



Song Sparrow Solar LLC Traffic Impact Study

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Prepared for:

Song Sparrow Solar LLC

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Executive Summary

Song Sparrow Solar LLC is proposing to construct and operate the Song Sparrow Solar Project (Project) located near the intersection of Gage and Davis Roads approximately 4 miles south of Kevil in Ballard County, Kentucky. The petitioner proposes to utilize the existing land to establish a solar facility on the site. The development will have access points along several routes around the facility. Analyses of the 2022 existing conditions (based on most recent counts provided by the Kentucky Transportation Cabinet, KYTC) and the 2026 construction year were performed. The traffic impact study (TIS) evaluated the operating conditions for the AM and PM peak hours at the roadway segments below:

- Station 004256: KY 286 (Wickliffe Road) from MP 0.000 to MP 14.343
- Station 073800: KY 286 (Wickliffe Road) from MP 0.000 to MP 2.226
- Station 004304: KY 358 (Hinkleville Road) from MP 0.000 to MP 7.984
- Station 004307: KY 473 (Gage Road) from MP 0.000 to MP 7.577
- Station 004274: KY 2532 (Kevil-Lovelaceville Road) from MP 0.000 to MP 5.268
- Station 004281: CR 1127 (Mosstown / Buchanan Road) from MP 0.000 to MP 0.186
- Station 004308: CR 1138 (Robey Road) from MP 0.297 to MP 0.497

Based on the results of the analysis, the following conclusions were developed:

- During construction, all highway segments are anticipated to continue to operate at acceptable level of service (LOS) standards during the peak hours. Therefore, the construction for this project will not adversely affect traffic operations on any of the roadways in and around the project area.
- After construction is complete, the site will be managed with negligible added traffic demand. During the operational phase of the project, the surrounding roadway network will continue to operate at an acceptable LOS during the peak hours.



SONG SPARROW SOLAR LLC TRAFFIC IMPACT STUDY

INTRODUCTION

1.0 INTRODUCTION

The purpose of this study is to estimate the traffic impacts of the proposed Song Sparrow Solar Project (“Song Sparrow Solar” or the “Project”) which is located near the intersection of Gage and Davis Roads approximately 4 miles south of Kevil six miles north of Gage in Ballard County, Kentucky. The Project site can be generally described as south of Robey Road, north of KY 286, east of KY 358 and west of KY 2532. The proposed Project site is shown in **Figure 1**.

The proposed solar Project will be situated on approximately 655 acres and will consist of solar photovoltaic panels and their associated racking systems, inverters, collection system, transmission line, project substation and other project equipment. Arrays of photovoltaic modules will be mounted on single access trackers arranged in rows. Power conversion systems will be distributed throughout the Project area, comprised of inverters, Project substation, and utility switching station. The equipment will connect via underground electrical wiring to a Project substation and switchyard proposing to interconnect to the existing Grahamville-to-Wickliffe 161kV transmission line located in the southwest corner of the Project area north of Mosstown Road. The Project will have access points around the site with construction vehicle deliveries. A construction year of 2026 was evaluated as part of the study.

2.0 DATA COLLECTION

Annual Average Daily Traffic (AADT) traffic counts were obtained from the Kentucky Transportation Cabinet (KYTC) to establish the existing traffic conditions. **Figure 2** shows the locations of the primary / adjacent count stations used in this analysis. The summarized count data for each of these stations (plus additional stations outside the immediate area) is included in **Appendix A** for the following count stations:

- Station 004256: KY 286 (Wickliffe Road) from MP 0.000 to MP 14.343
- Station 073800: KY 286 (Wickliffe Road) from MP 0.000 to MP 2.226
- Station 004304: KY 358 (Hinkleville Road) from MP 0.000 to MP 7.984
- Station 004307: KY 473 (Gage Road) from MP 0.000 to MP 7.577
- Station 004274: KY 2532 (Kevil-Lovelaceville Road) from MP 0.000 to MP 5.268
- Station 004281: CR 1127 (Buchanan Road) from MP 0.000 to MP 0.186
- Station 004308: CR 1138 (Robey Road) from MP 0.297 to MP 0.497



