following individuals were in attendance:

Stephen De Witte	KYTC – Central Office Planning
Jeff Dick	KYTC – District 8
Mallory Frye	KYTC – District 8
Joe Gossage	KYTC – District 8
Dave Heil	KYTC – Central Office Planning
James Jones	KYTC – District 8
Amanda Parmley	KYTC – District 8
Randy Turner	KYTC – District 8
Brian Aldridge	Stantec Consulting Services Inc.
Hayden Chism	Stantec Consulting Services Inc.
Dan O'Dea	Stantec Consulting Services Inc.
Len Harper	Stantec Consulting Services Inc.
Graham Winchester	Stantec Consulting Services Inc.

Dan O'Dea welcomed everyone and delivered a presentation on the progress to-date for the KY 90 Corridor Study. The following enumerated items were discussed:

1. The purpose of the meeting was to update the project team on the results of the weekend turning movement counts collected on June 17th and 18th during the Thunder Run special event weekend at Lake Cumberland.
2. Dan presented a summary of the turning movement counts
    - Friday (6/17) traffic increased by 11% while the Saturday (6/18) traffic decreased by 13% when compared to the count collected on October 27, 2021.
    - Question: Did we look at trucks with boats?
        - Answer: Yes, we have noted truck percentage and percentage of vehicles with boats.
3. The project team then had a discussion:
    - Left-turn Lane warrants were met for two hours at the Valero intersection and for two hours at the KY 3106 intersection for the Friday counts
    - It was noted that turn lanes are generally not built for special event weekend traffic.
    - Question: Should we recommend restricting passing in front of Valero?
        - Answer: If head-on and angle collisions were prevalent in the vicinity, no passing zones could be considered based on entrance density. Since these crash types are not prevalent, District 8 Traffic recommends keeping this passing opportunity.
        - Question: What were the collisions in the passing zone?
            - Answer: There were 5 rear end collisions, one single vehicle collision, and one angle collision over the five-year analysis period between 2016 and 2020.
    - It was noted that the Excess Expected Crashes (EEC) analysis showed that KY 90 had fewer crashes than expected over the analysis period. There were three intersections with EEC's above 0, but all were below 0.5.
    - The project team discussed the improvement concept of paved shoulders. It was noted that paved shoulders would allow for more efficient passage of Emergency Vehicles. Currently, cars do not move to the gravel shoulder to let the Emergency Vehicles pass. Also, KYTC Maintenance would prefer to eliminate gravel shoulders from the corridor and use either pavement or dirt shoulders. The decision was made by the project team to include paved shoulders as an option for a stand-alone improvement concept.
    - Question: Can the project team make a "Do Nothing" recommendation?
        - Answer: Yes – the project team can present concepts for future consideration if traffic patterns change, with a "Do Nothing" recommendation in report based on the existing and future data analysis conducted as part of this study.
    - Question: What should we show to the Advisory Committee?
        - Answer: Discuss the latest traffic counts and present improvements for future consideration. The following improvement concepts will be presented for future consideration:
            - Paved Shoulders with Deep Rumble Strips on Edge Line
            - Center Two-Way Left Turn Lane (TWTL) in Monticello
    - Stantec will provide construction costs and perform a benefit-cost analysis based on the potential for crash reduction.

- Question: Should we consider a four-lane option? How much traffic would be needed?
    - Answer: No, at least 15,000 VPD – 20,000 VPD would be needed before a four-lane concept is considered. The 2045 estimate is 10,500 VPD.
- Question: Should the advisory committee meeting be in-person or virtual?
    - Answer: The meeting will be in-person likely in late August / early September. The Aspire Center in Monticello is a possible location to host the meeting.

The meeting ended at approximately 2:30 p.m. EST.

