CRAB RUN
SOLAR PROJECT

Exhibit H

Traffic Impact Study

To:	Ellen Mullins Principal Technical Consultant Capital Projects Delivery
From:	Josh Coburn, PE, PTOE, RSP1
Date:	December 4, 2025
Re:	Crab Run Project Traffic Impact Study, Marion County, Kentucky

EXECUTIVE SUMMARY

A solar facility development is proposed for a property located in Marion County south of KY-49. The petitioner proposes to utilize the existing land to establish a solar facility on the site, which is approximately 413 acres in size. The project site will have a primary access point along Arthur Mattingly Road and a second access point sharing a private entrance off Frogtown Road.

In this traffic impact study, analysis of the existing conditions, the 2028 construction year, and the 2038 operation phase were performed. The traffic impact study (TIS) evaluated the operating conditions for the AM and PM peak hours at the following roadway segments.

- KYTC Count Station 115036: KY-9002 from near the Washington County line (MP 41.401) to KY 555 (MP 44.807)
- KYTC Count Station 115027: KY-555 (MP 6.232) to KY-555 (MP 14.656)
- KYTC Count Station 078786: KY-55 (MP 1.866) to KY-55 (MP 4.669)
- KYTC Count Station 078A82: KY-2154 (MP 2.199) to KY-2154 (MP 3.366)
- KYTC Count Station 078507: KY-49 (MP 18.600) to KY-49 (MP 24.042)

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 both the peak hours. Therefore, the construction for this project will not adversely affect traffic operations accessing the site.
- After construction is complete, all highway segments are anticipated to continue to operate at acceptable level of service (LOS) standards during both the peak hours. Therefore, the post-construction operation of this solar field site will not adversely affect traffic operations accessing the site.
- It is recommended that all truck traffic must enter the site through the primary access point at Arthur Mattingly Road during the site's Construction and Operation phases due to Frogtown Road's slimmer lanes and 90 degree turns.

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1 INTRODUCTION

This traffic study was undertaken to assess the traffic impact of a proposed solar facility in Marion County, Kentucky. The project site is located south of KY-49 and is encased by Arthur Mattingly Road, Frogtown Road, and KY-49. The vicinity map (Figure 1) displays the location of the proposed project and study area.

The project site will have a primary access point along Arthur Mattingly Road and a secondary access through a private entrance along Frogtown Road. Existing traffic conditions, a construction year of 2028, and the operational phase of the site was evaluated as part of the study. Twenty-four-hour count and classification data were obtained from Kentucky Transportation Cabinet (KYTC) to establish the existing traffic conditions. Figure 2 shows the locations of the KYTC count stations used in this analysis. The summarized count data for each of these KYTC count stations is included in Appendix A for the following KTYC count stations:

- KYTC Count Station 115036: KY-9002 from near the Washington County line (MP 41.401) to KY-555 (MP 44.807)
- KYTC Count Station 115027: KY-555 (MP 6.232) to KY-555 (MP 14.656)
- KYTC Count Station 078786: KY-55 (MP 1.866) to KY-55 (MP 4.669)
- KYTC Count Station 078A82: KY-2154 (MP 2.199) to KY-2154 (MP 3.366)
- KYTC Count Station 078507: KY-49 (MP 18.600) to KY-49 (MP 24.042)