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DATA COLLECTION

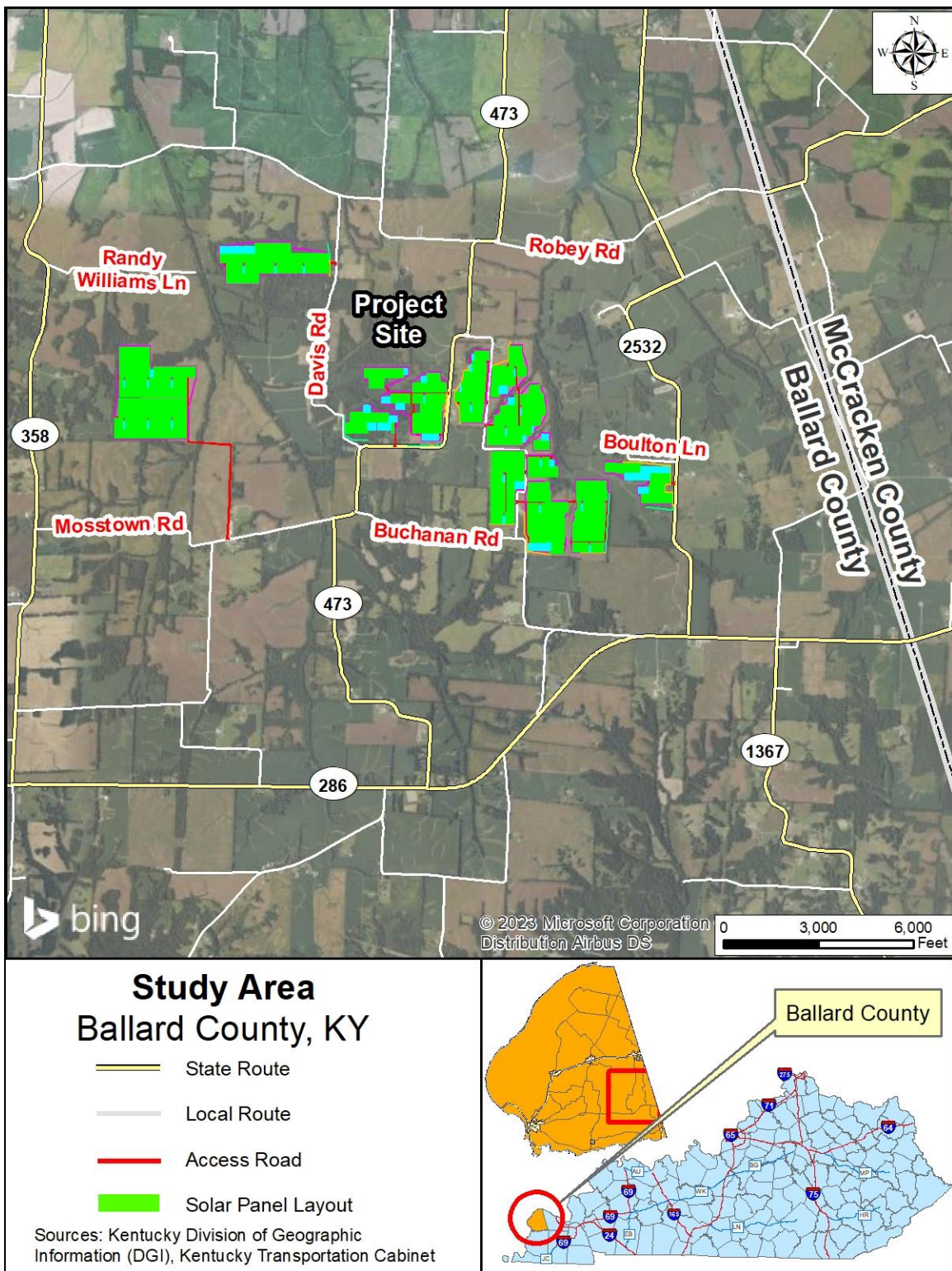


Figure 1: Project Location



SONG SPARROW SOLAR LLC TRAFFIC IMPACT STUDY

DATA COLLECTION

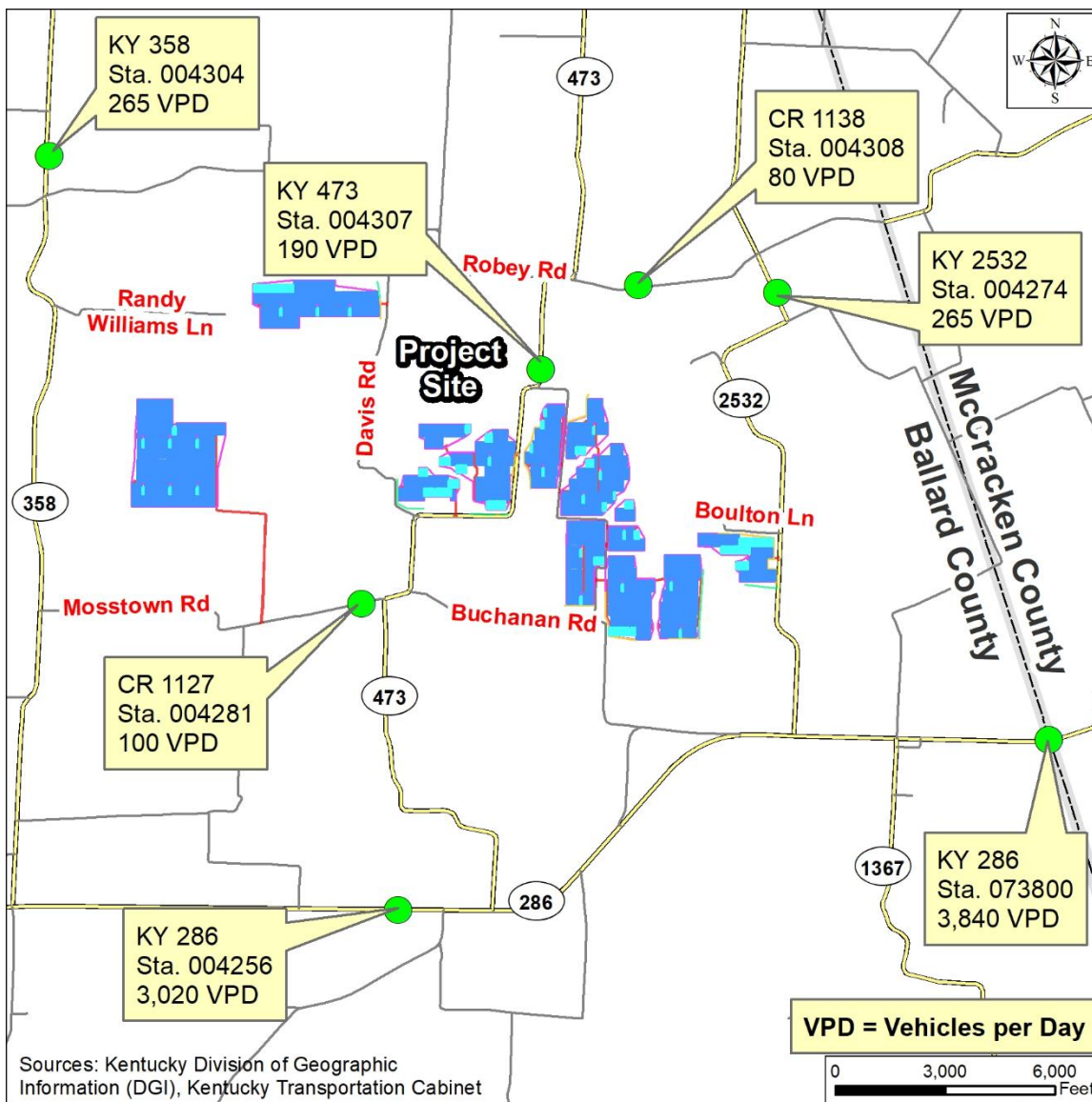


Figure 2: KYTC Count Stations



SONG SPARROW SOLAR LLC TRAFFIC IMPACT STUDY

DATA COLLECTION

Ballard County population projections have continued to decline slightly since 2010, as shown in **Figure 3**. Therefore, a growth rate was not applied to the traffic count data as it is presumed that volumes have not increased.

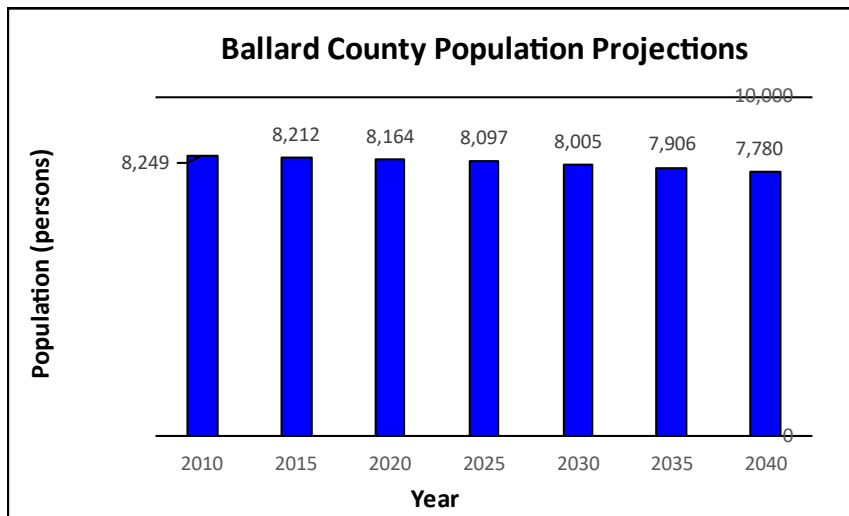


Figure 3: Population Projections

KY 286 located directly south of the Project site is classified as a two-lane rural minor arterial with daily traffic volume ranging from 3,020 vehicles per day (VPD) in Ballard County to 3,840 VPD in McCracken County with a posted speed limit of 55 mph. KY 358 is a two-lane rural minor collector with a posted speed limit of 55 mph and daily traffic of 265 VPD. KY 473 is a two-lane rural minor collector with a posted speed limit of 55 mph and daily traffic of 190 VPD. To the east of the Project site, KY 2532 is a two-lane rural minor collector with a posted speed limit of 55 mph and daily traffic of 265 VPD. A map of speed limits is shown in **Figure 4**. Note that speed limits for Robey Road and Buchanan Road were not included in KYTC GIS database, but the posted speed limit for both routes is 35 mph.






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DATA COLLECTION



Speed Limits

-  55 Miles per Hour
-  35 Miles per Hour