Meeting Minutes

TO:	Stephen De Witte Co-Project Manager KYTC Central Office 200 Mero Street Frankfort, KY 40622	Jeff Dick Co-Project Manager KYTC District Office #8 1660 US 27 Somerset, KY 42501

FROM: Dan O'Dea
Project Manager
Stantec Consulting Services Inc.

DATE: September 8, 2022

SUBJECT: KY 90 Corridor Study
KY 90 (MP 12.931 – MP 15.617)
Wayne County
KYTC Item No. 08-80105
Advisory Committee Meeting No. 2

The second Advisory Committee Meeting for the subject project was held at the UK Wayne County Cooperative Extension Office in Monticello, KY and virtually via Microsoft Teams on September 1, 2022, at 10:30 a.m. EDT. The following individuals were in attendance:

Lyndsey Brown	Lake Cumberland Area Development District (LCADD)
Ian Cole	Lake Cumberland Area Development District (LCADD)
Stephen DeWitte*	KYTC – Central Office Planning
Jeff Dick	KYTC – District 8
Dwight Dobbs	Wayne County Schools
Joe Gossage	KYTC – District 8
Dave Heil	KYTC – Central Office Planning
James Jones	KYTC – District 8
Conley Moren*	KYTC – District 8
Amanda Parmley*	KYTC – District 8
Ken Upchurch	Kentucky House of Representatives
Brian Aldridge*	Stantec Consulting Services Inc.
Dan O'Dea	Stantec Consulting Services Inc.
Len Harper	Stantec Consulting Services Inc.
Graham Winchester	Stantec Consulting Services Inc.

*Attended virtually via Microsoft Teams

Dan O'Dea welcomed everyone and led introductions. The purpose of the meeting was to discuss the progress to-date for the KY 90 Corridor Study. Dan then delivered a presentation. The following enumerated items were discussed.

1. The purpose of the meeting is to present the results from the MetroQuest survey and to get feedback from the local officials/stakeholders on improvement concepts.

2. This project is state funded with State Priority Project (SPP) funds. It is listed in Kentucky's *FY 2022 – FY 2028 Highway Plan* as 08-80105.00 and has $6.078 million in Right-of-Way (2023), $2.92 million in Utilities (2025), and $22.143 million in Construction (2026).

3. The goal of this study is to identify transportation issues and evaluate the need for and scope of potential improvement options to improve safety, mobility, and capacity on KY 90 between KY 90X/KY 1275 and KY 3106 near Monticello, Kentucky.

4. Highlights from the traffic analysis were discussed. Historical KYTC traffic volumes show an Annual Average Daily Traffic (AADT) of 9,600 vehicles per day (VPD) on the study portion of KY 90 with 11.3 percent trucks. Results from a Highway Capacity Software (HCS) analysis revealed that the corridor operates at a LOS B during the AM peak and a LOS C during the PM peak hour. Turning movement counts were collected by Stantec at 11 intersections and show combined peak hour volumes up to 883 vehicles per hour (vph) on KY 90. HCS was also used to analyze peak hour traffic at the intersections. All intersections operate at LOS C or better.

   Annual growth rates were developed using the Kentucky Statewide Travel Demand Model (KYSTM), historical KYTC traffic counts, and population projections from the Kentucky State Data Center. While historical traffic trends and Wayne County population projections show slight declines, the KYSTM shows slight growth over the next 25 years. An annual growth rate of 0.3% per year was assumed to develop traffic forecasts. Based on this growth rate, daily traffic is expected to be around 10,500 VPD in 2045. Turning movement counts were also forecasted using 0.3% annual growth and were analyzed using HCS. Based on this analysis, KY 90 is expected to operate at LOS C or better in 2045 during the peak hours.
   - A stakeholder noted that the census estimates are likely low in Wayne County.

5. A MetroQuest survey was developed to solicit feedback from the local officials and stakeholders after the first Advisory Committee Meeting. Respondents were asked to rank transportation issues on KY 90. The results were then summarized with a #1 ranking receiving 5 points, #2 receiving 4 points, #3 receiving 3 points, #4 receiving 2 points, and #5 receiving 1 point. Lack of turn lanes was ranked as the highest priority issue, followed by safety and lack of passing opportunities.