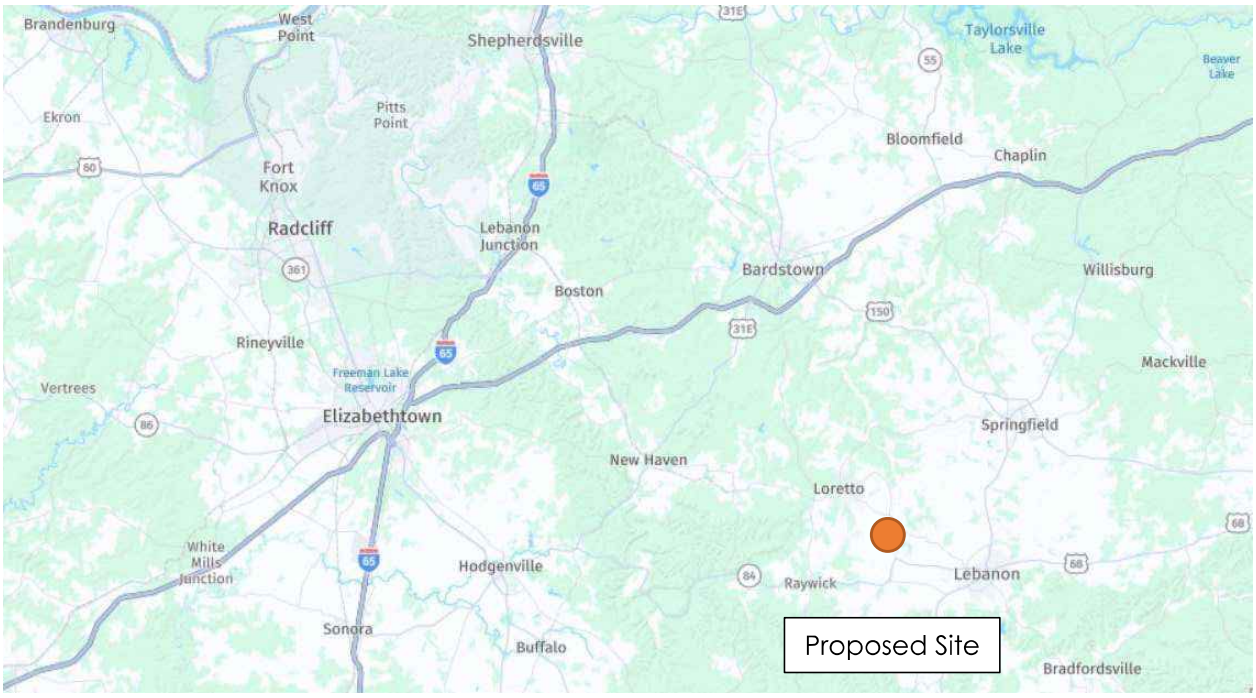

Figure 1: Vicinity Map

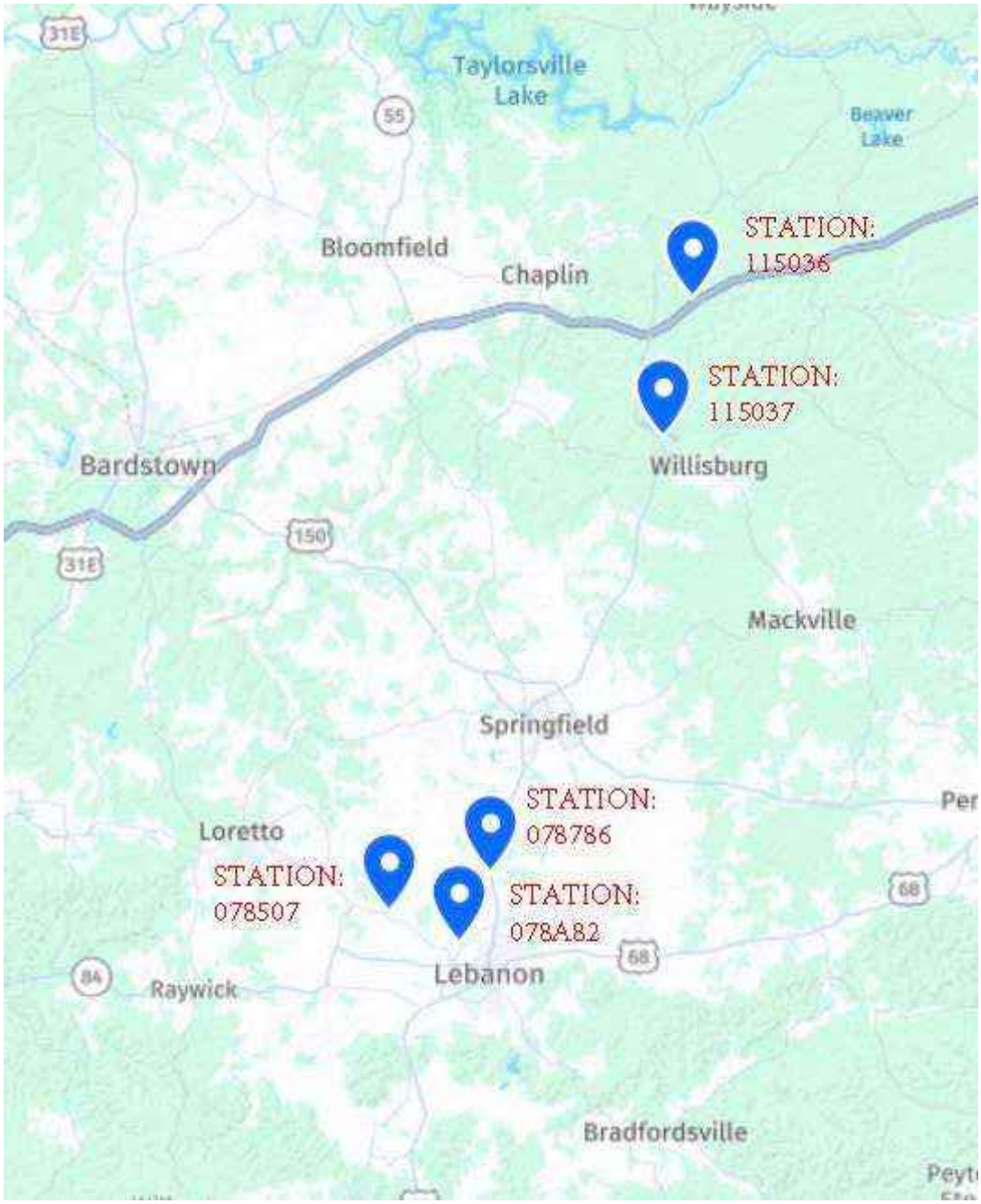

Figure 2: KYTC Count Station Location Map

2 EXISTING CONDITIONS

2.1 REGIONAL AND LOCAL ACCESS

Arthur Mattingly Road will provide the primary access point to the proposed project while all other roads provide local and regional access. A brief description of the surrounding roadways follows:

KY-9002 – KY-9002 is a principal arterial that provides local and regional access to the proposed project. KY-9002 generally runs in the east-west direction. The road's lane widths measure approximately 12 feet. In the vicinity of the project the road offers two divided through lanes in each direction and wide shoulders. The existing speed limit is posted at 70 mph.

KY-555 – KY-555 is a principal arterial that provides local and regional access to the proposed project. KY-555 generally runs in the north-south direction. The road's lane widths measure approximately 12 feet. In the vicinity of the project the road offers one through lane in each direction and wide 10 foot shoulders. The existing speed limit is posted at 55 mph.

KY-55 – KY-55 is a principal arterial that provides local and regional access to the proposed project. KY-55 generally runs in the north-south direction. The road's lane widths measure approximately 12 feet. In the vicinity of the project the road offers a 2+1 lane configuration and wide 10 foot shoulders. The existing speed limit is posted at 55 mph.