-  Speed Limit not provided

Sources: Kentucky Division of Geographic Information (DGI), Kentucky Transportation Cabinet



SONG SPARROW SOLAR LLC TRAFFIC IMPACT STUDY

DATA COLLECTION

Two-lane analyses were used to evaluate the roadways based on methods described in the Highway Capacity Manual (HCM) and implemented within the Highway Capacity Software (HCS 2023). The results can be found in **Appendix B**. The analyses were used to estimate capacity and Level of Service (LOS) for given traffic and geometric conditions. LOS provides a measure of the quality of traffic flow provided by a roadway facility, expressed in terms of letter grades with LOS A representing the highest quality traffic flow and minimal delay, and LOS F representing poor traffic operations and significant delay. For rural areas, LOS C or better is generally considered to be desirable. In urban areas, LOS D or better is generally considered desirable.

The two-lane highways method utilizes follower density (followers/mile) as the service measure for LOS, as shown in **Table 1**.

Table 1: Level of Service Criteria for Two-Lane Highways

LOS	Density (followers/mi) Speed Limit ≥ 50 mph	Density (followers/mi) Speed Limit < 50 mph
A	≤ 2	≤ 2.5
B	> 2 - 4	> 2.5 - 5.5
C	> 4 - 8	> 5 - 10
D	> 8 - 12	> 10 - 15
E	> 12	> 15
F	Demand exceeds capacity	Demand exceeds capacity

The results of the existing (2023) year peak hour traffic analyses for two-lane roads are summarized in **Table 2**. The results indicate that all existing year project-adjacent two-lane roadways currently operate at acceptable LOS during the peak hour.