   In general, results from the Advisory Committee survey identified that most of the safety and congestion issues along KY 90 are at the intersections. Drivers are particularly concerned with the lack of turning and passing opportunities, peak hour congestion, excessive speeds along the corridor, inadequate lighting, and difficulty exiting

intersections onto KY 90. The improvement ideas recommended most from the survey were additional turning lanes, paved shoulders, and additional lighting at some intersections.

6. Turn lane evaluations were performed by using 2021 turning movement counts for the 11 intersections and applying them to the KYTC Turn Lane Warrant Spreadsheet which is based on guidelines in the Highway Design Manual (Sections HD-902.11.3 and HD-92.12). Warrants for left-turn lanes are not satisfied for any of the intersections on KY 90.

   Similarly, the KYTC Turn Lane Warrant Spreadsheet for right-turn lanes are not satisfied for any of the intersections on KY 90.

7. The project team collected turning movement counts on the weekend of June 18th during the Lake Cumberland Thunder Run to determine the overall increase in traffic during a busy lake weekend. Counts were collected at the KY 90 intersections with Tate Dr., Sunstar Blvd., Brandon Dr., and KY 3106 from 7 a.m. to 7 p.m. on Friday and Saturday. Overall traffic on Friday was 11 percent higher than what was counted for a typical weekday in October 2021, while traffic was 13 percent lower on Saturday. Even with the increased traffic on Friday, left-turn lanes were only warranted at two intersections for two hours each. In general, KYTC performs traffic analyses on typical weekdays rather than special events. The results from the Thunder Run turning movement counts did not indicate the need for additional analysis or consideration of turn lanes.

8. Crash data from the Kentucky State Police database and the Crash Data Analysis Tool indicate that this portion of KY 90 has an Excess Expected Crashes (EEC) of -4 crashes per year, indicating that the route is performing better than expected. Two intersections on KY 90, Franklin Road/Tate Drive and Cumberland Drive, have slightly positive EECs but still less than one crash per year.

   A crash density map was developed to highlight areas with crash clusters. There are high densities of crashes near the commercial area at the southern end of the study corridor and near the Valero at the northern end of the study area.

9. Dan then led a discussion of improvement concepts.

   Two-Way Left-Turn Lane (TWLTL) from south of Tate Drive to Cumberland Drive

   Due to the high crash density in the commercial area near Tate Drive, a two-way left-turn lane (TWLTL) is proposed to remove left-turning vehicles from the traffic stream. This will provide safer turning opportunities and reduce the number of rear end collisions.

   Paved Shoulders

   Currently, most of the study corridor has two-foot paved shoulders with eight feet of gravel shoulder. Providing eight feet of paved shoulder for the entire corridor would result in the following safety benefits:

- Provides emergency stopping space for broken-down vehicles Provides space for maintenance operations and snow storage
- Provide lateral support for the pavement and require less maintenance than gravel
- Allow vehicles to easily move over for emergency vehicles
- Allow for vehicles to potentially avoid rear-end and head on collisions
- Allow slow moving tractors to pull over if necessary
- Increases effective turning radii at intersections

It was noted that rumble strips would be installed for both the TWLTL and paved shoulder concepts.

- Members from the Advisory Committee agreed with the TWTL and paved shoulder improvement recommendations.

