

Appendix B

Traffic Methodology and Analysis





US 25 Corridor Planning Study

Traffic Methodology Report

Project No. 11-181
Laurel County



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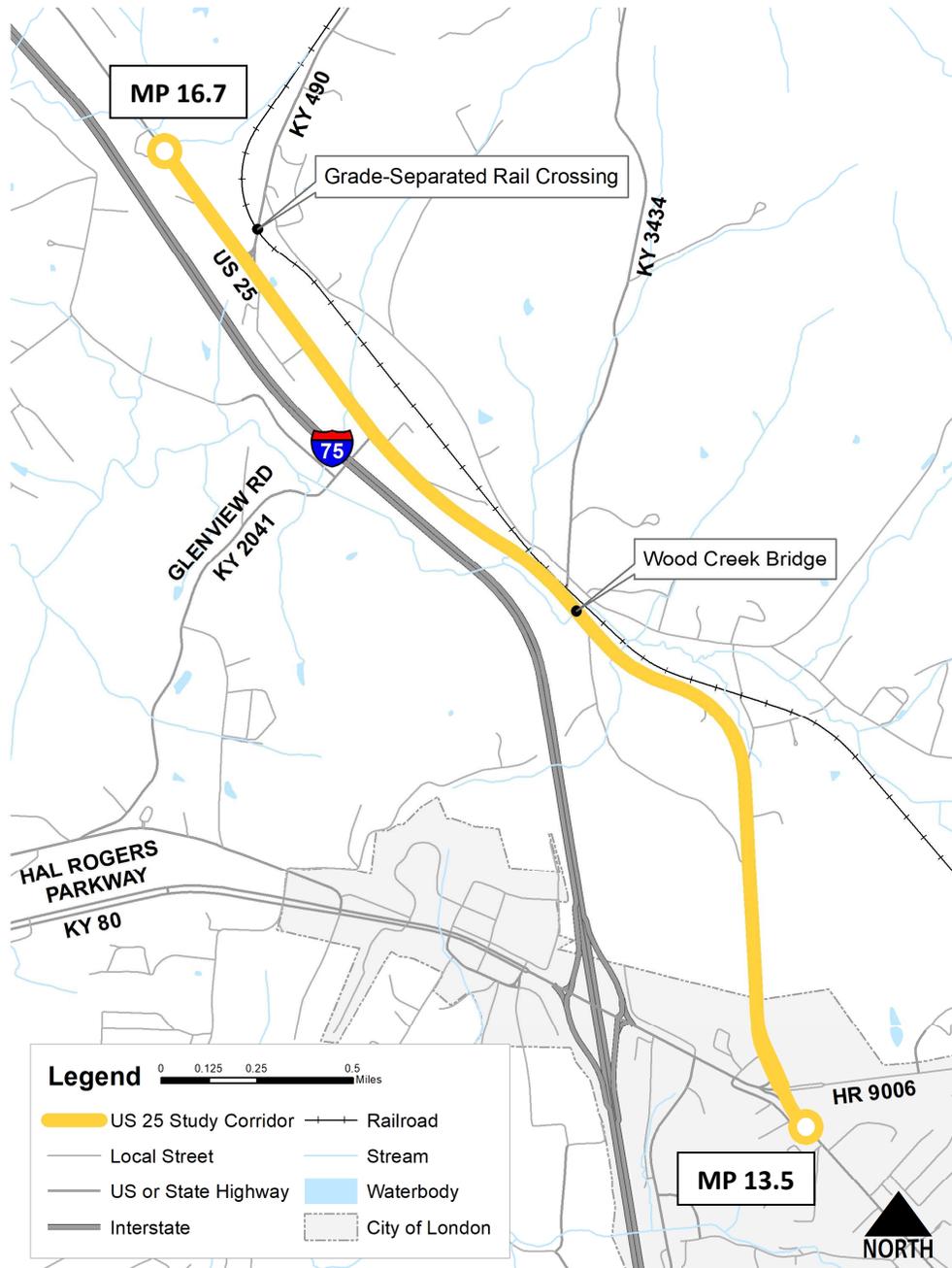
Appendices

- Appendix A** - Traffic Count Data
- Appendix B** - 2023 Existing Scenarios
- Appendix C** - 2045 No-Build Scenarios

Introduction and Study Area

The Kentucky Transportation Cabinet (KYTC) launched a corridor study of US 25 from Milepoint (MP) 13.5 to MP 16.7 in Laurel County. The study area includes the northern city limits of London and the 3.2 miles of corridor encompasses a commercial transition zone between urban London and rural Laurel County to the north of KY 490. The study area is depicted in Figure 1.

Figure 1 - US 25 Study Area



US 25 is classified as an urban minor arterial south of the intersection with KY 80 from MP 13.5 to MP 13.62 with a relatively wide footprint including four travel lanes, a two-way left turn lane, and wide shoulders. The remaining study corridor north of the KY 80 intersection is classified as an urban major collector and narrows quickly to a two-lane roadway with minimal paved shoulders.

The intersection of US 25 and KY 80 also includes channelized right-turn lanes, dual left-turn lanes from US 25, striped medians on KY 80, and a northbound acceleration lane on US 25. The transition of US 25 from the wide intersection at KY 80 to a two-lane section is relatively short, and occurs between the intersection and a point just north of State Police Road. Near the intersection with KY 490, the study corridor widens to include turn lanes and an acceleration lane. Finally, US 25 parallels I-75 and is utilized as a detour route for interstate traffic.

Traffic Data

Intersection counts and KYTC-provided segment volumes were utilized to establish the existing conditions and historical trends of the traffic on US 25 for the 2023 base year.

Intersection Counts

Traffic counts were conducted at the four major intersections of KY 80, KY 3434, KY 2041, and KY 490. Streetlight data was utilized and adjusted to estimate intersection counts. Proportions were calculated for Streetlight volumes to count volumes at the above-mentioned intersections. These proportions, along with some balancing, were used to adjust the Streetlight counts at the remaining intersections. Raw intersection counts are included in Appendix A. The raw intersection counts and Streetlight proportions were utilized to develop a series of 2023 Existing Scenarios for each of the intersections on the study corridor, which are located in Appendix B.

Segment Counts

KYTC conducted segment counts for four separate segments of US 25 and traffic volumes were collected from the corresponding stations for each segment. The segment data is shown in Table 1, and the corresponding station locations are shown in Figure 2.

Table 1 - US 25 KYTC Count Station Segment Volumes

Station ID	Begin MP	End MP	Count Year	AADT	K Factor	D Factor	% Single Truck	% Combo Truck	% Total Trucks
063A76	13.500	13.621	2021	17,014	9.2	59	8.36	4.04	12.41
063A77	13.621	14.455	2022	11,280	9.7	53	6.61	5.28	11.89
063791	14.455	16.379	2021	9,622	9.1	55	6.61	5.28	11.89
063798	16.379	16.700	2017	3,200	8.9	58	4.92	4.42	9.34

Figure 2 - US 25 Segments by Station ID



In addition to the current available counts for each station on US 25, the planning team evaluated historical count trends on both US 25 and KY 80, including impacts to segment volumes during the COVID-19 pandemic. 2020 counts were not performed on US 25, and following years are not significantly different from previous years. 2020 counts were significantly different along the KY 80 corridor and were not considered during the analysis given the availability of segment counts in the years following 2020.

Bicycle and Pedestrian Activity

In addition to segment volume proportions, bicycle and pedestrian activity was also estimated from Streetlight data. Although the Streetlight data is not accurate enough to estimate precise volumes of bicyclists and pedestrians, it does provide a relative comparison of activity between each roadway segment. High bicycle activity (Figure 3) and high pedestrian activity (Figure 4) are shown along two sections of the study corridor between CVB Drive and Bullock Road and between KY 3434 and KY 2041. Bicyclists and pedestrians are noted traveling along the corridor with regular frequency through both field observations and survey results.

Figure 3 - Streetlight Bicycle Activity

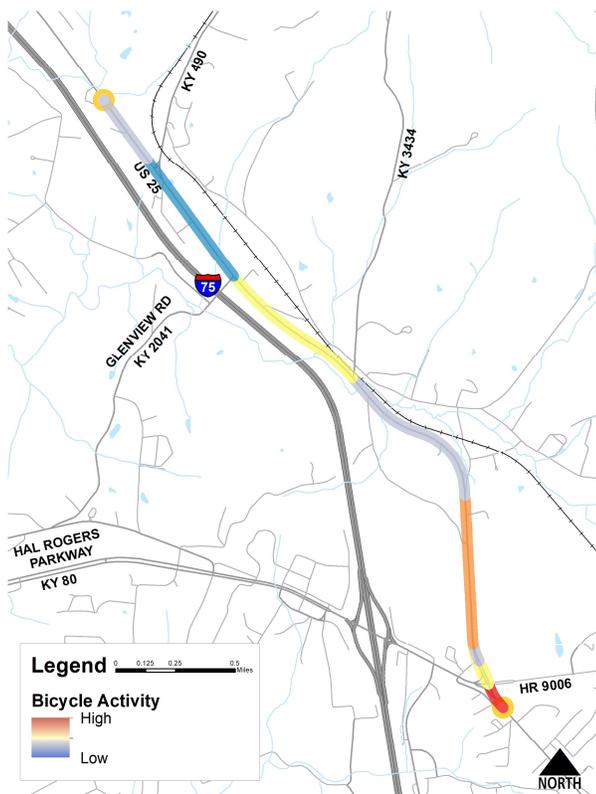
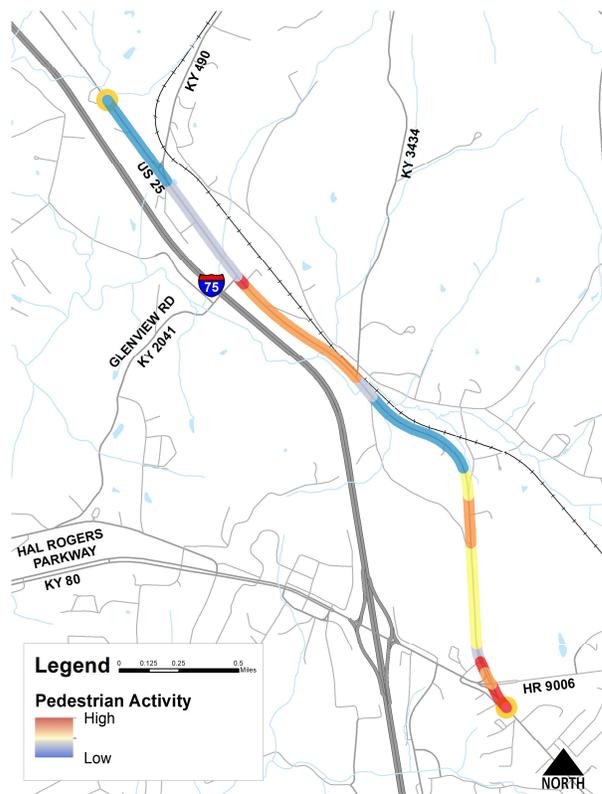


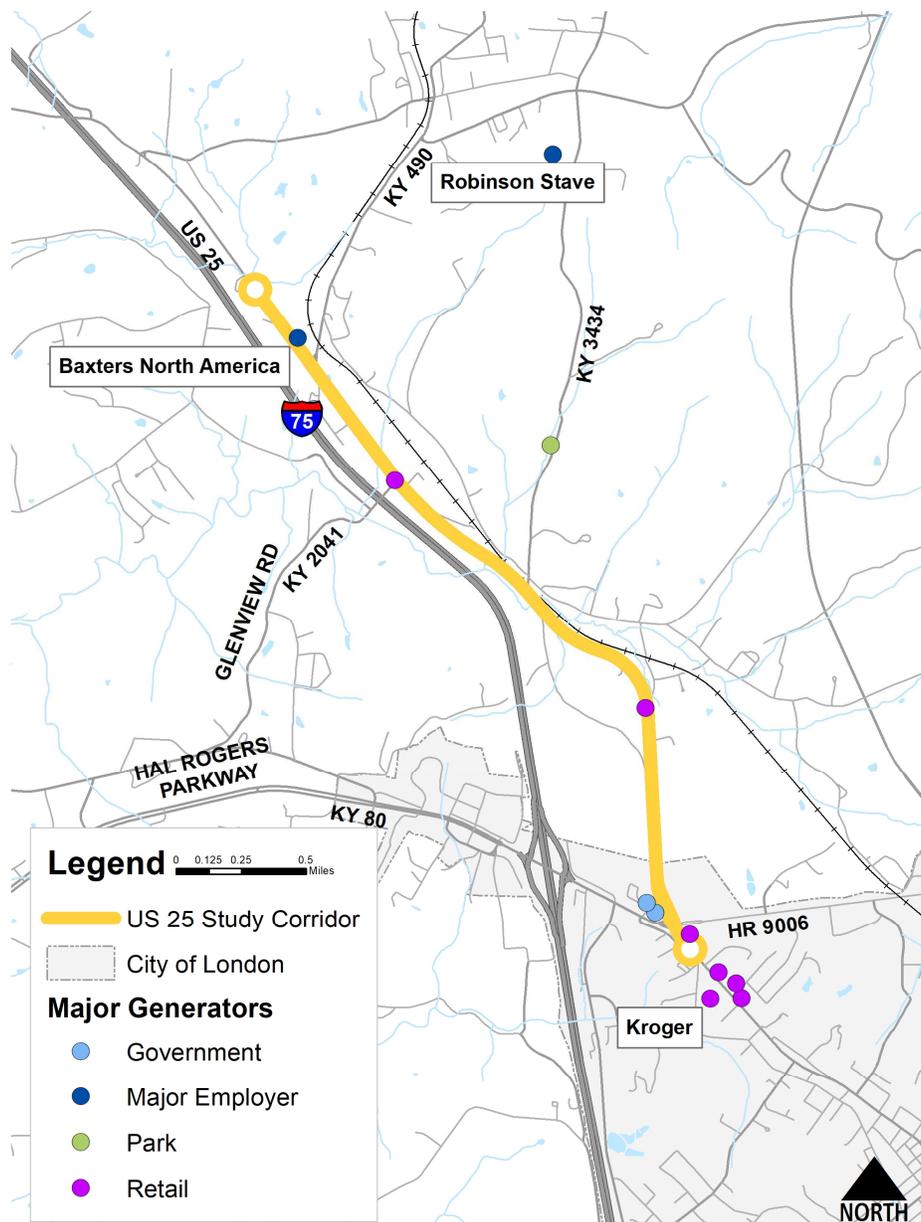
Figure 4 - Streetlight Pedestrian Activity



Major Traffic Generators

The traffic along the US 25 study corridor is largely characterized as through-traffic, low- to moderate-volume trips to individual commercial and residential parcels, and occasional detour route traffic for I-75. There are two major employment traffic generators located on and near the study area: Baxters North America located at the intersection of US 25 and KY 490, and Robinson Stave located in East Bernstadt. In addition to being motor-vehicle traffic generators, the gas stations along the study corridor and the Kroger located just south of the study area are major generators of pedestrians and bicyclists traveling along and across the corridor. The locations of these traffic generators are shown in Figure 5.

Figure 5 - Major Traffic Generators



Traffic Forecast Methodology

The traffic forecast methodology for the US 25 Corridor Study includes total traffic and truck volumes for 2023 and the design year 2045, and a consideration of anticipated bicycle and pedestrian activity. Adjacent planned projects to the study corridor impact pavement conditions only and are not anticipated to impact future traffic growth in either the build or no-build scenarios.

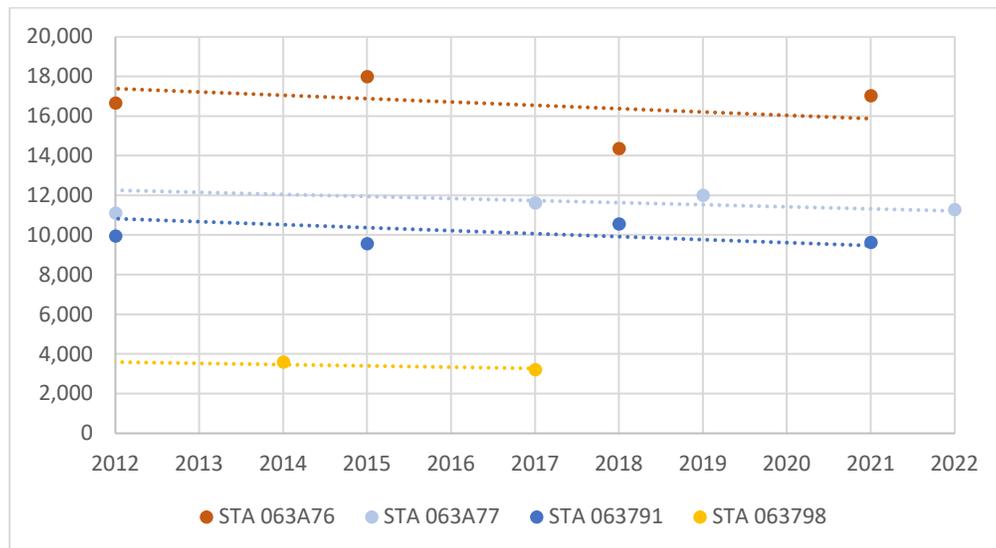
Traffic Growth Rate

In selecting a traffic growth rate, the following sources of growth trends were evaluated: historic traffic trends, population growth trends, and the Laurel-Pulaski Regional Travel Demand Model (TDM). Each of the growth trends informed the ultimate selection of a 0.5% growth rate for the 2045 design year.