Table 2: 2023 Peak Hour Two-Lane Highway Analysis

Route	Segment Description	2023 Peak Hour	
		Density (followers/mi/ln)	LOS
KY 286	from KY 802 (MP 7.6) to KY 1367 (MP 13.6)	0.6	A
	from KY 1367 (MP 13.6) to County Line (MP 14.3)	1.1	A
KY 358	from KY 286 (MP 0.0) to US 60 (MP 8.0)	0.0	A
KY 473	from KY 286 (MP 0.0) to US 60 (MP 7.6)	0.0	A
KY 2532	from KY 286 (MP 0.0) to US 60 (MP 5.3)	0.0	A
CR 1127	west of KY 473 from MP 0.0 to MP 0.2	0.0	A
CR 1138	east of KY 473 from MP 0.3 to MP 0.5	0.0	A



SONG SPARROW SOLAR LLC TRAFFIC IMPACT STUDY

PROJECT TRIP GENERATION

Motor Vehicle Highway Generalized Service Volume Tables were also used to evaluate the roadways based on methods described in the *2023 Multimodal Quality/Level of Service Handbook (Q/LOS Handbook)*. The handbook is intended to be used by engineers, planners, and decision-makers to evaluate roadway users' quality/level of service (Q/LOS) at generalized planning levels. The Generalized Service Volume Tables are the primary tools for conducting generalized planning and are based on the Highway Capacity Manual (HCM) Sixth Edition and roadway, traffic, control characteristics and multimodal data. The Service Volume Table using Annual Average Daily Traffic (AADT) for Rural Roadways was used for this evaluation and are shown in **Table 3**. Rural roadways are in areas with a population less than 5,000 and not immediately adjacent to core urbanized, urbanized, or transitioning areas. Rural refers to sparsely settled lands that may include agricultural land mixed with grassland, woodland, or wetlands.

The results indicate that all existing Project-adjacent two-lane roadways have an AADT below, and in most cases far below, 4,600 vehicles per day and, therefore, operate at LOS A. Note that the AADT volumes which are less than the threshold volume for LOS B would be LOS A. As shown in **Figure 2**, the highest count volume count station is KY 286 at the Ballard / McCracken County line at 3,840 VPD.

Table 3 – Motor Vehicle Generalized Service Volume Table using AADT for Rural Roadways

Roadway Type	Level of Service (LOS)			
	B	C	D	E
Two-Lane	4,600	8,200	14,000	28,500
Four-Lane	32,000	45,800	55,700	63,900
Six-Lane	48,000	68,300	83,700	95,900

Source: 2023 Multimodal Quality/Level of Service Handbook, Appendix B

3.0 PROJECT TRIP GENERATION

3.1 CONSTRUCTION

The trip generation analysis for the construction of the Project would generally be based on the number of workers and the associated construction and delivery truck trips expected during the construction of the Project. Construction workers will consist of laborers, equipment operators, electricians, supervisory personnel, support personnel, and construction management personnel. It is envisioned that workers will



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PROJECT TRIP GENERATION

arrive/depart from passenger vehicles and trucks daily during the AM (6:00 – 9:00 AM) and PM (3:00 – 7:00 PM) peak hours. Equipment deliveries will occur on trailers, flatbeds, or other large vehicles at various times during the day. While specific details concerning construction duration and intensity are not currently known, this study has employed a sensitivity analysis to demonstrate likely construction traffic levels will not have a significant, adverse effect on peak hour traffic operations. For this analysis, existing peak hour traffic volumes on roadways were increased by 50 percent which is far greater than would be anticipated for the actual construction of the Project.

3.1.1 CONSTRUCTION ANALYSIS

The 2026 construction year analysis assumed no changes to the existing roadway network and increases in traffic demand discussed above. The results of the construction year peak hour two-lane analysis are summarized in **Table 4**. Complete output reports are included in **Appendix B**. The results indicate that all analyzed roadway segments are anticipated to continue to operate at an acceptable LOS during construction for both peak hours.

Table 4: Construction Year (2026) Peak Two-Lane Highway Analysis

Route	Segment Description	Year Peak Hour	
		Density (followers/mi/ln)	LOS
KY 286	from KY 802 (MP 7.6) to KY 1367 (MP 13.6)	1.2	A
	from KY 1367 (MP 13.6) to County Line (MP 14.3)	2.1	B
KY 358	from KY 286 (MP 0.0) to US 60 (MP 8.0)	0.0	A
KY 473	from KY 286 (MP 0.0) to US 60 (MP 7.6)	0.0	A
KY 2532	from KY 286 (MP 0.0) to US 60 (MP 5.3)	0.0	A
CR 1127	west of KY 473 from MP 0.0 to MP 0.2	0.0	A
CR 1138	east of KY 473 from MP 0.3 to MP 0.5	0.0	A

Similarly, the results indicate that all but one of the construction volumes (existing volumes increased by 50 percent) Project-adjacent two-lane roadways still have an AADT below 4,600 vehicles per day and would, therefore, still operate at LOS A. Increasing the highest count volume count station is KY 286 at the Ballard / McCracken County line by 50 percent would increase the volume to 5,760 VPD which would operate at LOS B.

3.2 OPERATION

Once operational, the facility will be managed and monitored by a small number of employees. The facility will have up to three full-time employees on site for 40 hours per week for site inspections and



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CONCLUSION

repair. Operations workers are expected to commute to and from the project site individually during the peak AM and PM hours. Work can also be conducted at night up to thirty days a year. This additional volume of daily traffic is considered negligible, and the operational phase of the project will have no measurable impact on the traffic and/or transportation infrastructure.

4.0 CONCLUSION

As demonstrated in the traffic analysis, the construction period will not produce significant operational changes to existing roadways. All roadways within the Project area will continue to operate at an acceptable LOS (likely LOS A) during peak construction traffic. Although no significant adverse traffic impacts are expected during project construction or operation, using mitigation measures such as ridesharing between construction workers, using appropriate traffic controls, or allowing flexible working hours outside of peak hours could be implemented to minimize any potential for delays during the AM and PM peak hours.