KY-2154 – KY-2154 is a principal arterial that provides local and regional access to the proposed project. KY-2154 generally runs in the north-south direction. The road's lane widths measure approximately 12 feet. In the vicinity of the project the road offers one through lane in each direction with dedicated turn lanes and wide 10 foot shoulders. The existing speed limit is posted at 55 mph.

KY-49 – KY-49 is a major collector that provides local and regional access to the proposed project. KY-49 generally runs in the east-west direction. The road's lane widths measure approximately 11 feet. In the vicinity of the project the road offers one through lane in each direction with slim shoulders. The existing speed limit is posted at 55 mph.

Arthur Mattingly Road – Arthur Mattingly Road is a local road that provides local access to the proposed project. Arthur Mattingly Road generally runs in the east-west direction. The road is unmarked but measures approximately 12.5 feet, leaving adequate room for one lane. The existing speed limit is not posted and by KY state law is 55 mph.

Frogtown Road – Frogtown Road is a local road that provides local access to the proposed project. Frogtown Road Road generally runs in the north-south direction. The road is unmarked but measures approximately 17 feet, leaving adequate room for one lane. The existing speed limit is not posted and by KY state law is 55 mph.

2.2 BASE TRAFFIC VOLUMES (EXISTING CONDITION)

At KYTC Count Station 115036, traffic counts were taken each hour from 00:00 AM on October 15, 2024 to 24:00 AM on October 16, 2024.