10. A brief discussion was held on intersection lighting. KYTC Traffic Operation Guidance Manual (TO-709 "Intersection Lighting") provides warrants for the installation of intersection lighting. A crash analysis was performed for all nighttime crashes between 2016 and 2020 which indicated that warrants for intersection lighting were not satisfied. KYTC Traffic Operation Guidance Manual (TO-710 "Intersection Delineation Lighting") addresses lighting which essentially illuminates an area to guide motorists of the upcoming intersection or the area that the vehicle is exiting. Intersection delineation lighting is warranted if a local agency supports the installation and is willing to install and maintain such lighting through the encroachment permit process. Delineation lighting does not need to be approved by KYTC, but funding must come from an outside source (businesses, cities, etc.). Intersection Delineation Lighting already exists at seven of the intersections.
    - It was noted that a large cross has been installed near the KY 90 intersection with KY 3106. The cross illuminates at night and may provide lighting for the intersection.

11. Advanced Side Road signs and supplemental street name plaques may be considered at intersections along the study corridor to notify drivers of approaching access points and warn of potential turning traffic, particularly at locations without intersection lighting. If used, it is recommended that signs be placed 325 feet in advance of an intersection.

12. The next steps are to finalize improvement concept prioritization and develop a draft report.

The meeting ended at approximately 11:30 a.m. EDT.

Meeting Minutes

TO:

Stephen De Witte
Co-Project Manager
KYTC Central Office
200 Mero Street
Frankfort, KY 40622

Jeff Dick
Co-Project Manager
KYTC District Office #8
1660 US 27
Somerset, KY 42501

FROM: Dan O'Dea
Project Manager
Stantec Consulting Services Inc.

DATE: September 13, 2022

SUBJECT: KY 90 Corridor Study
KY 90 (MP 12.931 – MP 15.617)
Wayne County
KYTC Item No. 08-80105
Project Team Meeting No. 3

The third Project Team Meeting for the subject project was held at the UK Wayne County Cooperative Extension Office in Monticello, KY and virtually via Microsoft Teams on September 1, 2022, at 1:30 p.m. EDT. The following individuals were in attendance:

Jeff Dick	KYTC – District 8
Mark Foster	KYTC – District 8
Joe Gossage	KYTC – District 8
James Jones	KYTC – District 8
Conley Moren*	KYTC – District 8
Amanda Parmley*	KYTC – District 8
David Souleyrette*	KYTC – Central Office Planning
Dan O'Dea	Stantec Consulting Services Inc.
Len Harper	Stantec Consulting Services Inc.
Graham Winchester	Stantec Consulting Services Inc.

*Joined via Microsoft Teams

Dan O'Dea welcomed everyone and delivered a presentation on the progress to-date for the KY 90 Corridor Study. The following enumerated items were discussed:

1. The purpose of this meeting is to get feedback from the project team on improvement concept prioritization.

2. This project is state funded with State Priority Project (SPP) funds. It is listed in Kentucky's *FY 2022 – FY 2028 Highway Plan* as 08-80105.00 and has $6.078 million in Right-of-Way (2023), $2.92 million in Utilities (2025), and $22.143 million in Construction (2026).

3. The goal of this study is to identify and evaluate the need for and scope of potential improvement options to improve safety, mobility, and capacity of KY 90 in the study area.

   There was a discussion of improvement concepts. The project team determined that the recommended improvement concept will include a two-way left-turn lane (TWLTL) from south of Tate Drive to Cumberland Drive and shoulder paving from Cumberland Drive to Cooley Lane (KY 3106). This includes 44-feet of full depth pavement to accommodate the TWLTL section and future turn lanes as needed through the paved shoulder section. The archive plans show the existing full depth pavement on KY 90 is 24-feet wide and the total roadway width (including gravel shoulders) is 48-feet. The estimated construction cost of this project, including 44-feet of full-depth pavement, is $5.5 million. The improvements are not expected to require any utility relocations or additional right-of-way. The proposed typical sections on KY 90 are as follows:

   KY 90 from south of Tate Drive to Cumberland Drive
   Two 12-foot lanes, a 14-foot TWLTL, five-foot shoulders (three-foot paved), and edge-line rumble strips, as shown in **Figure 1**.