Historic Traffic Trends

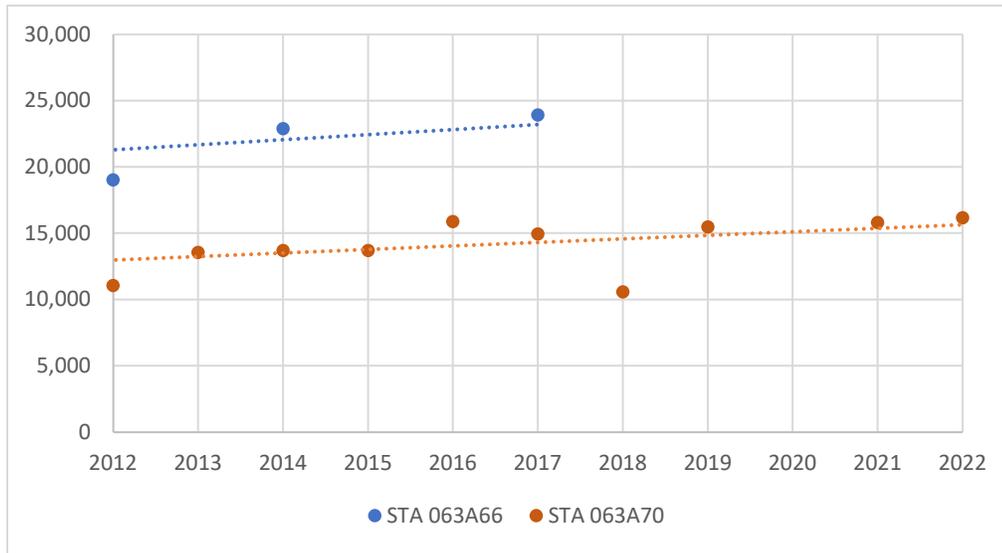
In addition to the most current year counts, KYTC also provided historic traffic volume data for each of the four count stations. Historically, traffic volumes trends on US 25 north of KY 80 have been on a steady decline since 2012 based on available counts, as summarized in Figure 6.

Figure 6 - US 25 Count Station Historic Traffic Trends



Discussions with local officials and stakeholders revealed planned development along KY 80 near its intersection with US 25. To fully capture potential growth along the US 25 study corridor, the planning team also evaluated the TDM and count station historic growth rates on KY 80. Traffic volumes on this major intersecting corridor have been steadily increasing since 2012, based on available data as shown in Figure 7.

Figure 7 - KY 80 KYTC Count Station Historic Growth Rates



Population Growth Trends

Population statistics are available from the US Census for the London, KY Micropolitan Area. The micropolitan area includes Laurel, Knox, and Whitley Counties and is summarized in Table 2. 2045 population projections from the Kentucky Data Center are also provided in this table with the anticipated growth rate from the projection. In addition, the planning team evaluated the growth trends within the zip code that encompasses the study area, as summarized in Table 3. While the population in the Micropolitan Area has increased in the last ten years, the projected population from the Kentucky Data Center is projected to decrease, and the local zip code population has decreased.

Table 2 - London, KY US Census Micropolitan Area Growth Rate

2045 Population Projection	2020 Population	2010 Population	Projected Growth Rate	Historic Growth Rate
131,530	149,863	58,849	-0.52%	9.80%

Table 3 - US Census 40741 Zip Code Growth Rate

2020 Population	2010 Population	Growth Rate
7,572	7,993	-0.54%

Laurel-Pulaski Regional Travel Demand Model (TDM)

The TDM average growth rate for each segment of the study corridor ranged from higher positive growth rates near the US 25 intersection with KY 80, aligning with current development

and growth projections, to near-zero growth heading north into rural Laurel County to the north of the intersection with KY 490. The TDM average growth rates for US 25 are summarized in Table 4. Average growth rates for KY 80 ranged from near-zero east of US 25 to positive west of US 25, as summarized in Table 5.

Table 4 - US 25 TDM Average Growth Rate by Segment

From MP	To MP	Description	TDM Average Growth Rate
13.500	13.621	KY 6259 - KY 80	0.85%
13.621	14.230	KY 80 - Robinson	0.48%
14.230	14.567	Robinson - Bullock	0.43%
14.567	15.147	Bullock - KY 3434	0.41%
15.147	15.821	KY 3434 - KY 2041	-0.12%
15.821	16.303	KY 2041 - KY 490	-0.01%
16.303	16.700	KY 490 - End MP	0.03%

Table 5 - KY 80 TDM Average Growth Rate by Segment

From MP	To MP	Description	TDM Average Growth Rate
10.364	10.610	Bravo - I-75	0.45%
10.610	11.211	I-75 - US 25	0.11%
0.000	0.357	US 25 - KY 6260	-0.07%
0.357	0.766	KY 6260 - KY 1769	-0.07%

Bicycle and Pedestrian Considerations

In addition to the growth of traffic, the planning team anticipates steady increases of bicycle and pedestrian activity along and across the study corridor. The study area is bound by residential areas, with percentages of persons below the poverty level significantly larger than the nation, state, and Laurel County, as identified in the Laurel County US 25 Study Socioeconomic Study performed in June 2023 and summarized in Figure 8.

Figure 8 - Percentages of Persons Below the Poverty Level

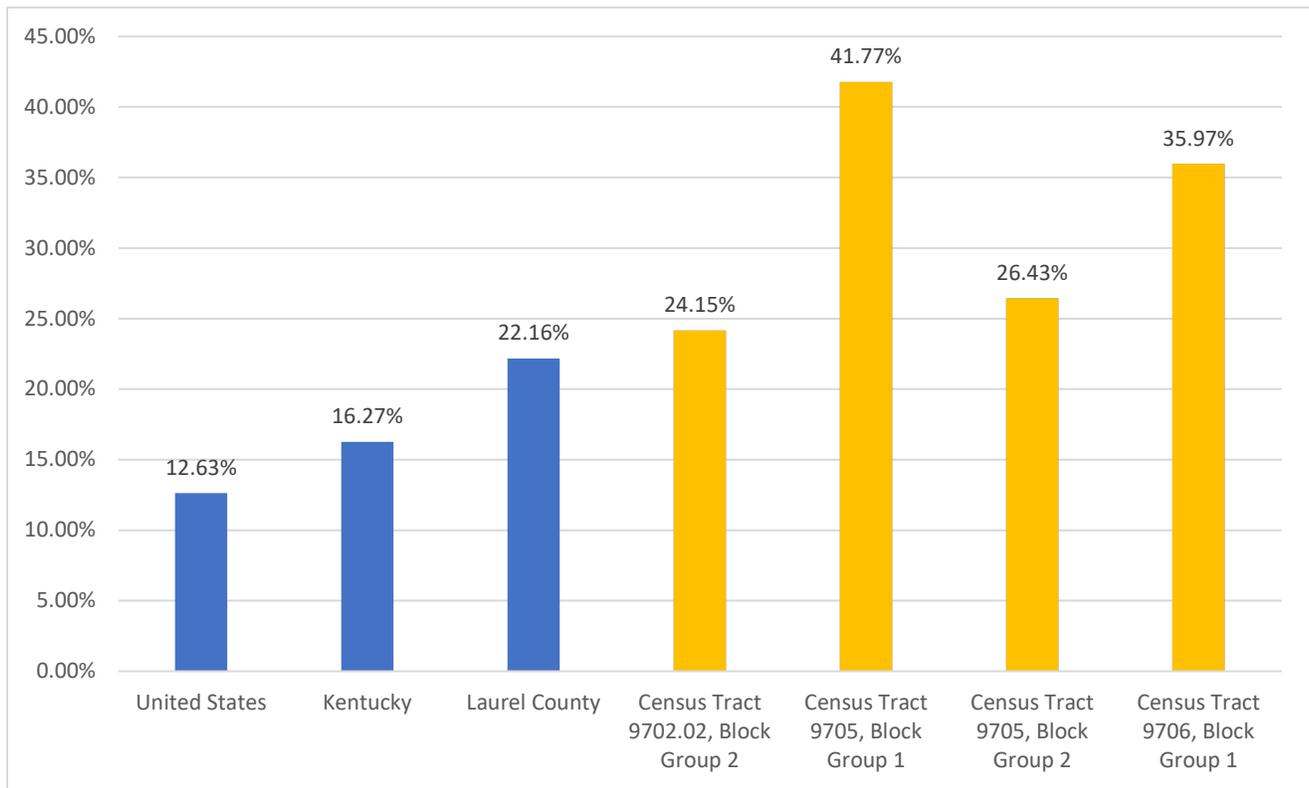
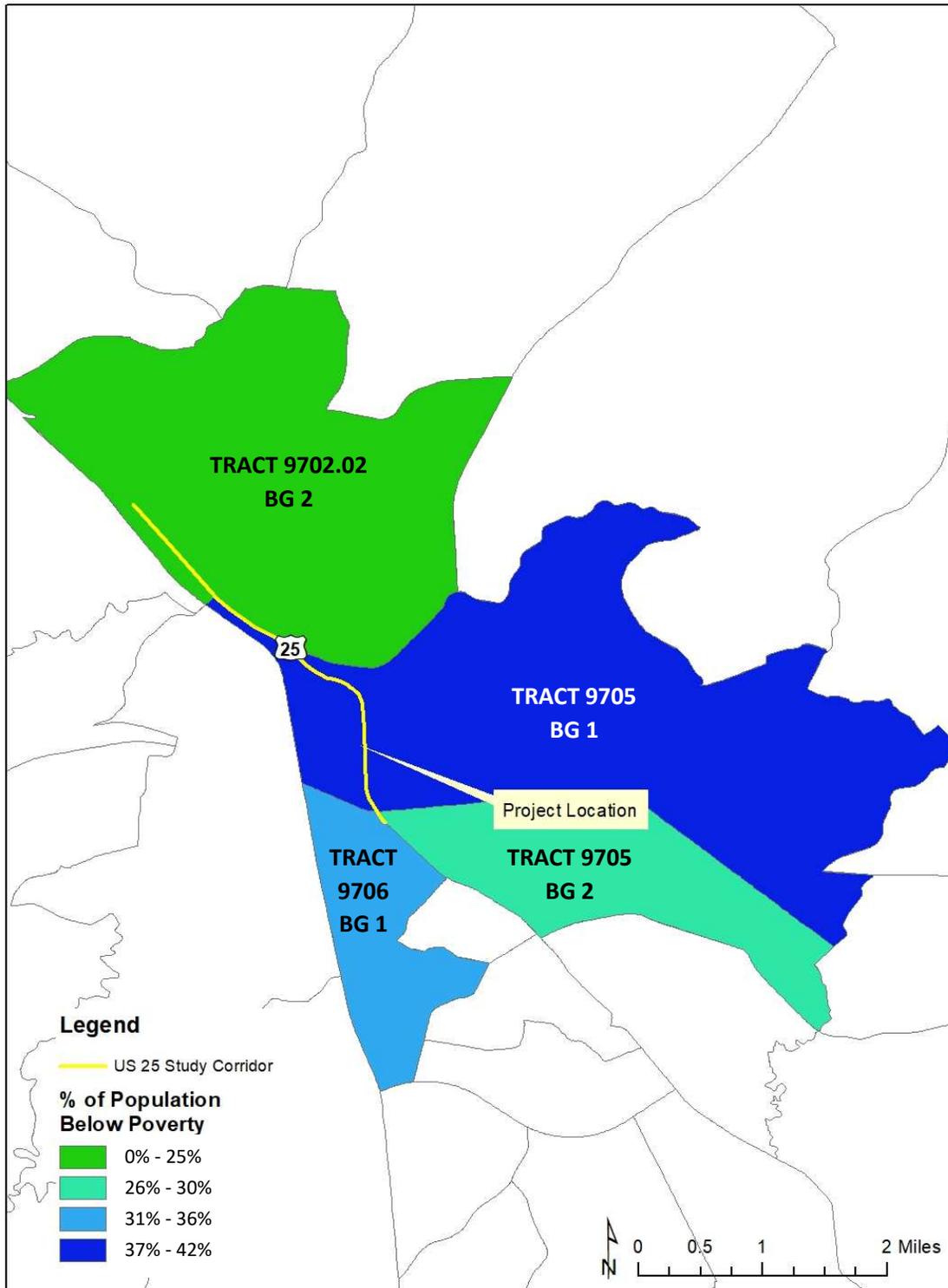


Figure 9 - Percentage of population below poverty line by Census Tract Block Group. Adapted from the Laurel County US 25 Study Socioeconomic Report from June 2023.



2045 Forecast Traffic Volume Projections

The selected 0.5% annual growth rate developed from the evaluation of the historic traffic trends, population trends, and the TDM were applied to the 2023 Existing Scenarios in Appendix B to project the 2045 No-Build Scenario. 2045 No-Build Scenarios for each of the intersections are included as Appendix C. Key data from the 2045 No-Build Scenario is summarized in Table 6. For the purposes of the traffic forecast and subsequent traffic analysis, the short segment of US 25 between CVB Drive and the KY 80 intersection is considered part of the US 25/KY 80 intersection footprint.

Table 6 - Comparison of Key Existing and No-Build Traffic Data by Segment

Build Scenario	Segment Description	Advancing Volumes (AM) (SB)	Opposing Volumes (AM) (NB)	Opposing Volumes (PM) (SB)	Advancing Volumes (PM) (NB)	% Trucks
2023 Existing	KY 80/HR 9006 to Bullock Rd.	530	450	470	580	12%
	Bullock Rd. to KY 2041	530	440	470	560	12%
	KY 2041 to KY 490	510	280	450	490	12%
2045 Future No-Build	KY 80/HR 9006 to Bullock Rd.	600	500	520	650	12%
	Bullock Rd. to KY 2041	600	490	530	630	12%
	KY 2041 to KY 490	560	310	500	560	12%

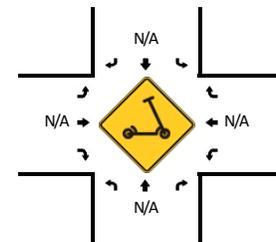
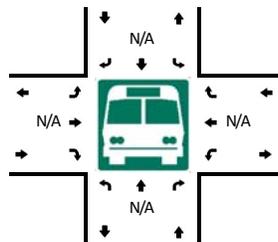
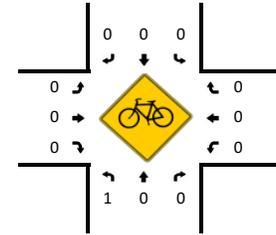
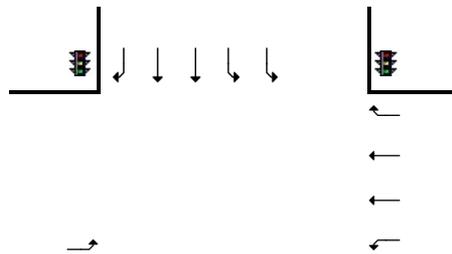
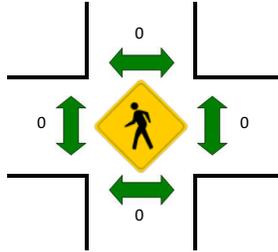
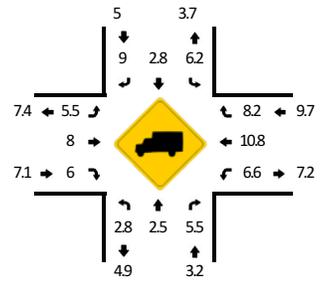
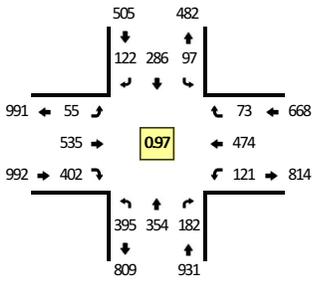
Appendix A