Appendix A

TRAFFIC COUNT DATA



Historical Traffic Volume Summary

Station Details:

Sta ID:	004256
Sta Type:	Classification
Map:	MapIt
District:	1
County:	Ballard
Route:	004-KY-0286 -000
Route Desc:	WICKLIFFE RD

Begin MP:	7.6140
Begin Desc:	KY 802
End Mp:	13.5630
End Desc:	KY 1367
Impact Year:	
Year Added:	

Newest Count:

AADT:	3011
Year:	2017
% Single:	6.1530
% Combo:	7.4950
K Factor:	8.50
D Factor:	53

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

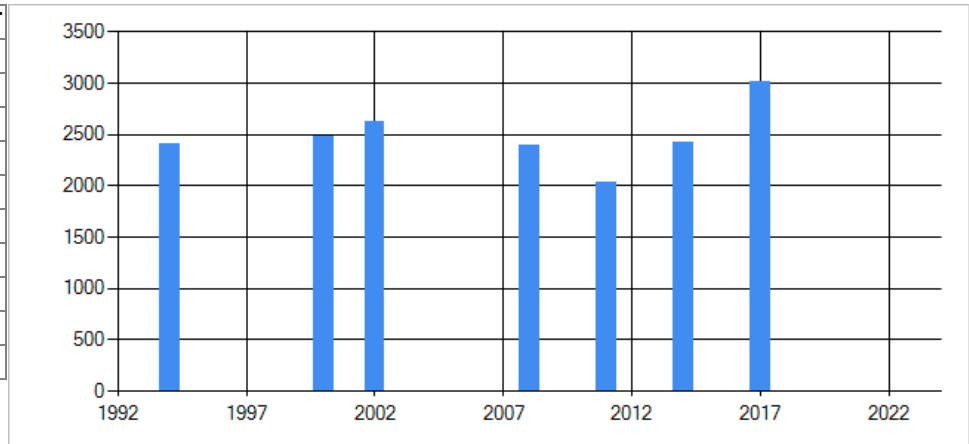
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2023		2013		2003	
2022		2012		2002	2630
2021		2011	2040	2001	
2020		2010		2000	2480
2019		2009		1999	
2018		2008	2390	1998	
2017	3011	2007		1997	
2016		2006		1996	
2015		2005		1995	
2014	2427	2004		1994	2410



Historical Traffic Volume Summary

Station Details:

Sta ID:	073800
Sta Type:	Full Coverage
Map:	MapIt
District:	1
County:	McCracken
Route:	073-KY-0286 -000
Route Desc:	KY-286

Begin MP:	0
Begin Desc:	BALLARD COUNTY LINE
End Mp:	2.2260
End Desc:	US 62
Impact Year:	
Year Added:	

Newest Count:

AADT:	3836
Year:	2020
% Single:	6.1530
% Combo:	7.4950
K Factor:	8.70
D Factor:	56

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

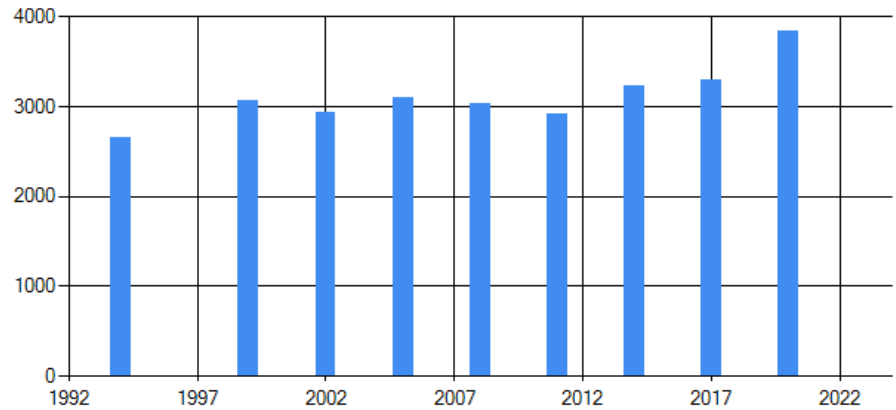
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2023		2013		2003	
2022		2012		2002	2930
2021		2011	2920	2001	
2020	3836	2010		2000	
2019		2009		1999	3060
2018		2008	3040	1998	
2017	3292	2007		1997	
2016		2006		1996	
2015		2005	3100	1995	
2014	3224	2004		1994	2650



Historical Traffic Volume Summary

Station Details:

Sta ID:	004304
Sta Type:	Full Coverage
Map:	MapIt
District:	1
County:	Ballard
Route:	004-KY-0358 -000
Route Desc:	HINKLEVILLE RD+BLUEGRASS DR

Begin MP:	0
Begin Desc:	KY 286 (WICKLIFFE ROAD)
End Mp:	7.9840
End Desc:	US 60 JUNCTION
Impact Year:	
Year Added:	

Newest Count:

AADT:	263
Year:	2020
% Single:	
% Combo:	
K Factor:	12.10
D Factor:	56

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

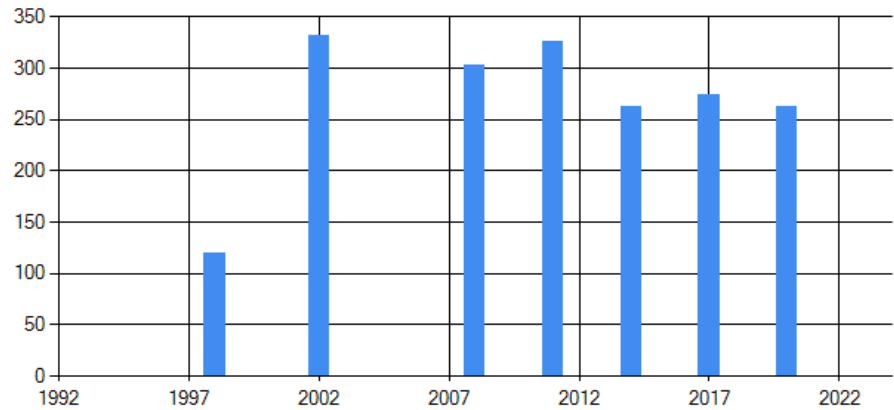
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2023		2013		2003	
2022		2012		2002	332
2021		2011	326	2001	
2020	263	2010		2000	
2019		2009		1999	
2018		2008	303	1998	120
2017	274	2007		1997	
2016		2006		1996	
2015		2005		1995	
2014	262	2004		1994	