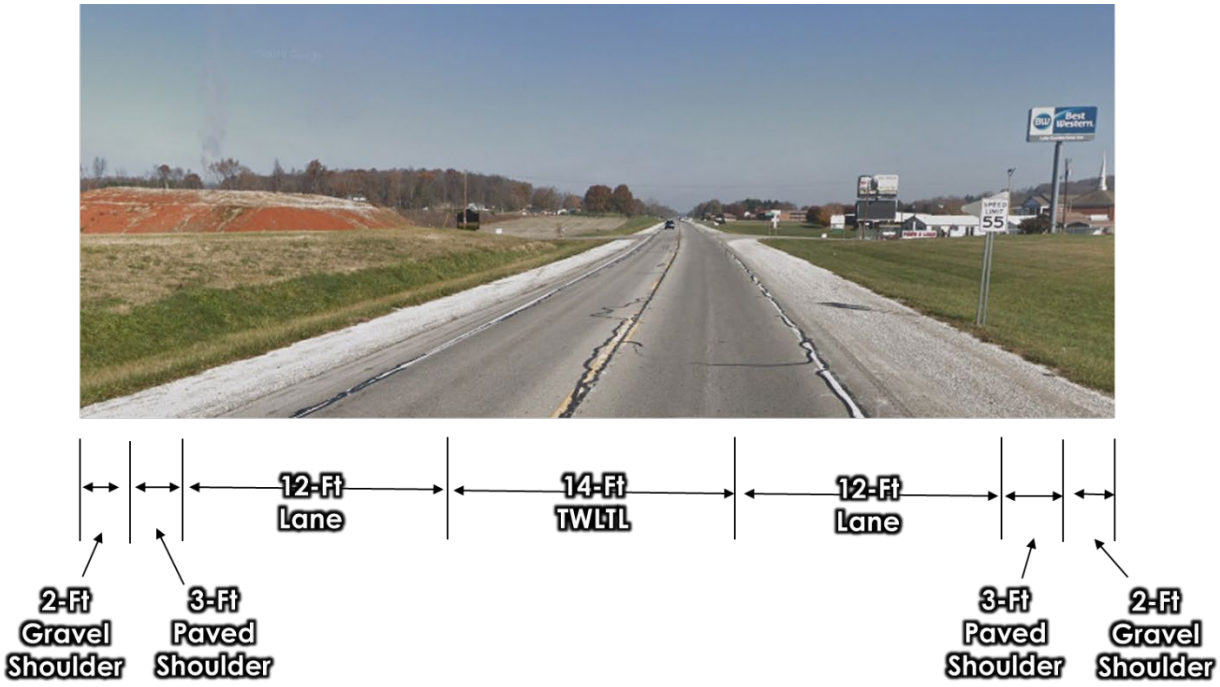


Figure 1: TWLTL Typical Section

KY 90 from Cumberland Drive to Cooley Lane
Two 12-foot lanes, 12-foot shoulders (ten-foot paved), centerline rumble strips, and edge-line rumble strips.