Traffic Count Data

LOCATION: US 25 -- KY 80
CITY/STATE: London, KY

QC JOB #: 16103701
DATE: Tue, Mar 21 2023

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:45 PM -- 5:00 PM



15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 80 (Eastbound)				KY 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	36	15	14	0	13	36	17	0	4	68	30	0	17	68	10	0	328	
7:15 AM	41	25	16	0	22	55	18	0	2	108	58	0	23	80	15	0	463	
7:30 AM	48	27	30	0	31	67	34	0	6	141	61	0	25	126	17	0	613	
7:45 AM	40	14	30	0	41	97	32	0	11	142	90	0	44	170	35	0	746	2150
8:00 AM	51	29	35	0	25	70	26	0	3	101	80	0	52	146	32	0	650	2472
8:15 AM	55	48	24	0	8	54	24	0	10	61	85	0	35	129	28	0	561	2570
8:30 AM	60	35	19	0	9	46	21	0	7	75	61	0	22	75	14	0	444	2401
8:45 AM	46	38	20	0	10	46	22	0	6	64	76	0	27	110	22	0	487	2142
9:00 AM	45	39	19	0	9	44	19	0	6	60	61	0	29	67	17	0	415	1907
9:15 AM	47	46	20	0	6	53	21	0	7	62	54	0	12	86	16	0	430	1776
9:30 AM	54	37	31	0	8	58	20	0	11	72	69	0	28	92	17	0	497	1829
9:45 AM	59	38	24	0	16	57	24	0	9	48	60	0	30	82	10	0	457	1799
10:00 AM	54	44	15	0	14	50	18	0	11	49	65	0	27	87	12	0	446	1830
10:15 AM	63	38	26	0	10	62	22	0	6	63	77	0	24	73	8	0	472	1872
10:30 AM	75	41	21	0	3	54	19	0	7	55	54	0	23	77	11	0	440	1815
10:45 AM	64	49	20	0	16	51	16	0	12	59	55	0	17	83	19	0	461	1819
11:00 AM	55	54	18	0	16	61	16	0	11	60	50	0	24	54	9	0	428	1801
11:15 AM	66	48	19	0	18	68	17	0	5	69	57	0	34	82	11	0	494	1823
11:30 AM	62	57	17	0	10	59	16	0	6	107	78	1	28	80	19	0	540	1923
11:45 AM	83	79	34	0	7	55	19	0	9	77	48	0	28	60	10	0	509	1971
12:00 PM	64	59	32	0	5	60	30	0	9	73	75	0	22	80	13	0	522	2065
12:15 PM	65	51	19	0	14	73	18	0	7	78	72	0	16	87	23	0	523	2094
12:30 PM	78	72	23	0	9	75	32	0	12	78	64	0	16	71	8	0	538	2092
12:45 PM	83	59	26	0	15	68	23	0	10	74	89	0	37	71	18	0	573	2156
1:00 PM	78	69	25	0	11	45	20	0	7	71	84	0	27	88	7	0	532	2166
1:15 PM	74	66	32	0	14	71	26	0	4	88	88	0	28	77	20	0	588	2231
1:30 PM	85	58	33	0	17	87	26	0	12	73	72	0	19	78	13	0	573	2266
1:45 PM	68	47	26	0	14	65	21	0	13	101	92	0	22	99	13	0	581	2274
2:00 PM	83	65	41	0	17	60	27	0	13	82	75	0	31	83	12	0	589	2331
2:15 PM	73	65	26	0	30	48	22	0	13	83	68	0	23	96	17	0	564	2307
2:30 PM	77	76	37	0	21	47	14	0	9	95	87	0	24	86	19	0	592	2326
2:45 PM	52	63	52	0	21	49	28	0	18	105	76	0	23	101	14	0	602	2347
3:00 PM	78	56	47	0	16	59	30	0	12	115	78	0	49	145	27	0	712	2470
3:15 PM	86	66	47	0	21	74	37	0	12	105	80	0	43	158	22	0	751	2657
3:30 PM	91	58	40	0	20	65	29	0	12	82	90	0	54	130	32	0	703	2768
3:45 PM	90	76	39	0	20	68	33	0	17	122	94	0	36	100	22	0	717	2883
4:00 PM	83	58	44	0	29	55	38	0	23	94	71	0	31	115	20	0	661	2832
4:15 PM	90	85	40	0	26	74	25	0	12	120	81	0	25	90	23	0	691	2772
4:30 PM	89	81	37	0	36	78	39	0	14	136	104	0	29	116	22	0	781	2850

15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 80 (Eastbound)				KY 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:45 PM	125	86	44	0	26	84	31	0	14	126	99	0	26	122	16	0	799	2932
5:00 PM	96	91	55	0	17	66	24	0	20	145	109	0	34	128	14	0	799	3070
5:15 PM	85	96	46	0	18	58	28	0	7	128	90	0	32	108	21	0	717	3096
5:30 PM	82	72	35	0	15	64	39	0	14	126	98	0	25	83	14	0	667	2982
5:45 PM	109	59	40	0	15	44	28	0	16	118	90	0	24	81	12	0	636	2819
6:00 PM	73	58	33	0	13	55	23	0	12	121	77	0	16	71	15	0	567	2587
6:15 PM	66	70	28	0	12	56	29	0	6	107	79	0	16	74	10	0	553	2423
6:30 PM	57	45	21	0	10	44	13	0	13	89	56	0	13	63	8	0	432	2188
6:45 PM	56	40	17	0	13	39	23	0	6	82	65	0	16	58	13	1	429	1981
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	500	344	176	0	104	336	124	0	56	504	396	0	104	488	64	0	3196	
Heavy Trucks	24	8	8		8	16	12		0	44	36		8	48	4		216	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		
<i>Comments:</i>																		

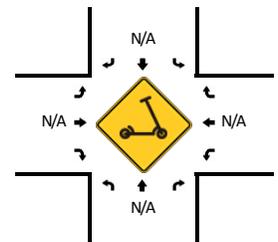
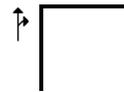
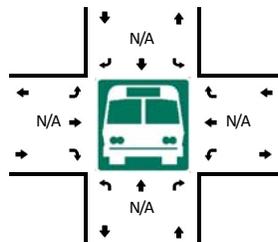
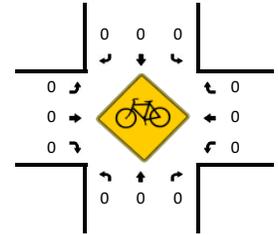
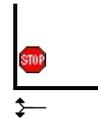
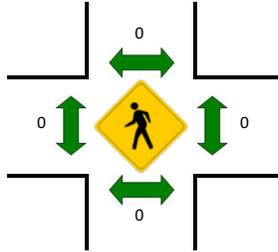
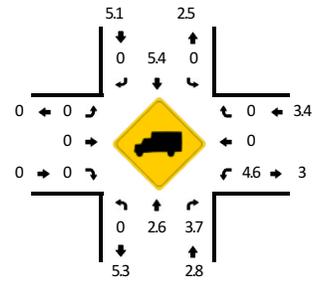
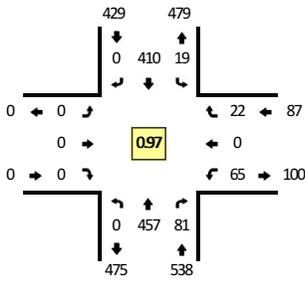
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SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: US 25 -- KY 3434
CITY/STATE: Laurel, KY

QC JOB #: 16103702
DATE: Tue, Mar 21 2023

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 4:15 PM -- 4:30 PM



15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 3434 (Eastbound)				KY 3434 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	30	6	0	0	70	0	0	0	0	0	0	5	0	3	0	114	
7:15 AM	0	56	6	0	1	93	0	0	0	0	0	0	13	0	3	0	172	
7:30 AM	0	52	8	0	3	119	0	0	0	0	0	0	16	0	6	0	204	
7:45 AM	0	56	9	0	2	163	0	0	0	0	0	0	23	0	5	0	258	748
8:00 AM	0	61	6	0	5	93	0	0	0	0	0	0	14	0	4	0	183	817
8:15 AM	0	62	6	0	5	69	0	0	0	0	0	0	10	0	4	0	156	801
8:30 AM	0	44	9	0	4	64	0	0	0	0	0	0	9	0	4	0	134	731
8:45 AM	0	40	9	0	0	61	0	0	0	0	0	0	6	0	1	0	117	590
9:00 AM	0	63	6	0	3	78	0	0	0	0	0	0	4	0	5	0	159	566
9:15 AM	0	72	9	0	3	71	0	0	0	0	0	0	7	0	2	0	164	574
9:30 AM	0	64	2	0	3	75	0	0	0	0	0	0	13	0	3	0	160	600
9:45 AM	0	55	6	0	2	71	0	0	0	0	0	0	6	0	1	0	141	624
10:00 AM	0	46	7	0	2	69	0	0	0	0	0	0	9	0	1	0	134	599
10:15 AM	0	54	5	0	2	87	0	0	0	0	0	0	10	0	2	0	160	595
10:30 AM	0	52	5	0	2	68	0	0	0	0	0	0	5	0	2	0	134	569
10:45 AM	0	83	9	0	3	80	0	0	0	0	0	0	7	0	7	0	189	617
11:00 AM	0	62	8	1	5	86	0	0	0	0	0	0	10	0	3	0	175	658
11:15 AM	0	55	13	0	2	75	0	0	0	0	0	0	5	0	8	0	158	656
11:30 AM	0	79	8	0	4	85	0	0	0	0	0	0	10	0	1	0	187	709
11:45 AM	0	89	12	1	3	81	0	0	0	0	0	0	8	0	1	0	195	715
12:00 PM	0	87	7	0	1	78	0	0	0	0	0	0	10	0	2	0	185	725
12:15 PM	0	78	7	0	1	90	0	0	0	0	0	0	11	0	2	0	189	756
12:30 PM	0	90	12	0	2	96	0	0	0	0	0	0	13	0	4	0	217	786
12:45 PM	0	68	11	0	6	79	0	0	0	0	0	0	5	0	2	0	171	762
1:00 PM	0	83	8	0	5	75	0	0	0	0	0	0	4	0	1	0	176	753
1:15 PM	0	77	12	0	2	80	0	0	0	0	0	0	17	0	5	0	193	757
1:30 PM	0	76	4	0	3	108	0	0	0	0	0	0	6	0	1	0	198	738
1:45 PM	0	79	8	0	3	92	0	0	0	0	0	0	4	0	7	0	193	760
2:00 PM	0	78	8	0	5	93	0	0	0	0	0	0	6	0	5	0	195	779
2:15 PM	0	107	7	0	10	76	0	0	0	0	0	0	10	0	3	0	213	799
2:30 PM	0	95	9	0	3	70	0	0	0	0	0	0	8	0	5	0	190	791
2:45 PM	0	93	13	0	5	89	0	0	0	0	0	0	8	0	6	0	214	812
3:00 PM	0	81	8	0	5	99	0	0	0	0	0	0	12	0	10	0	215	832
3:15 PM	0	99	8	0	4	112	0	0	0	0	0	0	10	0	6	0	239	858
3:30 PM	0	129	14	0	7	98	0	0	0	0	0	0	13	0	7	0	268	936
3:45 PM	0	113	22	0	5	111	0	0	0	0	0	0	7	0	9	0	267	989
4:00 PM	0	106	19	0	6	93	0	0	0	0	0	0	16	0	6	0	246	1020
4:15 PM	0	125	24	0	5	105	0	0	0	0	0	0	10	0	2	0	271	1052

15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 3434 (Eastbound)				KY 3434 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:30 PM	0	113	16	0	3	101	0	0	0	0	0	0	32	0	5	0	270	1054
4:45 PM	0	128	8	0	5	90	0	0	0	0	0	0	12	0	9	0	252	1039
5:00 PM	0	125	12	0	8	91	0	0	0	0	0	0	10	0	4	0	250	1043
5:15 PM	0	125	18	0	6	79	0	0	0	0	0	0	10	0	3	0	241	1013
5:30 PM	0	124	11	0	6	91	0	0	0	0	0	0	13	0	6	0	251	994
5:45 PM	0	96	16	0	4	82	0	0	0	0	0	0	12	0	6	0	216	958
6:00 PM	0	77	6	0	6	64	0	0	0	0	0	0	9	0	3	0	165	873
6:15 PM	0	106	15	0	3	73	0	0	0	0	0	0	7	0	4	0	208	840
6:30 PM	0	80	7	0	1	59	0	0	0	0	0	0	8	0	4	0	159	748
6:45 PM	0	56	13	0	6	73	0	0	0	0	0	0	5	0	2	0	155	687
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	500	96	0	20	420	0	0	0	0	0	0	40	0	8	0	1084	
Heavy Trucks	0	4	0		0	36	0		0	0	0		4	0	0		44	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

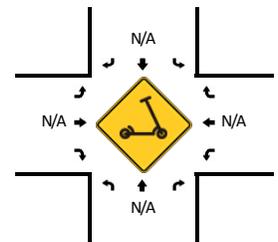
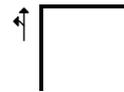
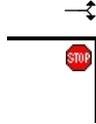
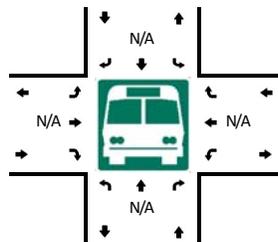
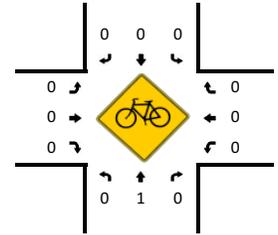
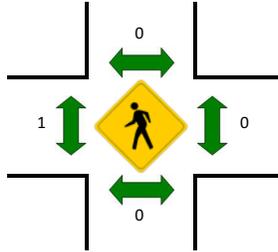
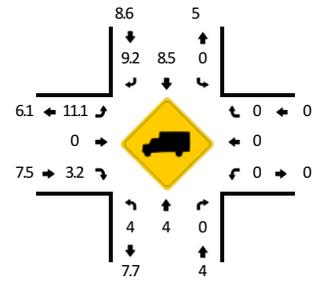
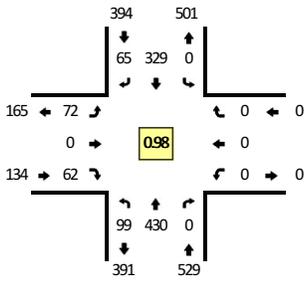
Report generated on 4/4/2023 1:55 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: US 25 -- KY 2041
CITY/STATE: Laurel, KY