Historical Traffic Volume Summary

Station Details:

Sta ID:	004307
Sta Type:	Full Coverage
Map:	MapIt
District:	1
County:	Ballard
Route:	004-KY-0473 -000
Route Desc:	GAGE RD

Begin MP:	0
Begin Desc:	KY 286
End Mp:	7.5770
End Desc:	US 60 (KENTUCKY AVE) JUNCTION
Impact Year:	
Year Added:	

Newest Count:

AADT:	189
Year:	2020
% Single:	
% Combo:	
K Factor:	12.20
D Factor:	56

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

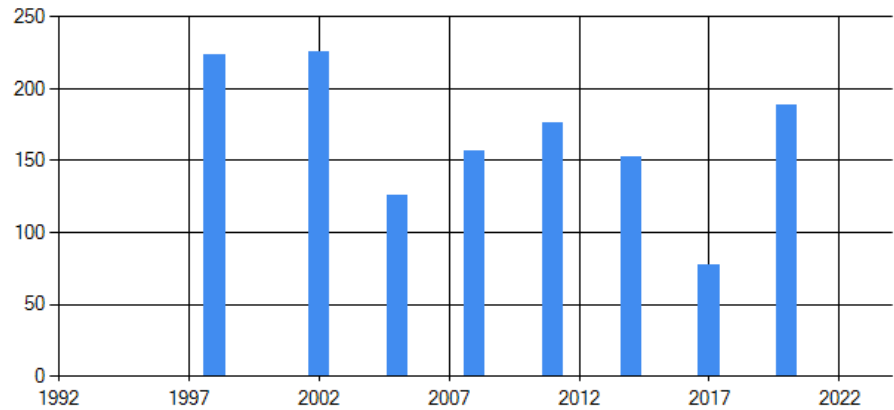
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2023		2013		2003	
2022		2012		2002	226
2021		2011	176	2001	
2020	189	2010		2000	
2019		2009		1999	
2018		2008	157	1998	224
2017	77	2007		1997	
2016		2006		1996	
2015		2005	126	1995	
2014	153	2004		1994	



Historical Traffic Volume Summary

Station Details:

Sta ID:	004274
Sta Type:	Full Coverage
Map:	MapIt
District:	1
County:	Ballard
Route:	004-KY-2532 -000
Route Desc:	COUNTY LINE RD

Begin MP:	0
Begin Desc:	KY 286
End Mp:	5.2680
End Desc:	EXIT BALLARD CO-MCCRACKEN CO
Impact Year:	
Year Added:	

Newest Count:

AA DT:	265
Year:	2022
% Single:	
% Combo:	
K Factor:	13.60
D Factor:	58

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AA DT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

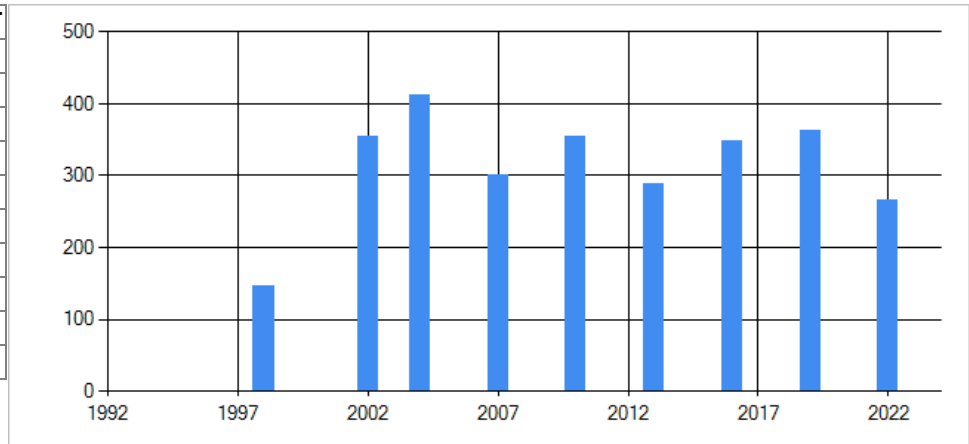
% Single – single unit truck volume as a percentage of the AA DT

% Combo – combination truck volume as a percentage of the AA DT

K Factor – peak hour volume as a percentage of the AA DT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AA DT	Year	AA DT	Year	AA DT
2023		2013	288	2003	
2022	265	2012		2002	354
2021		2011		2001	
2020		2010	355	2000	
2019	362	2009		1999	
2018		2008		1998	146
2017		2007	300	1997	
2016	349	2006		1996	
2015		2005		1995	
2014		2004	413	1994	



Historical Traffic Volume Summary

Station Details:

Sta ID:	004281
Sta Type:	Local Road Bridge
Map:	MapIt
District:	1
County:	Ballard
Route:	004-CR-1127 -000
Route Desc:	MOSSTOWN RD

Begin MP:	0
Begin Desc:	
End Mp:	0.1860
End Desc:	
Impact Year:	
Year Added:	

Newest Count:

AADT:	100
Year:	2010
% Single:	
% Combo:	
K Factor:	
D Factor:	