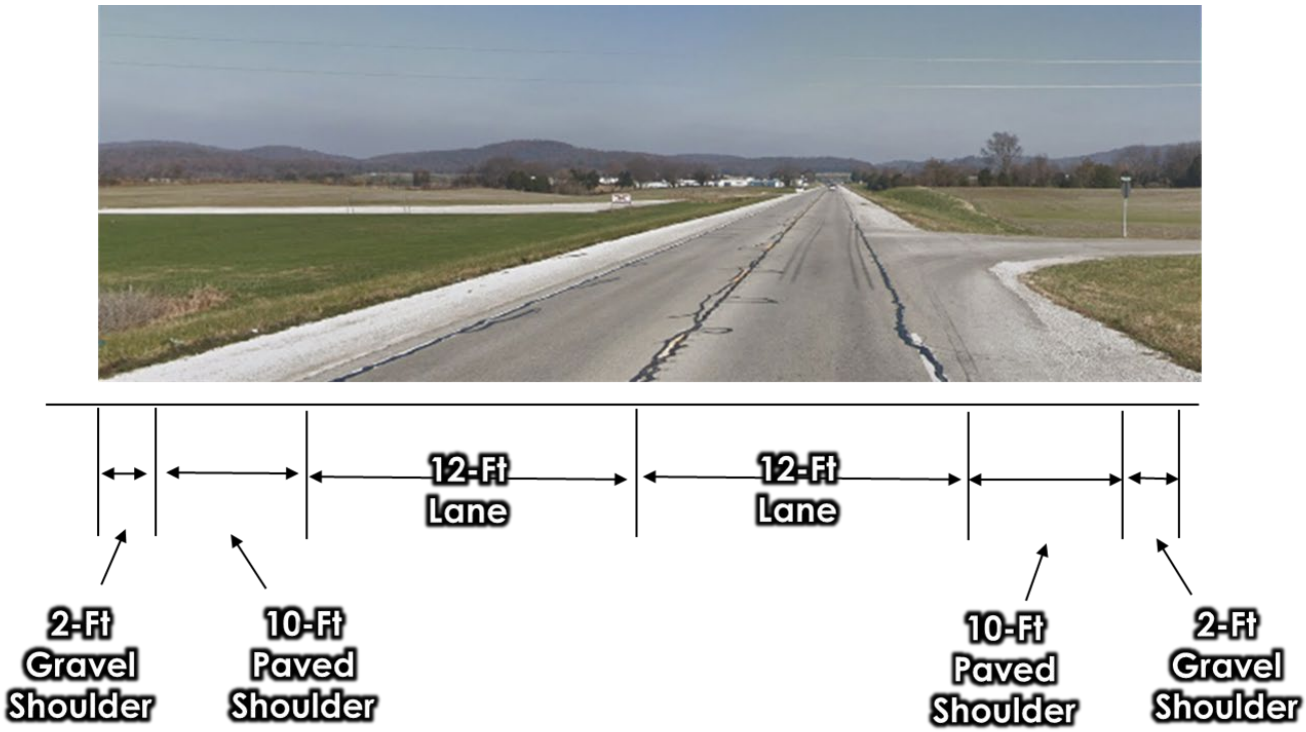


Figure 2: Paved Shoulder Typical Section

Project Team Discussion:

- It was noted that this section of KY 90 had preventative maintenance/resurfacing in 2021. The 2021 project was not a pavement rehabilitation project.
- Shoulder rumble strips shall be installed with width and depth based on KTYC standards.
- There was a brief discussion on whether or not to reduce the speed limit through the proposed TWTL section to 45 miles per hour (mph). The speed limit should only be lowered if the adjacent section of KY 90 west of KY 1275 is also lowered to 45mph.
- Additional intersection lighting will not be recommended at this time.

As part of the next phase of this project, Phase 1 Design, consideration should be given to extending the full depth paved shoulders north of Cooley Lane approximately 1.8 miles to the end of the current construction project near Old Mill Springs Road. This would provide a consistent shoulder between Monticello and US 27 in Bronston.

Advanced Side Road warning signs with street name plaques may be considered at intersections along the study corridor to notify drivers of approaching access points and warn of potential turning traffic, particularly at locations without intersection lighting. If used, it is recommended that signs be placed 325 feet in advance of an intersection. It was noted, however, that District 8 Traffic typically

reserves the placement of advanced Side Road warning signs for only those locations where sight distance is an issue.

- KYTC typically places these signs at locations with restricted sight distance and/or greater than expected number of crashes at the intersection, particularly angle, left-turn and rear end collisions. KYTC prefers local jurisdictions to properly sign for their routes using MUTCD standards before a road name plaque is added.

4. The next step is for Stantec to submit a draft report.

The meeting ended at approximately 2:30 p.m. EDT.