QC JOB #: 16103703
DATE: Tue, Mar 21 2023

Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 2041 (Eastbound)				KY 2041 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	31	0	0	0	61	4	0	9	0	13	0	0	0	0	0	121	
7:15 AM	4	57	0	0	0	70	15	0	21	0	25	0	0	0	0	0	192	
7:30 AM	7	45	0	0	0	118	23	0	26	0	18	0	0	0	0	0	237	
7:45 AM	9	53	0	0	0	151	31	0	25	0	19	0	0	0	0	0	288	838
8:00 AM	12	45	0	0	0	72	12	0	7	0	20	0	0	0	0	0	168	885
8:15 AM	3	55	0	0	0	63	13	0	8	0	9	0	0	0	0	0	151	844
8:30 AM	11	39	0	0	0	61	13	0	13	0	16	0	0	0	0	0	153	760
8:45 AM	4	40	0	0	0	46	11	0	14	0	13	0	0	0	0	0	128	600
9:00 AM	7	44	0	0	0	70	4	0	8	0	17	0	0	0	0	0	150	582
9:15 AM	11	56	0	1	0	55	2	0	9	0	12	0	0	0	0	0	146	577
9:30 AM	6	51	0	0	0	55	7	0	7	0	14	0	0	0	0	0	140	564
9:45 AM	9	55	0	1	0	58	8	0	4	0	13	0	0	0	0	0	148	584
10:00 AM	4	42	0	1	0	60	3	0	7	0	8	0	0	0	0	0	125	559
10:15 AM	9	43	0	1	0	67	13	0	5	0	15	0	0	0	0	0	153	566
10:30 AM	8	44	0	0	0	53	6	0	11	0	15	0	0	0	0	0	137	563
10:45 AM	20	57	0	0	0	61	7	0	11	0	12	0	0	0	0	0	168	583
11:00 AM	13	56	0	0	0	72	8	0	14	0	16	0	0	0	0	0	179	637
11:15 AM	10	48	0	0	0	60	9	0	10	0	15	0	0	0	0	0	152	636
11:30 AM	12	57	0	0	0	73	8	0	5	0	16	0	0	0	0	0	171	670
11:45 AM	13	67	0	0	0	66	11	0	6	0	21	0	0	0	0	0	184	686
12:00 PM	13	76	0	0	0	62	9	0	11	0	11	0	0	0	0	0	182	689
12:15 PM	12	64	0	0	0	65	9	0	14	0	15	0	0	0	0	0	179	716
12:30 PM	17	75	0	0	0	91	9	0	6	0	9	0	0	0	0	0	207	752
12:45 PM	16	58	0	0	0	69	4	0	9	0	8	0	0	0	0	0	164	732
1:00 PM	12	63	0	0	0	62	12	0	9	0	18	0	0	0	0	0	176	726
1:15 PM	12	69	0	0	0	76	13	0	11	0	14	0	0	0	0	0	195	742
1:30 PM	9	64	0	0	0	71	16	0	8	0	22	0	0	0	0	0	190	725
1:45 PM	10	64	0	0	0	77	8	0	13	0	15	0	0	0	0	0	187	748
2:00 PM	7	74	0	0	0	70	12	0	13	0	12	0	0	0	0	0	188	760
2:15 PM	18	86	0	0	0	66	10	0	14	0	12	0	0	0	0	0	206	771
2:30 PM	10	81	0	0	0	63	10	0	12	0	19	0	0	0	0	0	195	776
2:45 PM	11	77	0	0	0	68	10	0	18	0	14	0	0	0	0	0	198	787
3:00 PM	16	75	0	0	0	91	17	0	22	0	15	0	0	0	0	0	236	835
3:15 PM	22	75	0	0	0	86	17	0	14	0	26	0	0	0	0	0	240	869
3:30 PM	24	107	0	0	0	89	21	0	11	0	14	0	0	0	0	0	266	940
3:45 PM	20	104	0	0	0	91	15	0	19	0	22	0	0	0	0	0	271	1013
4:00 PM	23	84	0	0	0	75	21	0	11	0	19	0	0	0	0	0	233	1010
4:15 PM	28	109	0	0	0	85	15	0	14	0	11	0	0	0	0	0	262	1032
4:30 PM	25	81	0	0	0	107	19	0	17	0	12	0	0	0	0	0	261	1027

15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 2041 (Eastbound)				KY 2041 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:45 PM	22	115	0	0	0	66	13	0	25	0	23	1	0	0	0	0	265	1021
5:00 PM	24	125	0	0	0	71	18	0	15	0	16	0	0	0	0	0	269	1057
5:15 PM	17	110	0	0	0	72	27	0	17	0	14	0	0	0	0	0	257	1052
5:30 PM	22	110	0	0	0	67	12	0	11	0	13	0	0	0	0	0	235	1026
5:45 PM	18	80	0	0	0	68	19	0	19	0	14	0	0	0	0	0	218	979
6:00 PM	8	77	0	0	0	65	7	0	12	0	8	0	0	0	0	0	177	887
6:15 PM	12	111	0	0	0	64	13	0	17	0	13	0	0	0	0	0	230	860
6:30 PM	13	78	0	0	0	60	17	0	11	0	12	0	0	0	0	0	191	816
6:45 PM	10	53	0	0	0	56	12	0	14	0	13	0	0	0	0	0	158	756
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	96	500	0	0	0	284	72	0	60	0	64	0	0	0	0	0	1076	
Heavy Trucks	0	12	0	0	0	20	8	0	4	0	4	0	0	0	0	0	48	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

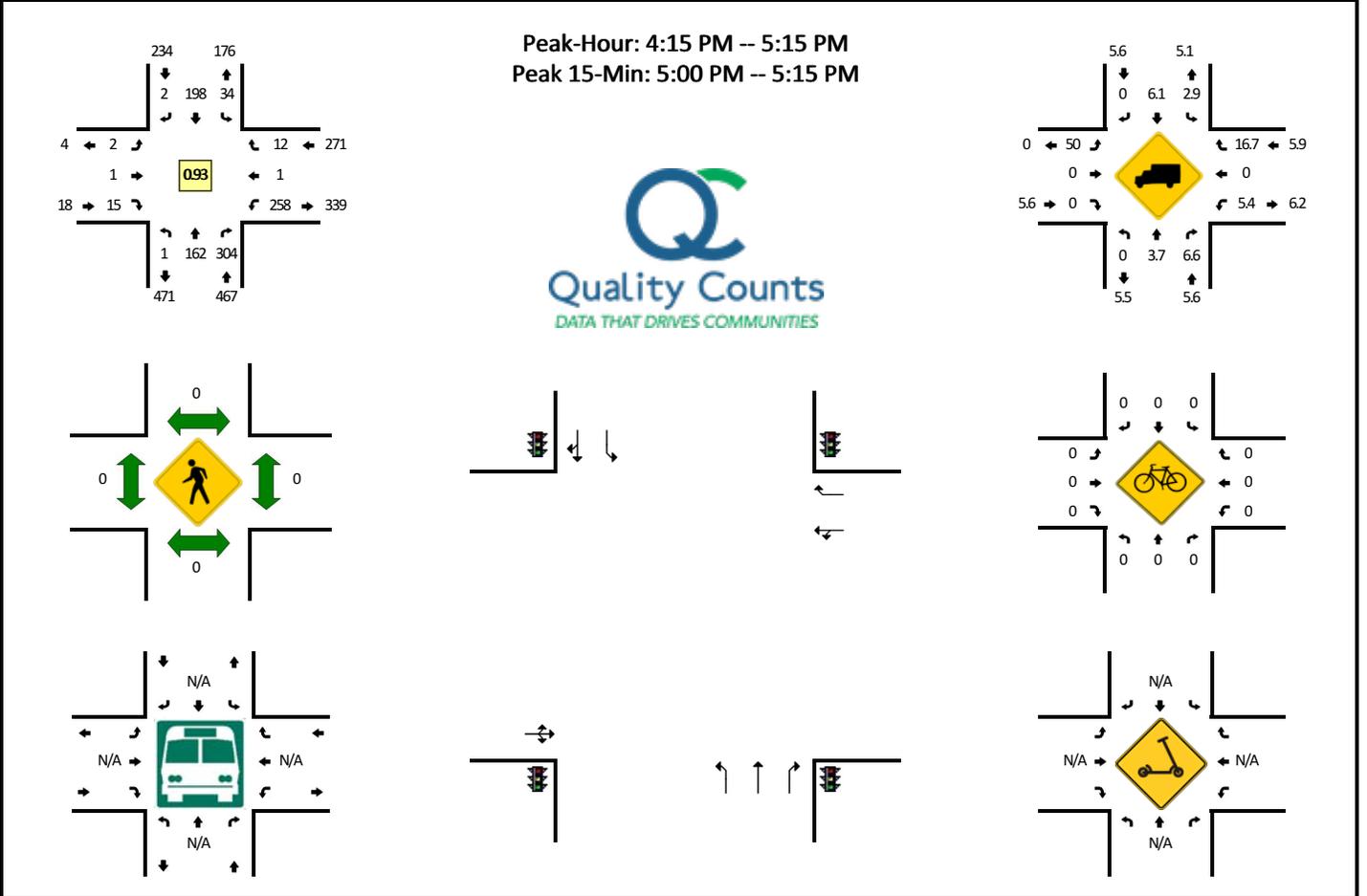
Comments:

Report generated on 4/4/2023 1:55 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: US 25 -- KY 490
CITY/STATE: Laurel, KY

QC JOB #: 16103704
DATE: Thu, Mar 30 2023



15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 490 (Eastbound)				KY 490 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U														
7:00 AM	1	15	19	0	2	24	0	0	0	0	0	0	42	0	3	0	106	
7:15 AM	0	27	59	0	6	38	1	0	1	0	0	0	58	0	4	0	194	
7:30 AM	1	15	52	0	9	48	1	0	0	0	0	0	93	0	5	0	224	
7:45 AM	3	20	51	0	11	37	1	0	0	0	0	0	121	1	5	0	250	774
8:00 AM	6	34	22	0	2	23	0	0	0	0	1	0	68	1	9	1	167	835
8:15 AM	4	28	27	0	2	26	0	0	0	0	0	0	62	2	4	0	155	796
8:30 AM	3	30	27	0	1	29	1	0	0	0	0	0	53	1	7	0	152	724
8:45 AM	1	27	21	0	2	37	1	0	0	1	0	0	34	3	5	0	132	606
9:00 AM	2	13	25	0	1	15	0	0	0	0	2	0	31	1	2	0	92	531
9:15 AM	2	18	27	0	0	27	0	0	0	0	1	0	41	1	5	0	122	498
9:30 AM	2	21	23	0	5	30	0	0	0	0	1	0	34	0	1	0	117	463
9:45 AM	2	25	33	0	0	28	0	0	0	0	2	0	49	0	2	0	141	472
10:00 AM	4	26	35	0	0	29	1	0	1	0	2	0	49	1	2	0	150	530
10:15 AM	4	19	27	0	0	22	2	0	1	1	4	0	47	1	2	0	130	538
10:30 AM	1	22	43	0	2	20	1	0	1	1	7	0	54	3	3	0	158	579
10:45 AM	0	18	29	0	1	30	1	0	0	1	2	0	46	1	2	0	131	569
11:00 AM	1	20	35	0	2	23	1	0	0	0	2	0	47	3	2	0	136	555
11:15 AM	4	22	48	0	4	31	4	0	0	0	4	0	43	0	2	0	162	587
11:30 AM	3	31	43	0	0	16	1	0	0	1	5	0	49	1	4	0	154	583
11:45 AM	2	28	33	0	0	38	1	0	0	1	5	0	38	2	2	0	150	602
12:00 PM	1	33	49	0	3	38	0	0	0	1	2	0	41	1	2	0	171	637
12:15 PM	2	28	46	0	3	28	0	0	0	0	2	0	33	0	3	1	146	621
12:30 PM	4	26	42	0	1	31	1	0	0	0	3	0	58	3	6	0	175	642
12:45 PM	4	37	58	0	2	24	0	0	1	0	3	0	42	1	1	0	173	665
1:00 PM	2	37	40	0	3	32	1	0	0	1	0	0	43	0	2	0	161	655
1:15 PM	2	25	47	0	3	22	1	0	1	0	4	0	42	2	5	0	154	663
1:30 PM	2	2	57	0	4	26	0	0	0	1	3	0	42	3	3	0	143	631
1:45 PM	0	23	56	0	9	37	0	0	0	1	3	0	30	2	3	0	164	622
2:00 PM	2	7	60	0	6	35	0	0	0	1	2	0	59	1	4	0	177	638
2:15 PM	1	9	57	0	7	38	1	0	1	2	2	0	53	2	1	0	174	658
2:30 PM	3	37	75	0	10	55	0	0	0	0	4	0	52	0	9	0	245	760
2:45 PM	7	36	67	0	4	35	0	0	0	0	2	0	48	2	1	0	202	798
3:00 PM	0	44	85	0	4	38	0	0	0	2	0	0	65	0	13	0	251	872
3:15 PM	0	44	52	0	3	37	1	0	0	1	1	0	72	0	8	0	219	917
3:30 PM	2	42	65	0	4	41	0	0	1	0	2	0	86	0	5	0	248	920
3:45 PM	1	57	68	0	4	30	0	0	0	0	1	0	77	0	5	0	243	961
4:00 PM	0	45	82	0	2	36	0	0	1	1	2	0	43	0	7	0	219	929
4:15 PM	1	40	76	0	10	43	1	0	1	0	4	0	60	0	4	0	240	950
4:30 PM	0	41	74	0	16	48	0	0	0	0	3	0	77	0	4	0	263	965

15-Min Count Period Beginning At	US 25 (Northbound)				US 25 (Southbound)				KY 490 (Eastbound)				KY 490 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U														
4:45 PM	0	39	70	0	4	42	1	0	0	0	2	0	60	0	4	0	222	944
5:00 PM	0	42	84	0	4	65	0	0	1	1	6	0	61	1	0	0	265	990
5:15 PM	0	55	89	0	6	34	0	0	0	0	1	0	50	0	3	0	238	988
5:30 PM	1	34	72	0	2	40	0	0	0	0	0	0	46	1	2	0	198	923
5:45 PM	1	36	74	0	4	37	0	0	0	0	0	0	48	1	2	0	203	904
6:00 PM	1	34	72	0	1	29	1	0	1	2	2	0	45	0	3	0	191	830
6:15 PM	1	26	61	0	4	30	0	0	0	0	2	0	34	0	2	0	160	752
6:30 PM	0	29	53	0	6	20	0	0	0	0	1	0	40	0	4	0	153	707
6:45 PM	0	31	60	0	2	20	0	0	0	0	0	0	35	0	5	0	153	657
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U														
All Vehicles	0	168	336	0	16	260	0	0	4	4	24	0	244	4	0	0	1060	
Heavy Trucks	0	8	16		0	8	0		0	0	0		4	0	0		36	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles		0				0				0				0			0	
Scooters																		

Comments:

Report generated on 4/4/2023 1:55 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Appendix B

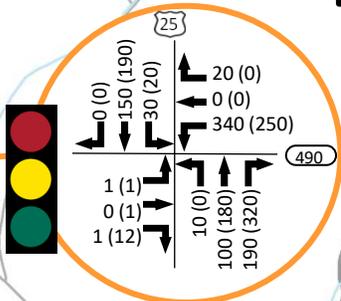
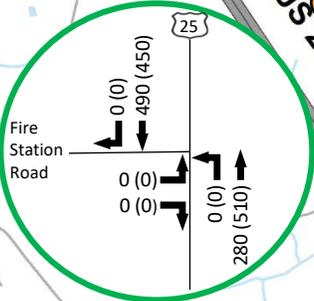
2023 Existing Scenarios

US 25

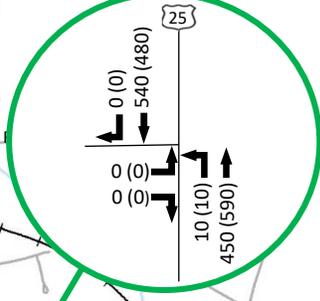
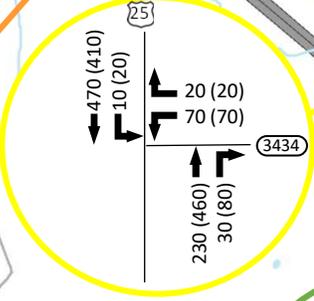
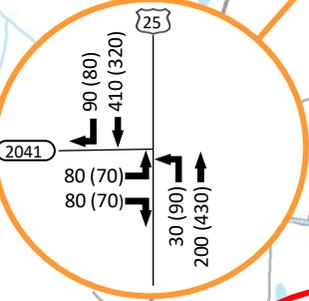
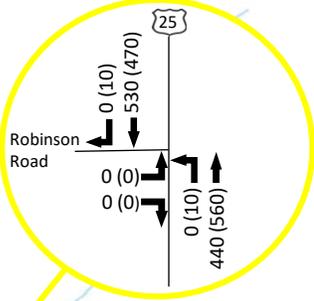
2023 Existing Scenario

Turning Movement Volumes and
Operational Level of Service

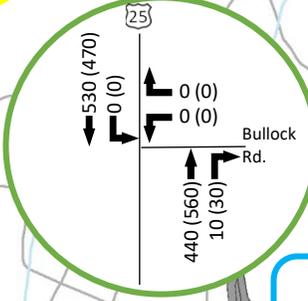
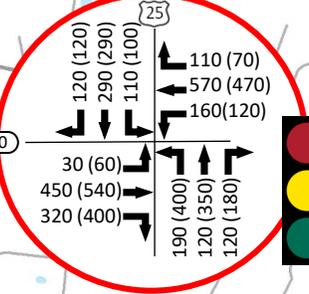
KY 490 to MP 16.7
ADT: 3,560
AM/PM LOS C



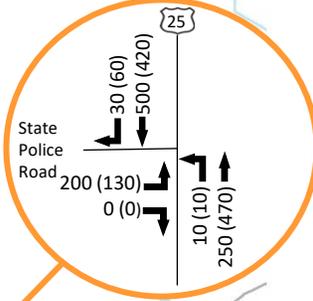
Bullock Road to KY 490
ADT: 9,620
AM/PM LOS C