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

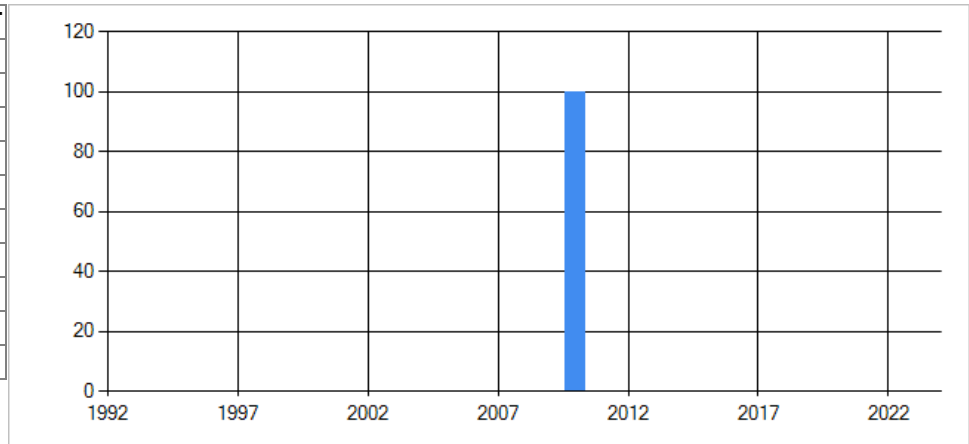
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2023		2013		2003	
2022		2012		2002	
2021		2011		2001	
2020		2010	100	2000	
2019		2009		1999	
2018		2008		1998	
2017		2007		1997	
2016		2006		1996	
2015		2005		1995	
2014		2004		1994	



Historical Traffic Volume Summary

Station Details:

Sta ID:	004308
Sta Type:	Local Road Bridge
Map:	MapIt
District:	1
County:	Ballard
Route:	004-CR-1138 -000
Route Desc:	ROBEY RD

Begin MP:	0.2970
Begin Desc:	
End Mp:	0.4970
End Desc:	
Impact Year:	
Year Added:	

Newest Count:

AADT:	77
Year:	2010
% Single:	
% Combo:	
K Factor:	
D Factor:	

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

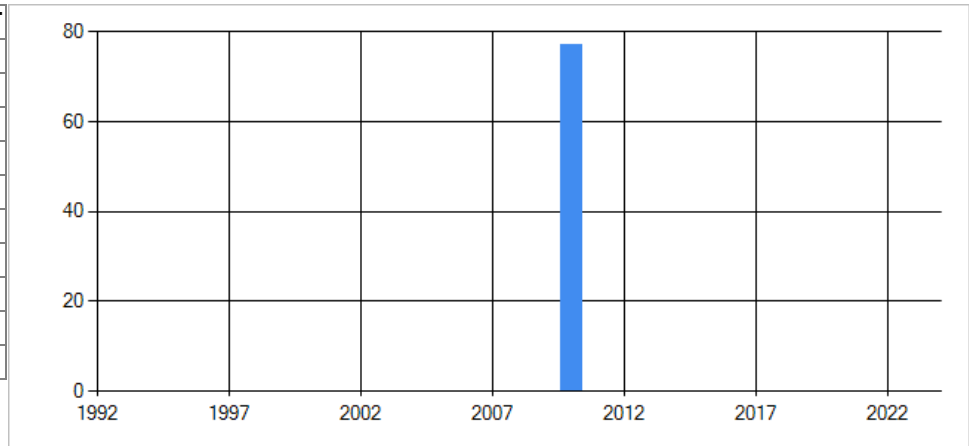
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2023		2013		2003	
2022		2012		2002	
2021		2011		2001	
2020		2010	77	2000	
2019		2009		1999	
2018		2008		1998	
2017		2007		1997	
2016		2006		1996	
2015		2005		1995	
2014		2004		1994	



Appendix B

HIGHWAY CAPACITY SOFTWARE (HCS 2023) FILES

2023

2026 (CONSTRUCTION YEAR)



HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	KY 286 (MP 7.614-13.563)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	31411
Lane Width, ft	10	Shoulder Width, ft	2
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	144	Opposing Demand Flow Rate, veh/h	128
Peak Hour Factor	0.94	Total Trucks, %	7.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.08

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.0
Speed Slope Coefficient (m)	3.35095	Speed Power Coefficient (p)	0.56282
PF Slope Coefficient (m)	-1.21377	PF Power Coefficient (p)	0.77734
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.6
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	31411	-	-	55.4

Vehicle Results

Average Speed, mi/h	55.4	Percent Followers, %	23.6
Segment Travel Time, minutes	6.45	Follower Density (FD), followers/mi/ln	0.6
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	202	0.04	0.6	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	KY 286 (MP 13.563-14.343)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	11753
Lane Width, ft	10	Shoulder Width, ft	2
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	198	Opposing Demand Flow Rate, veh/h	155
Peak Hour Factor	0.94	Total Trucks, %	7.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.12

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.0
Speed Slope Coefficient (m)	3.36301	Speed Power Coefficient (p)	0.55293
PF Slope Coefficient (m)	-1.22274	PF Power Coefficient (p)	0.77472
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	1.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11753	-	-	55.0

Vehicle Results

Average Speed, mi/h	55.0	Percent Followers, %	29.4
Segment Travel Time, minutes	2.43	Follower Density (FD), followers/mi/ln	1.1
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	104	0.03	1.1	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	KY 358 (MP 0.000-7.984)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	42156
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	19	Opposing Demand Flow Rate, veh/h	15
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.01

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	54.8
Speed Slope Coefficient (m)	3.21149	Speed Power Coefficient (p)	0.63372
PF Slope Coefficient (m)	-1.15434	PF Power Coefficient (p)	0.79102
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	42156	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	4.9
Segment Travel Time, minutes	8.74	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	36	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	KY 473 (MP 0.000-7.577)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	40007
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	14	Opposing Demand Flow Rate, veh/h	11
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.01