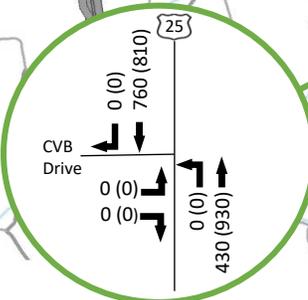
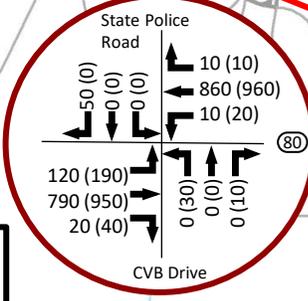
HAL ROGERS PARKWAY
KY 80



**KY 80/HR 9006 to
 Bullock Road**
ADT: 11,280
AM/PM LOS C



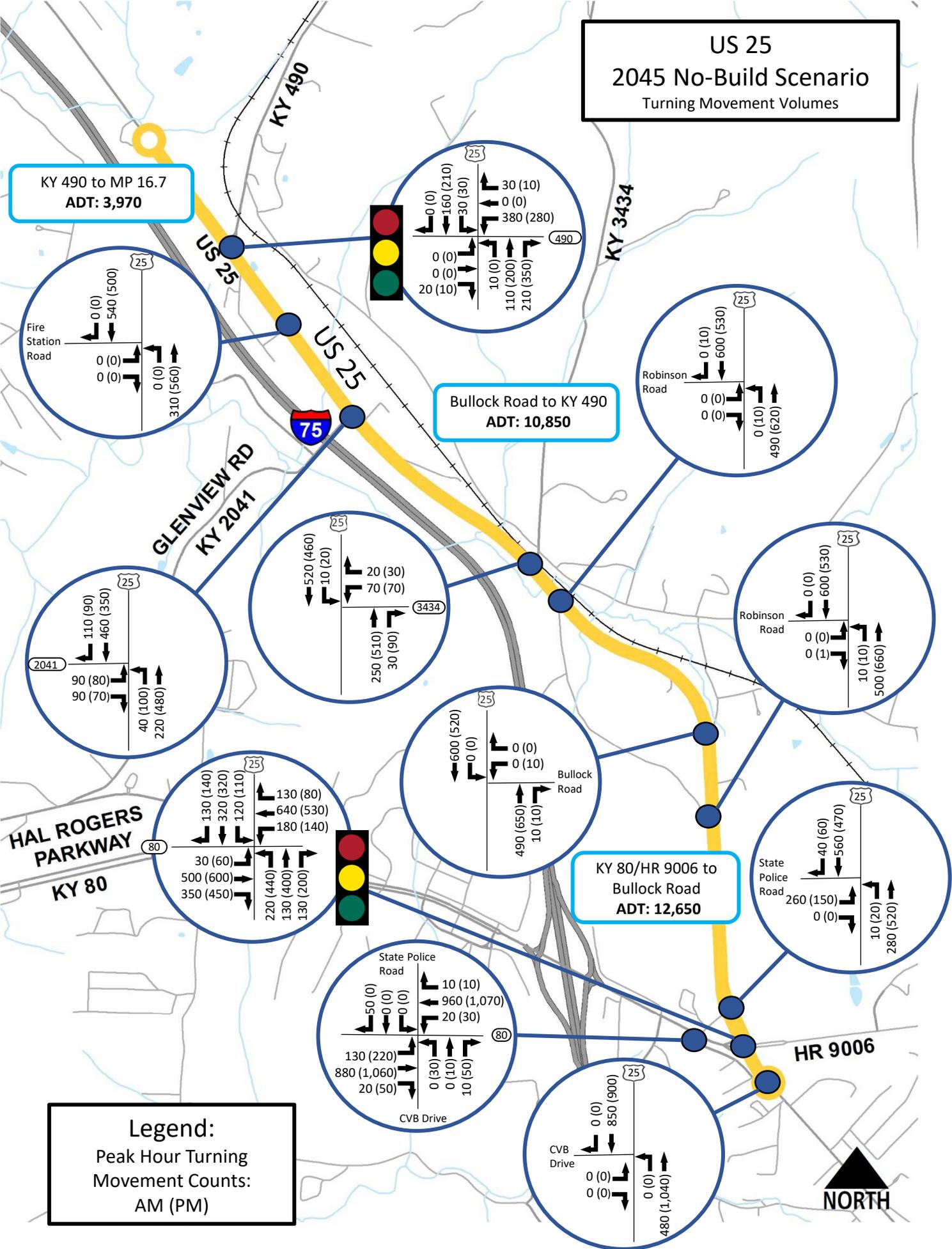
Legend:
 Turning Movement Counts:
 AM (PM)
 Peak Hour LOS: **A B C D E F**



Appendix C

2045 No-Build Scenarios

US 25 2045 No-Build Scenario Turning Movement Volumes



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Existing
Project Description	Northbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	479	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.28

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.7
Speed Slope Coefficient (m)	3.79312	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30097	PF Power Coefficient (p)	0.76166
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	4.4
%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	4995	-	-	57.2

Vehicle Results

Average Speed, mi/h	57.2	Percent Followers, %	52.4
Segment Travel Time, minutes	0.99	Follower Density (FD), followers/mi/ln	4.4
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	12.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	466	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.27
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	58.7
Speed Slope Coefficient (m)	3.75406	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30116	PF Power Coefficient (p)	0.75529
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	4.3
%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	6621	-	-	56.2

Vehicle Results

Average Speed, mi/h	56.2	Percent Followers, %	51.9
Segment Travel Time, minutes	1.34	Follower Density (FD), followers/mi/ln	4.3
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	7.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	297	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.17

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	60.0
Speed Slope Coefficient (m)	3.80306	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30225	PF Power Coefficient (p)	0.76236
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

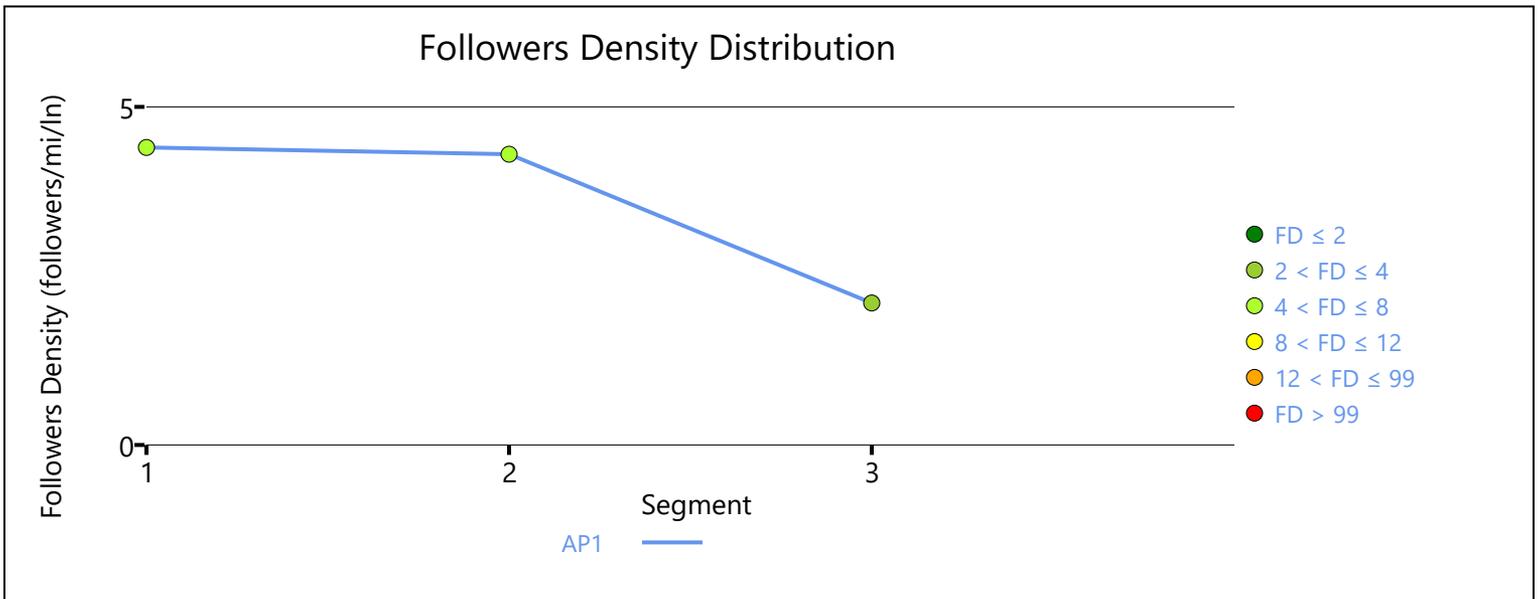
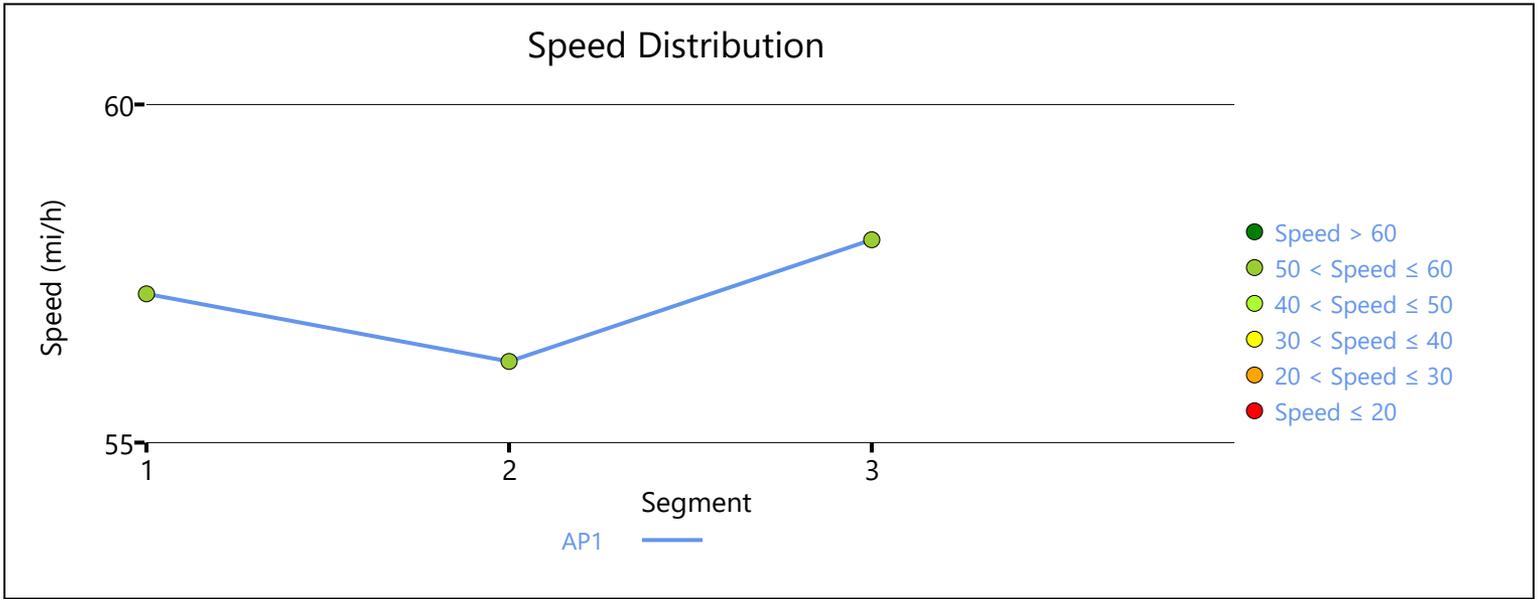
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	4641	-	-	58.0

Vehicle Results

Average Speed, mi/h	58.0	Percent Followers, %	40.3
Segment Travel Time, minutes	0.91	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	305	0.22	3.7	B



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Existing
Project Description	Southbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	11.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	568	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.33

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.0
Speed Slope Coefficient (m)	3.75247	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30719	PF Power Coefficient (p)	0.75970
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.8
%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	4995	-	-	56.2

Vehicle Results

Average Speed, mi/h	56.2	Percent Followers, %	57.3
Segment Travel Time, minutes	1.01	Follower Density (FD), followers/mi/ln	5.8
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	568	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.33
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.69986	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30909	PF Power Coefficient (p)	0.75260
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.9
%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	6621	-	-	55.0

Vehicle Results

Average Speed, mi/h	55.0	Percent Followers, %	57.5
Segment Travel Time, minutes	1.37	Follower Density (FD), followers/mi/ln	5.9
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	537	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.32

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.68111	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.32068	PF Power Coefficient (p)	0.75647
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

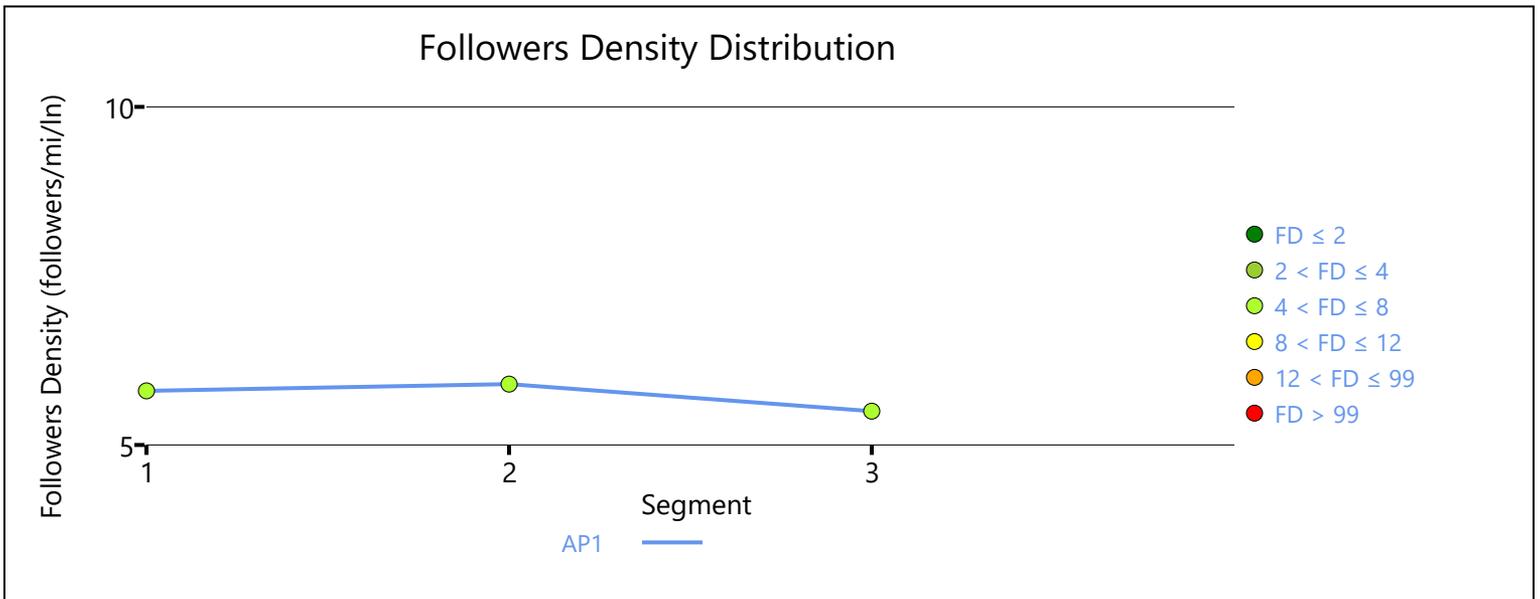
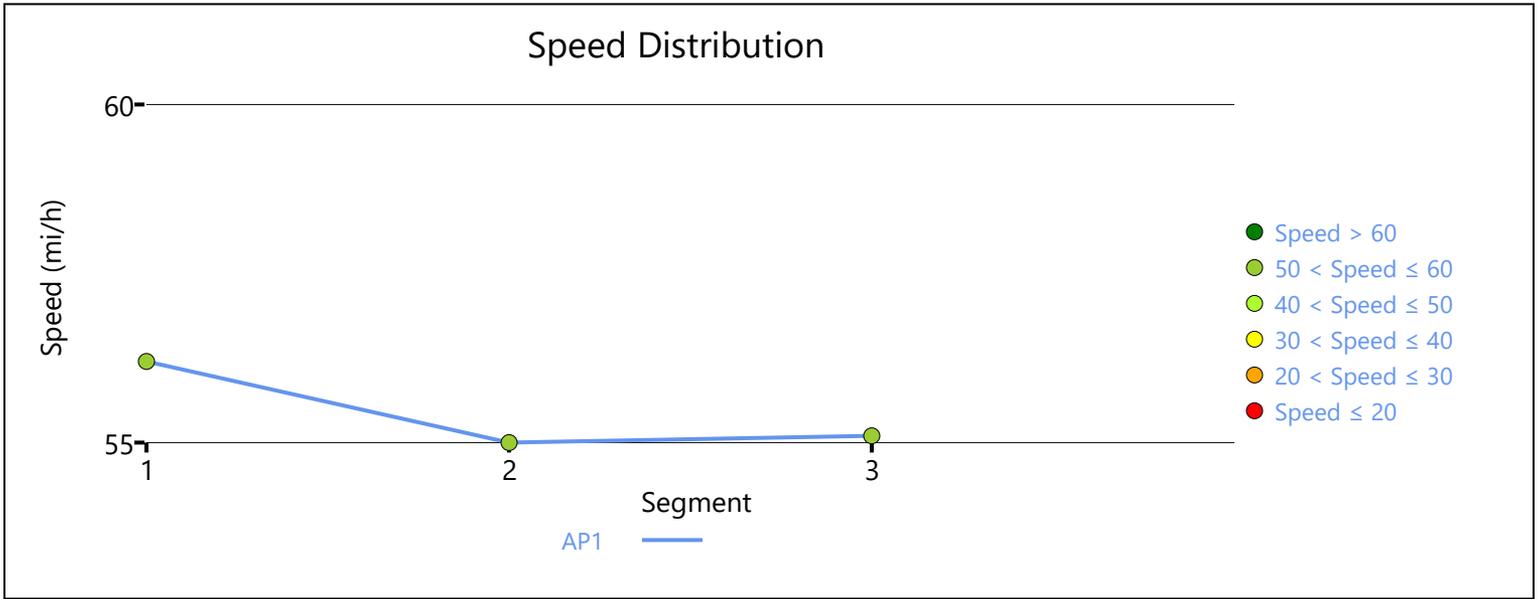
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	4641	-	-	55.1

Vehicle Results

Average Speed, mi/h	55.1	Percent Followers, %	56.2
Segment Travel Time, minutes	0.96	Follower Density (FD), followers/mi/ln	5.5
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	405	0.34	5.8	C



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Existing
Project Description	Northbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	621	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.37

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.7
Speed Slope Coefficient (m)	3.79312	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30097	PF Power Coefficient (p)	0.76166
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.5
%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	4995	-	-	56.8

Vehicle Results

Average Speed, mi/h	56.8	Percent Followers, %	59.6
Segment Travel Time, minutes	1.00	Follower Density (FD), followers/mi/ln	6.5
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	12.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	600	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.35
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	58.7
Speed Slope Coefficient (m)	3.75406	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30116	PF Power Coefficient (p)	0.75529
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.3
%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	6621	-	-	55.9

Vehicle Results

Average Speed, mi/h	55.9	Percent Followers, %	58.7
Segment Travel Time, minutes	1.35	Follower Density (FD), followers/mi/ln	6.3
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	7.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	526	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.31

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	60.0
Speed Slope Coefficient (m)	3.80306	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30225	PF Power Coefficient (p)	0.76236
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

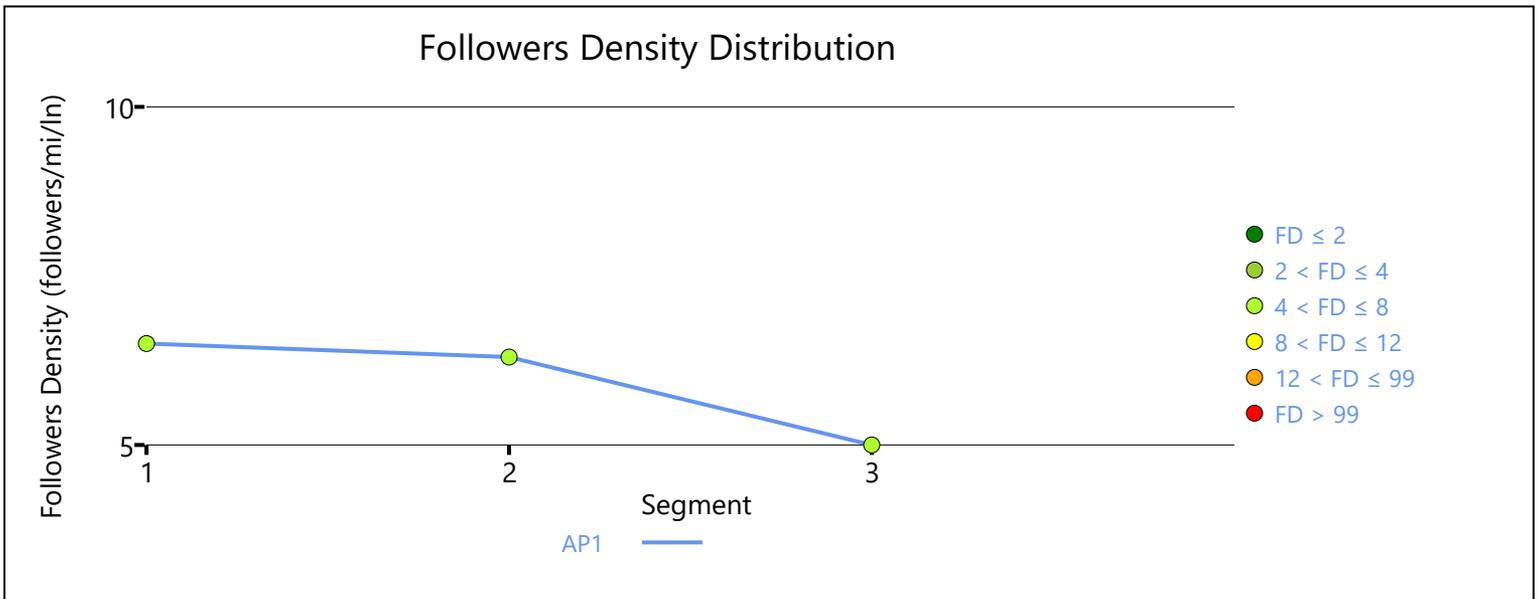
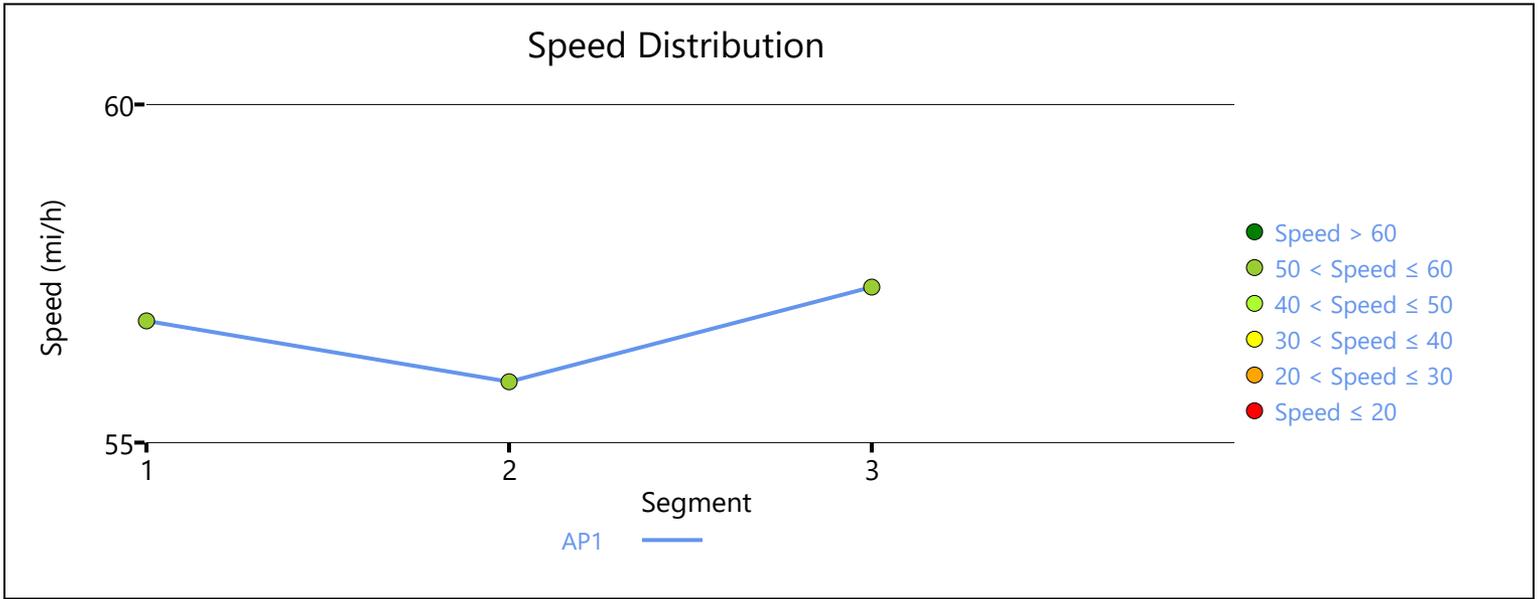
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1	Tangent	4641	-	-	57.3

Vehicle Results

Average Speed, mi/h	57.3	Percent Followers, %	55.0
Segment Travel Time, minutes	0.92	Follower Density (FD), followers/mi/ln	5.0
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	423	0.35	6.0	C



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Existing
Project Description	Southbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	11.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	499	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.29

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.0
Speed Slope Coefficient (m)	3.75247	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30719	PF Power Coefficient (p)	0.75970
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	4.8
%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	4995	-	-	56.4

Vehicle Results

Average Speed, mi/h	56.4	Percent Followers, %	53.7
Segment Travel Time, minutes	1.01	Follower Density (FD), followers/mi/ln	4.8
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	500	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.29
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.69986	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30909	PF Power Coefficient (p)	0.75260
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	4.9
%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	6621	-	-	55.2

Vehicle Results

Average Speed, mi/h	55.2	Percent Followers, %	54.0
Segment Travel Time, minutes	1.36	Follower Density (FD), followers/mi/ln	4.9
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	478	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.28

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.68111	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.32068	PF Power Coefficient (p)	0.75647
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	4.6
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

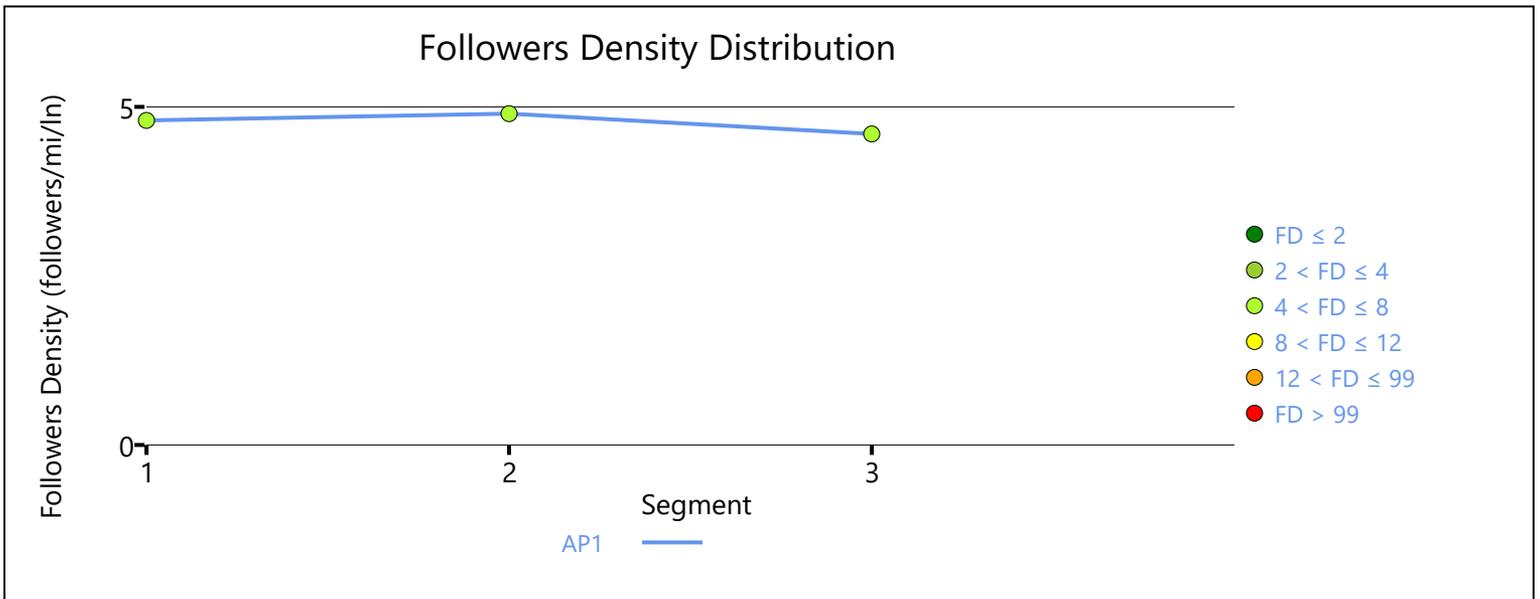
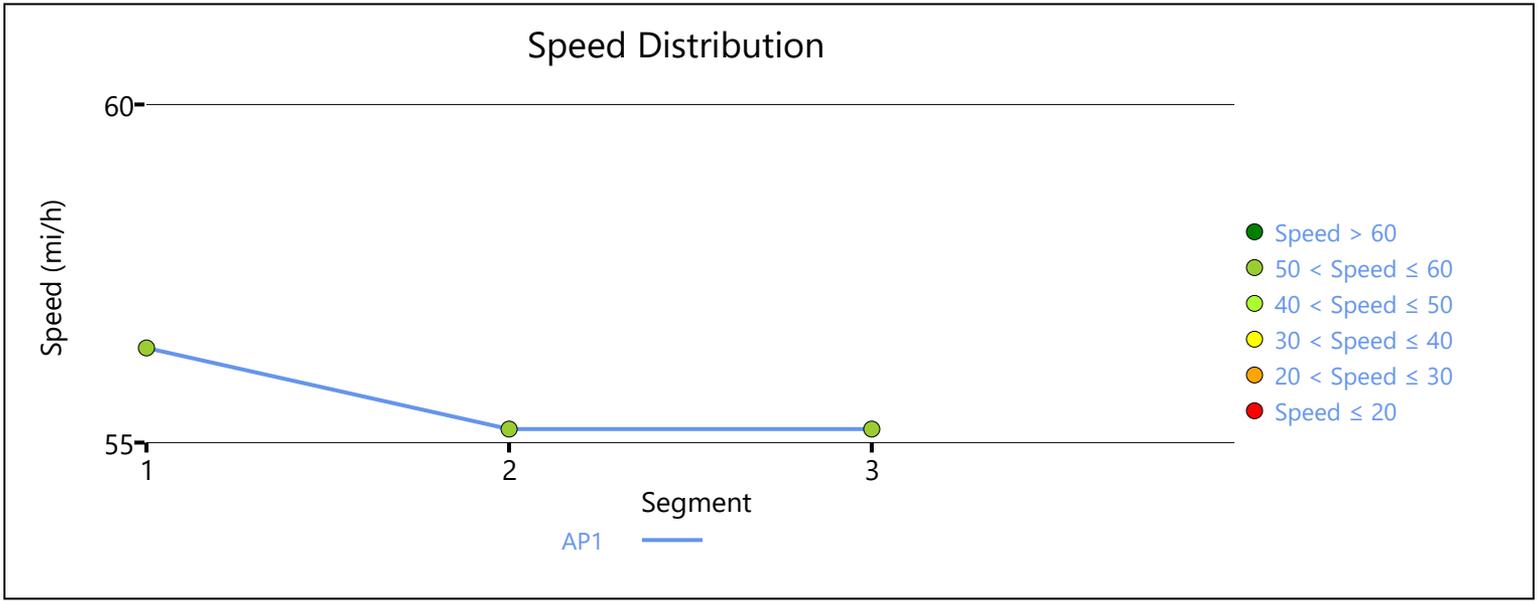
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	4641	-	-	55.2

Vehicle Results

Average Speed, mi/h	55.2	Percent Followers, %	53.0
Segment Travel Time, minutes	0.95	Follower Density (FD), followers/mi/ln	4.6
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	357	0.28	4.8	C



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future No Build
Project Description	Northbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	535	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.31

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.7
Speed Slope Coefficient (m)	3.79312	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30097	PF Power Coefficient (p)	0.76166
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.2
%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	4995	-	-	57.0

Vehicle Results

Average Speed, mi/h	57.0	Percent Followers, %	55.4
Segment Travel Time, minutes	1.00	Follower Density (FD), followers/mi/ln	5.2
Vehicle LOS	C		