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	54.8
Speed Slope Coefficient (m)	3.20529	Speed Power Coefficient (p)	0.64000
PF Slope Coefficient (m)	-1.14880	PF Power Coefficient (p)	0.79264
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	40007	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	3.8
Segment Travel Time, minutes	8.30	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	25	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	KY 2532 (MP 0.000-5.268)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	27815
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	22	Opposing Demand Flow Rate, veh/h	16
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.01

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	54.8
Speed Slope Coefficient (m)	3.21289	Speed Power Coefficient (p)	0.63231
PF Slope Coefficient (m)	-1.15559	PF Power Coefficient (p)	0.79066
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	27815	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	5.6
Segment Travel Time, minutes	5.77	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	28	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	CR 1127 (Mosstown Road)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	982
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	35	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	5	Opposing Demand Flow Rate, veh/h	5
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.00

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	32.0
Speed Slope Coefficient (m)	1.86433	Speed Power Coefficient (p)	0.65149
PF Slope Coefficient (m)	-1.17423	PF Power Coefficient (p)	0.70924
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	982	-	-	32.0

Vehicle Results

Average Speed, mi/h	32.0	Percent Followers, %	2.6
Segment Travel Time, minutes	0.35	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	0	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2023
Jurisdiction		Time Analyzed	
Project Description	CR 1138 (Robey Road)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	1056
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	35	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	3	Opposing Demand Flow Rate, veh/h	3
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.00

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	32.0
Speed Slope Coefficient (m)	1.86017	Speed Power Coefficient (p)	0.65585
PF Slope Coefficient (m)	-1.17027	PF Power Coefficient (p)	0.71031
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	1056	-	-	32.0

Vehicle Results

Average Speed, mi/h	32.0	Percent Followers, %	2.0
Segment Travel Time, minutes	0.38	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	0	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	KY 286 (MP 7.614-13.563)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	31411
Lane Width, ft	10	Shoulder Width, ft	2
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	216	Opposing Demand Flow Rate, veh/h	191
Peak Hour Factor	0.94	Total Trucks, %	7.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.13

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.0
Speed Slope Coefficient (m)	3.37727	Speed Power Coefficient (p)	0.54167
PF Slope Coefficient (m)	-1.23298	PF Power Coefficient (p)	0.77170
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	1.2
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	31411	-	-	54.9

Vehicle Results

Average Speed, mi/h	54.9	Percent Followers, %	31.5
Segment Travel Time, minutes	6.50	Follower Density (FD), followers/mi/ln	1.2
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	302	0.10	1.2	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	KY 286 (MP 13.563-14.343)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	11753
Lane Width, ft	10	Shoulder Width, ft	2
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	297	Opposing Demand Flow Rate, veh/h	233
Peak Hour Factor	0.94	Total Trucks, %	7.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.17

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.0
Speed Slope Coefficient (m)	3.39206	Speed Power Coefficient (p)	0.53048
PF Slope Coefficient (m)	-1.24317	PF Power Coefficient (p)	0.76863
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	2.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	11753	-	-	54.5

Vehicle Results

Average Speed, mi/h	54.5	Percent Followers, %	38.7
Segment Travel Time, minutes	2.45	Follower Density (FD), followers/mi/ln	2.1
Vehicle LOS	B		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	155	0.07	2.1	B

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	KY 358 (MP 0.000-7.984)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	42156
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	29	Opposing Demand Flow Rate, veh/h	22
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	54.8
Speed Slope Coefficient (m)	3.22048	Speed Power Coefficient (p)	0.62477
PF Slope Coefficient (m)	-1.16229	PF Power Coefficient (p)	0.78873
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	42156	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	6.8
Segment Travel Time, minutes	8.74	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	54	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	KY 473 (MP 0.000-7.577)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	40007
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	20	Opposing Demand Flow Rate, veh/h	16
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.01

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	54.8
Speed Slope Coefficient (m)	3.21289	Speed Power Coefficient (p)	0.63231
PF Slope Coefficient (m)	-1.15559	PF Power Coefficient (p)	0.79066
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	40007	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	5.1
Segment Travel Time, minutes	8.30	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	36	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	KY 2532 (MP 0.000-5.268)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	27815
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	33	Opposing Demand Flow Rate, veh/h	24
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.02

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	54.8
Speed Slope Coefficient (m)	3.22276	Speed Power Coefficient (p)	0.62253
PF Slope Coefficient (m)	-1.16428	PF Power Coefficient (p)	0.78815
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	27815	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	7.6
Segment Travel Time, minutes	5.77	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	41	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CR 1127 (Mosstown Road)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	982
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	35	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	7	Opposing Demand Flow Rate, veh/h	7
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.00

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	32.0
Speed Slope Coefficient (m)	1.86943	Speed Power Coefficient (p)	0.64619
PF Slope Coefficient (m)	-1.17908	PF Power Coefficient (p)	0.70794
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	982	-	-	32.0

Vehicle Results

Average Speed, mi/h	32.0	Percent Followers, %	3.5
Segment Travel Time, minutes	0.35	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	0	0.00	0.0	A

HCS Two-Lane Highway Report

Project Information

Analyst	TT	Date	8/15/2023
Agency	Stantec Consulting	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CR 1138 (Robey Road)	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	1056
Lane Width, ft	10	Shoulder Width, ft	0
Speed Limit, mi/h	35	Access Point Density, pts/mi	10.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	5	Opposing Demand Flow Rate, veh/h	5
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.00

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	32.0
Speed Slope Coefficient (m)	1.86556	Speed Power Coefficient (p)	0.65020
PF Slope Coefficient (m)	-1.17540	PF Power Coefficient (p)	0.70892
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	1056	-	-	32.0

Vehicle Results

Average Speed, mi/h	32.0	Percent Followers, %	2.8
Segment Travel Time, minutes	0.38	Follower Density (FD), followers/mi/ln	0.0
Vehicle LOS	A		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	0	0.00	0.0	A