Segment 2

Vehicle Inputs

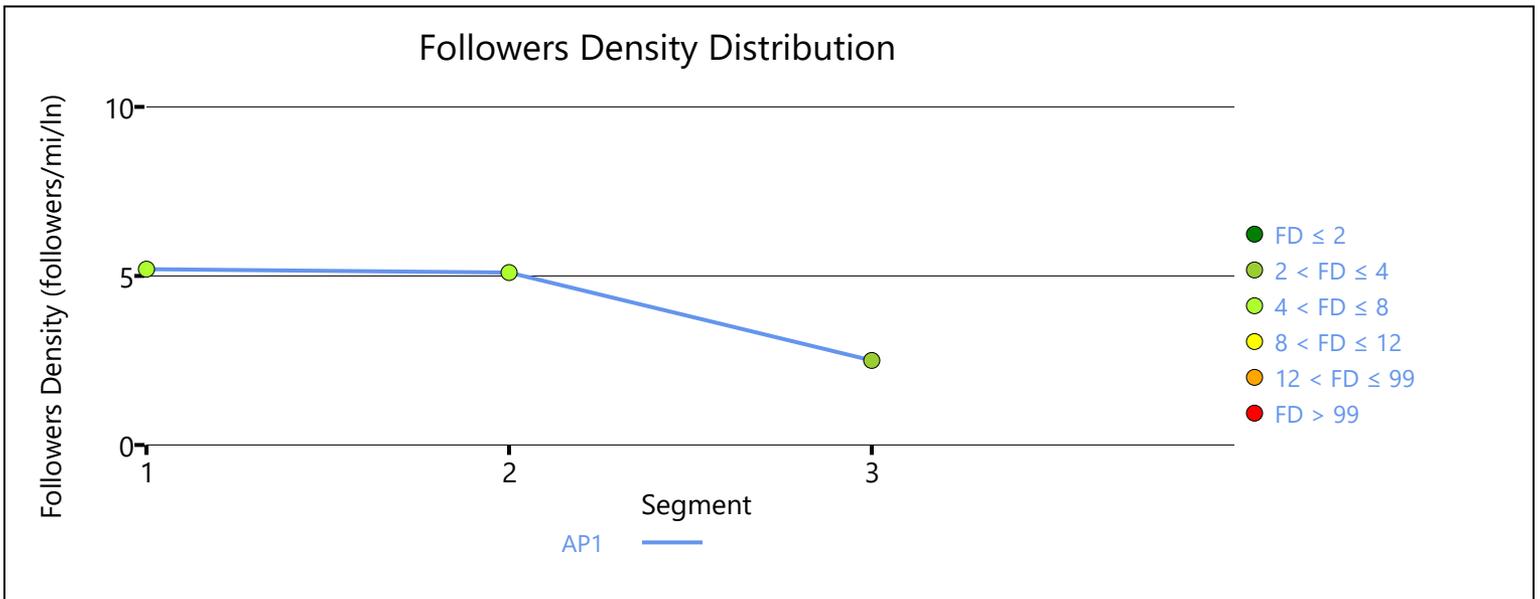
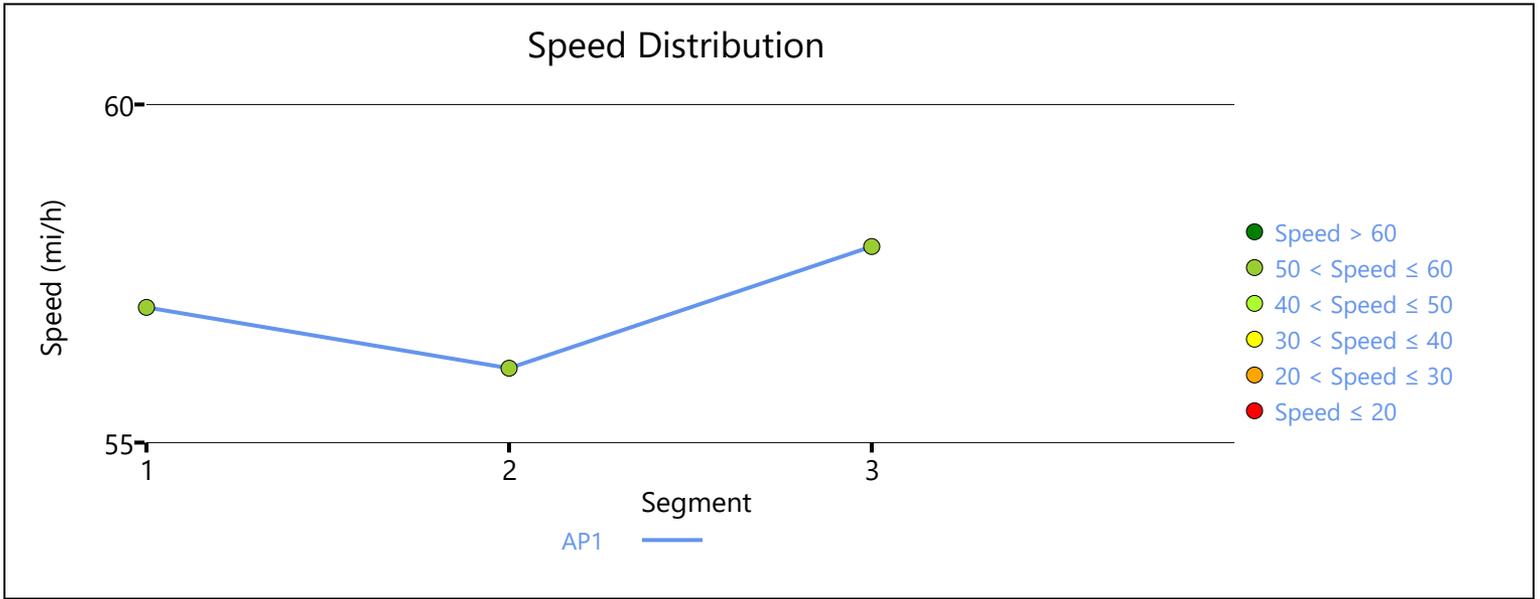
Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	12.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	521	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.31		
Intermediate Results					
Segment Vertical Class	1	Free-Flow Speed, mi/h	58.7		
Speed Slope Coefficient (m)	3.75406	Speed Power Coefficient (p)	0.41674		
PF Slope Coefficient (m)	-1.30116	PF Power Coefficient (p)	0.75529		
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.1		
%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	6621	-	-	56.1
Vehicle Results					
Average Speed, mi/h	56.1	Percent Followers, %	54.9		
Segment Travel Time, minutes	1.34	Follower Density (FD), followers/mi/ln	5.1		
Vehicle LOS	C				
Segment 3					
Vehicle Inputs					
Segment Type	Passing Constrained	Length, ft	4641		
Lane Width, ft	11	Shoulder Width, ft	6		
Speed Limit, mi/h	55	Access Point Density, pts/mi	7.0		
Demand and Capacity					
Directional Demand Flow Rate, veh/h	333	Opposing Demand Flow Rate, veh/h	-		
Peak Hour Factor	0.94	Total Trucks, %	12.00		
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.20		
Intermediate Results					
Segment Vertical Class	1	Free-Flow Speed, mi/h	60.0		
Speed Slope Coefficient (m)	3.80306	Speed Power Coefficient (p)	0.41674		
PF Slope Coefficient (m)	-1.30225	PF Power Coefficient (p)	0.76236		
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	2.5		
%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	4641	-	-	57.9
Vehicle Results					
Average Speed, mi/h	57.9	Percent Followers, %	43.1		
Segment Travel Time, minutes	0.91	Follower Density (FD), followers/mi/ln	2.5		
Vehicle LOS	B				
Facility Results					

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	341	0.26	4.4	C



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future No Build
Project Description	Southbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	11.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	635	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.37

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.0
Speed Slope Coefficient (m)	3.75247	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30719	PF Power Coefficient (p)	0.75970
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.8
%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	4995	-	-	56.1

Vehicle Results

Average Speed, mi/h	56.1	Percent Followers, %	60.4
Segment Travel Time, minutes	1.01	Follower Density (FD), followers/mi/ln	6.8
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	635	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.37
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.69986	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30909	PF Power Coefficient (p)	0.75260
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.0
%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	6621	-	-	54.8

Vehicle Results

Average Speed, mi/h	54.8	Percent Followers, %	60.6
Segment Travel Time, minutes	1.37	Follower Density (FD), followers/mi/ln	7.0
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	600	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.35

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.68111	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.32068	PF Power Coefficient (p)	0.75647
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.5
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

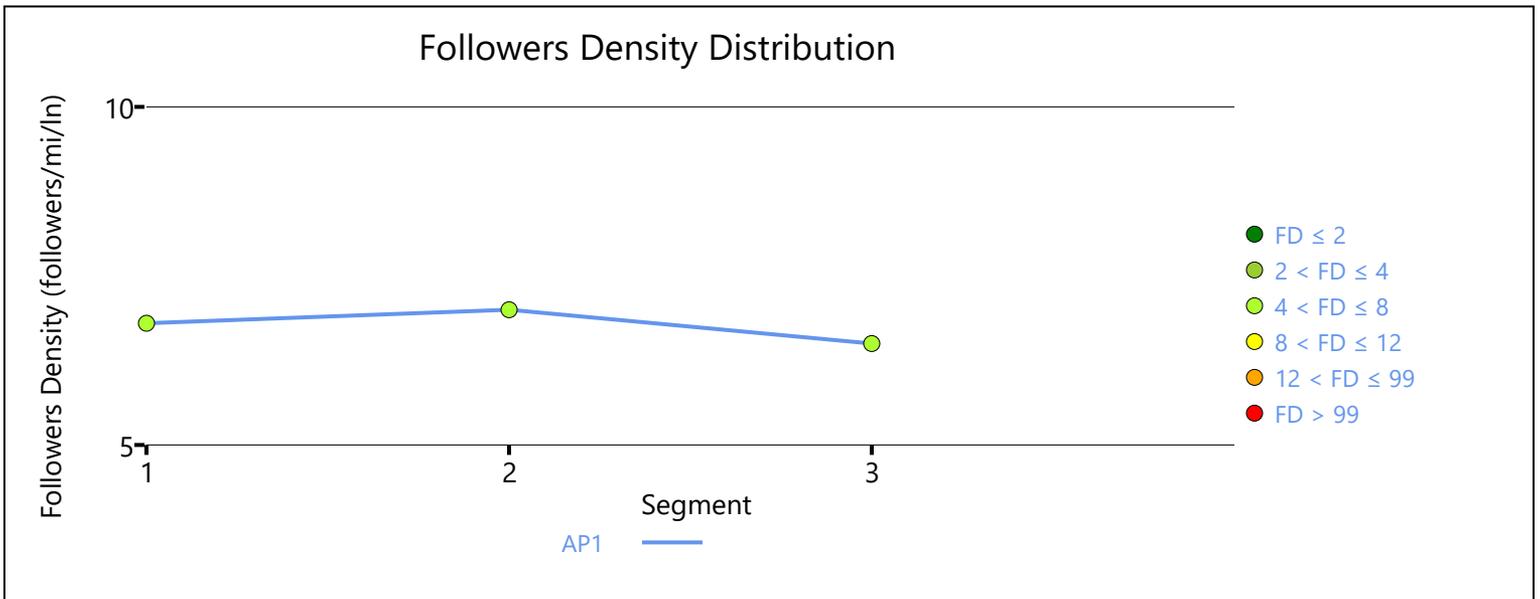
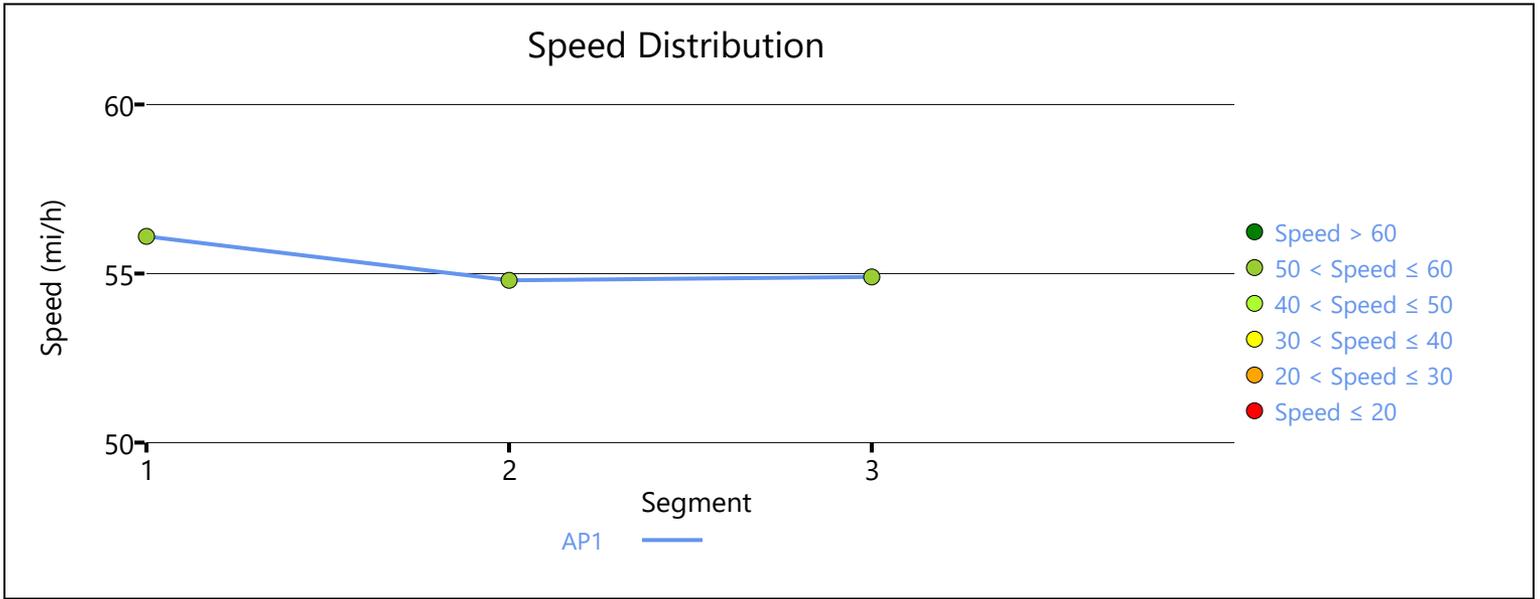
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	4641	-	-	54.9

Vehicle Results

Average Speed, mi/h	54.9	Percent Followers, %	59.2
Segment Travel Time, minutes	0.96	Follower Density (FD), followers/mi/ln	6.5
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	452	0.40	6.8	C



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future No Build
Project Description	Northbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	8.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	695	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.41

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	60.1
Speed Slope Coefficient (m)	3.81478	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.29902	PF Power Coefficient (p)	0.76095
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.6
%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	4995	-	-	57.0

Vehicle Results

Average Speed, mi/h	57.0	Percent Followers, %	62.6
Segment Travel Time, minutes	1.00	Follower Density (FD), followers/mi/ln	7.6
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	12.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	671	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	0.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.39
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.1
Speed Slope Coefficient (m)	3.77572	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.29934	PF Power Coefficient (p)	0.75460
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.4
%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	6621	-	-	56.1

Vehicle Results

Average Speed, mi/h	56.1	Percent Followers, %	61.8
Segment Travel Time, minutes	1.34	Follower Density (FD), followers/mi/ln	7.4
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	7.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	600	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	0.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.35

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	60.4
Speed Slope Coefficient (m)	3.82471	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30026	PF Power Coefficient (p)	0.76165
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.1
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

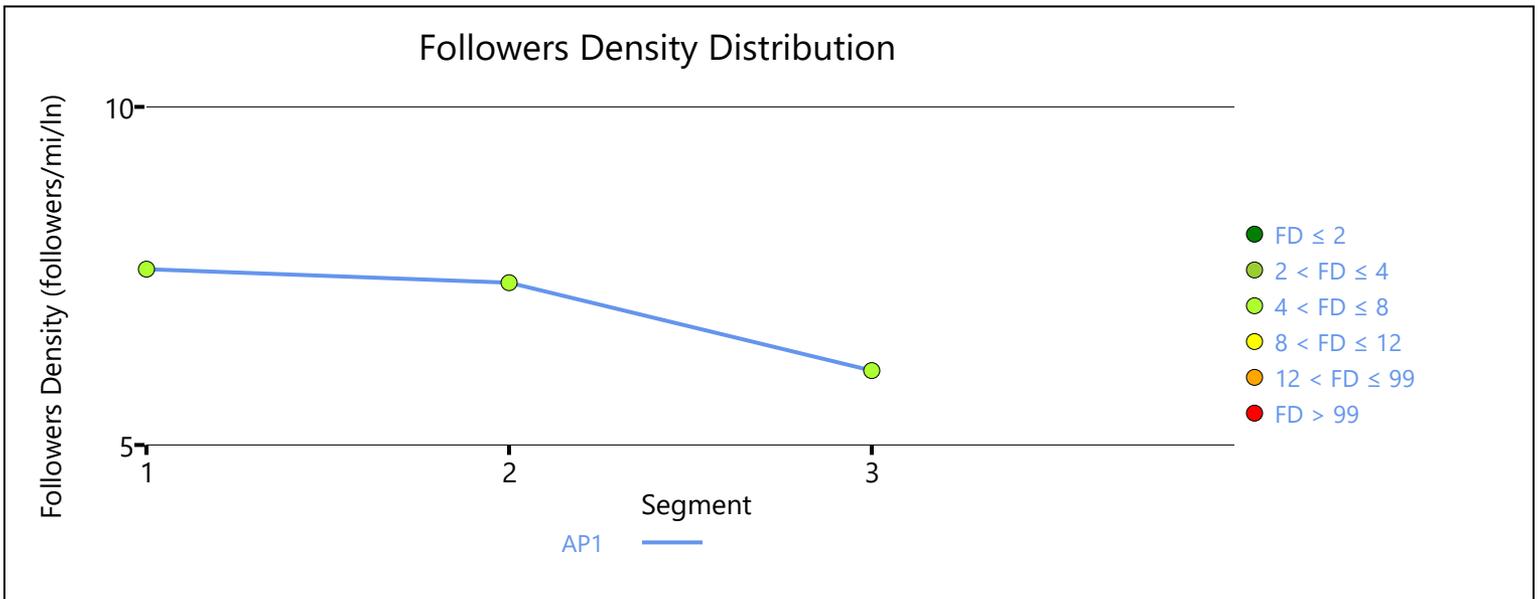
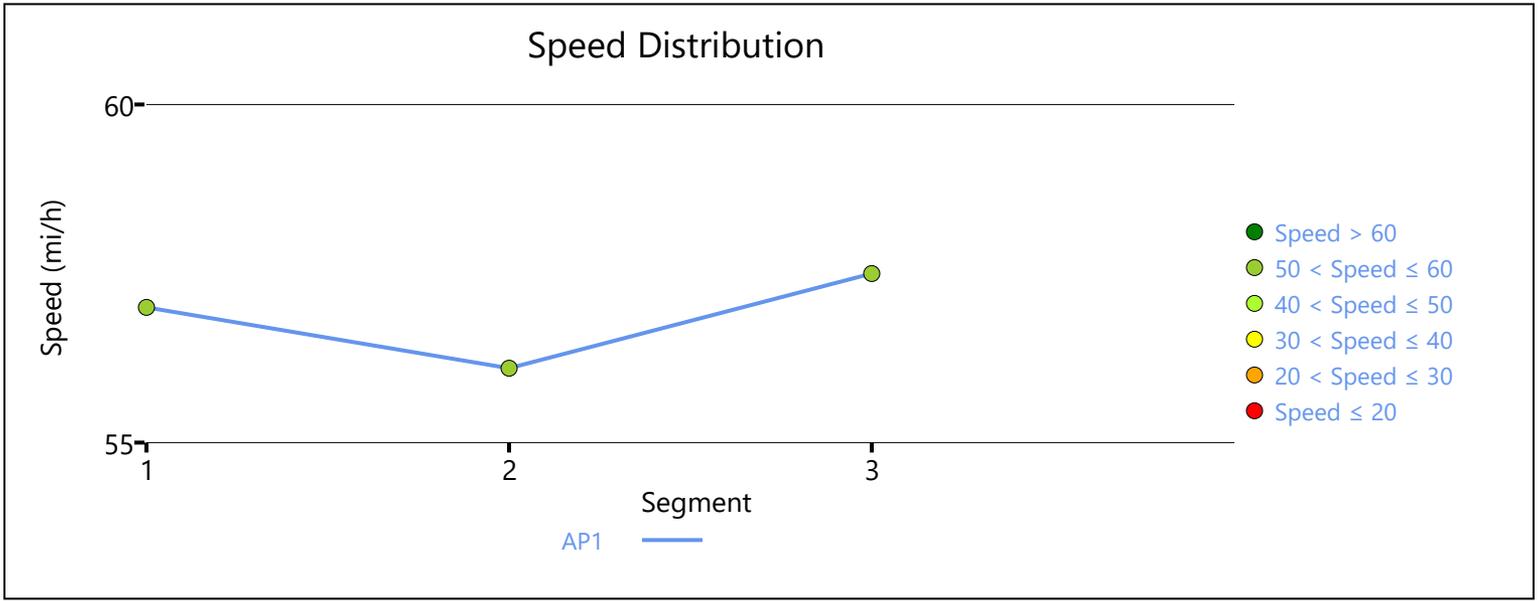
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	4641	-	-	57.5

Vehicle Results

Average Speed, mi/h	57.5	Percent Followers, %	58.6
Segment Travel Time, minutes	0.92	Follower Density (FD), followers/mi/ln	6.1
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	476	0.42	7.1	C



HCS Two-Lane Highway Report

Project Information

Analyst	PMN	Date	12/11/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future No Build
Project Description	Southbound	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4995
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	11.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	557	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.33

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.0
Speed Slope Coefficient (m)	3.75247	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30719	PF Power Coefficient (p)	0.75970
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.6
%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	4995	-	-	56.2

Vehicle Results

Average Speed, mi/h	56.2	Percent Followers, %	56.8
Segment Travel Time, minutes	1.01	Follower Density (FD), followers/mi/ln	5.6
Vehicle LOS	C		

Segment 2

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	6621
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	560	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00

Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.33
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Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.69986	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.30909	PF Power Coefficient (p)	0.75260
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.8
%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	6621	-	-	55.0

Vehicle Results

Average Speed, mi/h	55.0	Percent Followers, %	57.1
Segment Travel Time, minutes	1.37	Follower Density (FD), followers/mi/ln	5.8
Vehicle LOS	C		

Segment 3

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	4641
Lane Width, ft	11	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	16.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	534	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	12.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.31

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient (m)	3.68111	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.32068	PF Power Coefficient (p)	0.75647
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.4
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

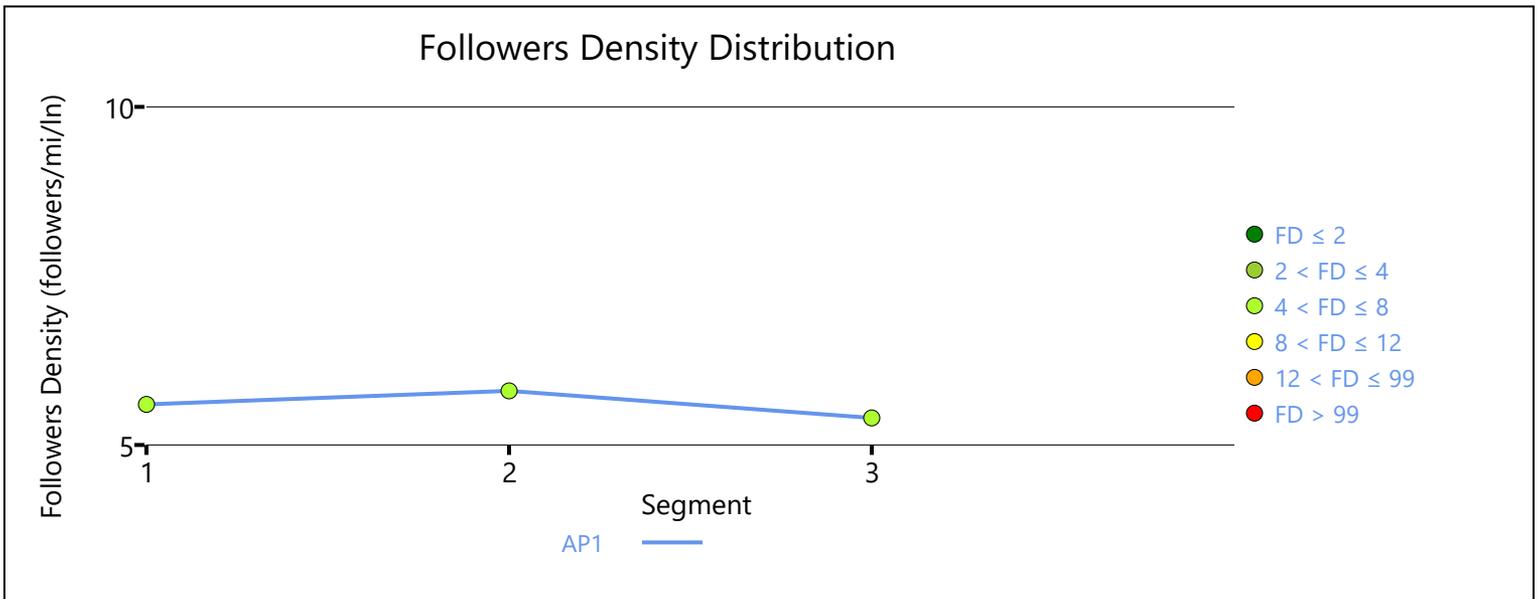
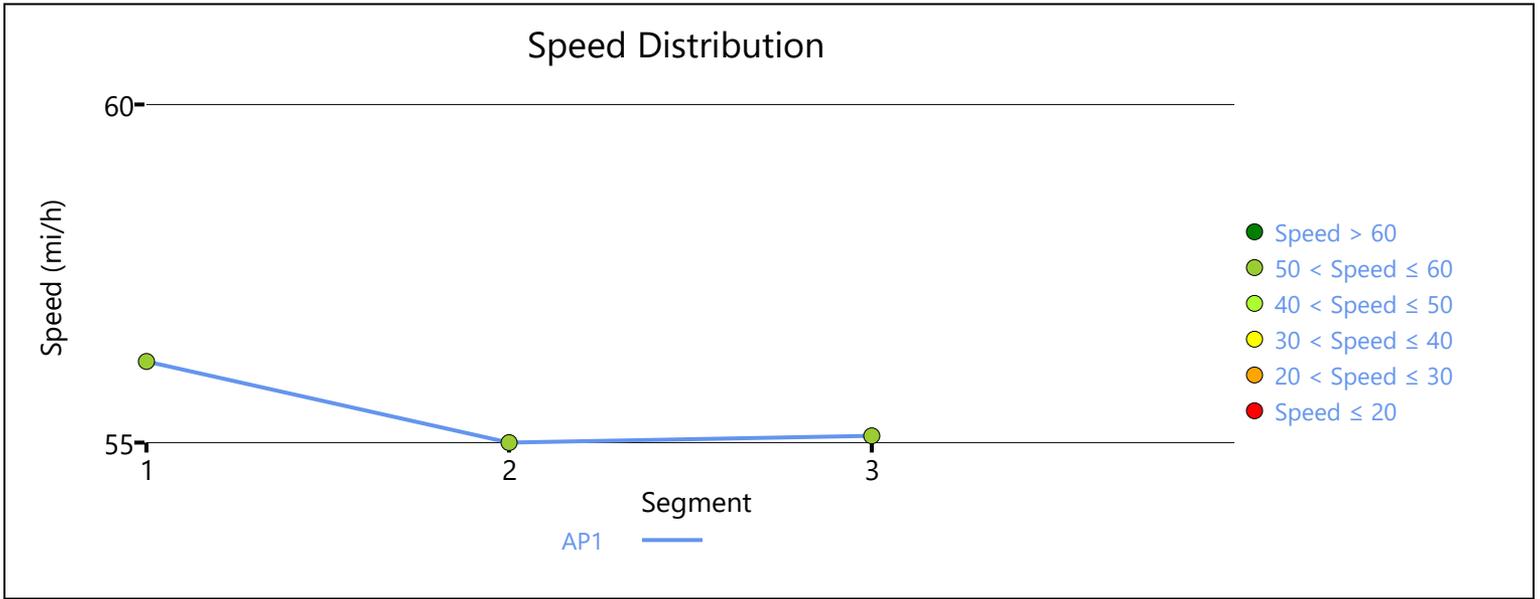
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	4641	-	-	55.1

Vehicle Results

Average Speed, mi/h	55.1	Percent Followers, %	56.0
Segment Travel Time, minutes	0.96	Follower Density (FD), followers/mi/ln	5.4
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	399	0.33	5.6	C



HCS Multilane Highway Report

Project Information

Analyst	PMN	Date	12/12/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future Build (4 Lane)
Project Description	Segment 1	Units	U.S. Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	8.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	43.9	Total Lateral Clearance (TLC), ft	8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V) veh/h	503	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	300
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.16

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	43.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	6.8
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	2.0		

Direction 2 Geometric Data			
Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	11.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	43.2	Total Lateral Clearance (TLC), ft	8
Direction 2 Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		
Direction 2 Demand and Capacity			
Volume (V) veh/h	597	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	356
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.19
Direction 2 Speed and Density			
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	43.2
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	8.2
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	2.8		

HCS Multilane Highway Report

Project Information

Analyst	PMN	Date	12/12/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future Build (4 Lane)
Project Description	Segment 2	Units	U.S. Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	12.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	42.9	Total Lateral Clearance (TLC), ft	8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V) veh/h	490	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	292
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.15

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	42.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	6.8
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	3.0		

Direction 2 Geometric Data			
Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	16.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	41.9	Total Lateral Clearance (TLC), ft	8
Direction 2 Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		
Direction 2 Demand and Capacity			
Volume (V) veh/h	597	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	356
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.19
Direction 2 Speed and Density			
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	41.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	8.5
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	4.0		

HCS Multilane Highway Report

Project Information

Analyst	PMN	Date	12/12/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	AM Future Build (4 Lane)
Project Description	Segment 3	Units	U.S. Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	7.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	44.2	Total Lateral Clearance (TLC), ft	8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V) veh/h	313	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	186
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.10

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	4.2
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	1.8		

Direction 2 Geometric Data			
Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	16.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	41.9	Total Lateral Clearance (TLC), ft	8
Direction 2 Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		
Direction 2 Demand and Capacity			
Volume (V) veh/h	564	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	336
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.18
Direction 2 Speed and Density			
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	41.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	8.0
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	4.0		

HCS Multilane Highway Report

Project Information

Analyst	PMN	Date	12/12/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future Build (4 Lane)
Project Description	Segment 1	Units	U.S. Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	8.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	43.9	Total Lateral Clearance (TLC), ft	8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V) veh/h	653	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	389
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.20

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	43.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	8.9
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	2.0		

Direction 2 Geometric Data			
Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	11.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	43.2	Total Lateral Clearance (TLC), ft	8
Direction 2 Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		
Direction 2 Demand and Capacity			
Volume (V) veh/h	524	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	312
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.16
Direction 2 Speed and Density			
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	43.2
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	7.2
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	2.8		

HCS Multilane Highway Report

Project Information

Analyst	PMN	Date	12/12/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future Build (4 Lane)
Project Description	Segment 2	Units	U.S. Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	12.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	42.9	Total Lateral Clearance (TLC), ft	8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V) veh/h	631	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	376
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.20

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	42.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	8.8
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	3.0		

Direction 2 Geometric Data			
Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	16.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	41.9	Total Lateral Clearance (TLC), ft	8
Direction 2 Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		
Direction 2 Demand and Capacity			
Volume (V) veh/h	526	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	314
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.17
Direction 2 Speed and Density			
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	41.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	7.5
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	4.0		

HCS Multilane Highway Report

Project Information

Analyst	PMN	Date	12/12/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction		Time Analyzed	PM Future Build (4 Lane)
Project Description	Segment 3	Units	U.S. Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	7.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	44.2	Total Lateral Clearance (TLC), ft	8

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V) veh/h	564	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	336
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.18

Direction 1 Speed and Density

Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	44.2
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	7.6
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	1.8		

Direction 2 Geometric Data			
Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Level
Measured or Base Free-Flow Speed	Base	Percent Grade, %	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Grade Length, mi	-
Lane Width, ft	11	Access Point Density, pts/mi	16.0
Median Type	Undivided	Left-Side Lateral Clearance (LCR), ft	6
Free-Flow Speed (FFS), mi/h	41.9	Total Lateral Clearance (TLC), ft	8
Direction 2 Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		
Direction 2 Demand and Capacity			
Volume (V) veh/h	502	Heavy Vehicle Adjustment Factor (fHV)	0.893
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	299
Total Trucks, %	12.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.16
Direction 2 Speed and Density			
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	41.9
Total Lateral Clearance Adj. (fLLC)	0.9	Density (D), pc/mi/ln	7.1
Median Type Adjustment (fM)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fA)	4.0		