At KYTC Count Station 115027, traffic counts were taken each hour from 16:00 AM July 28, 2025 until 08:00 AM August 01, 2025.

At KYTC Count Station 078786, traffic counts were taken each hour from 14:00 PM November 02, 2022 until 12:00 PM November 04, 2022.

At KYTC Count Station 078A82, traffic counts were taken each hour from 08:00 AM September 01, 2020 until 07:00 AM September 03, 2020.

At KYTC Count Station 078507, traffic counts were taken each hour from 13:00 PM May 21, 2025 until 12:00 PM May 2, 2025.

All traffic volumes can be found in the Appendix A.

2.3 BACKGROUND TRAFFIC VOLUMES

Throughout the anticipated travel route, historic growth rate varied from being flat over the last ten years to a 3% growth rate (KYTC Station 115036). The historic traffic volumes along the travel route have shown a 3% growth rate over the twelve years between 2012 and 2024 (KYTC Count Station 115036). The analysis assumes an annual 3% growth rate for all traffic within the project vicinity. Count stations 078786 and 078A82 had their traffic counts grown to 2025 for the existing volumes.

2.4 METHODOLOGY AND EXISTING CONDITIONS ANALYSIS

Multilane highway analysis was used to evaluate the roadways using Highway Capacity Software (HCS2025), and the results can be found in Appendix B. Multilane highway analyses estimates capacity and Level of Service (LOS) for given traffic and geometric conditions. LOS provides a measure describing 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. The multilane highways method utilizes density (pc/mi/ln) as the service measures for LOS. Table 1 displays the density ranges with their corresponding LOS, extracted from the Highway Capacity Manual (HCM).

The results of the existing traffic AM peak-hour multilane analyses are summarized in Table 2. The results of the existing traffic PM peak-hour multilane analyses are summarized in Table 3. The tables indicate that all highways currently operate at acceptable level-of-service standards during both the AM and PM peak hours.

LOS DENSITY RANGE			
LOS:	FREEWAY DENSITY (PC/MI/LN):	≥50 mph TWO-LANE DENSITY (PC/MI/LN):	<50 mph TWO-LANE DENSITY (PC/MI/LN):
A	≤11	≤2.0	≤2.5
B	>11-18	>2.0-4.0	>2.5-5.0
C	>18-26	>4.0-8.0	>5.0-10.0
D	>26-35	>8.0-12.0	>10.0-15.0
E	>35-45	>12.0	>15.0
F	>45 DEMAND EXCEEDS CAPACITY OR DENSITY	DEMAND EXCEEDS CAPACITY OR DENSITY	DEMAND EXCEEDS CAPACITY OR DENSITY

Table 1: LOS Criteria for Basic Freeway, Multilane or Two-Lane Highway Segments

EXISTING AM PEAK HOUR				
COUNT STATION:	ROADWAY TYPE:	DIRECTIONALITY:	DENSITY (PC/MI/LN):	LOS:
115036: KY-9002	FREEWAY	EAST-WEST	EB: 9.4, WB: 8.8	A, A
115027: KY-555	TWO-LANE	NORTH-SOUTH	1.5	A
078786: KY-55	TWO-LANE	NORTH-SOUTH	7.4	C
078A82: KY-2154	TWO-LANE	NORTH-SOUTH	5	C
78507: KY-49	TWO-LANE	EAST-WEST	2.1	B

Table 2: Existing AM Highway Analysis

EXISTING PM PEAK HOUR				
COUNT STATION:	ROADWAY TYPE:	DIRECTIONALITY:	DENSITY (PC/MI/LN):	LOS:
115036: KY-9002	FREEWAY	EAST-WEST	EB: 9.5, WB: 11.6	A, B
115027: KY-555	TWO-LANE	NORTH-SOUTH	1.8	A
078786: KY-55	TWO-LANE	NORTH-SOUTH	10.8	D
078A82: KY-2154	TWO-LANE	NORTH-SOUTH	13	E
78507: KY-49	TWO-LANE	EAST-WEST	1.8	A

Table 3: Existing PM Highway Analysis

3 TRIP GENERATION AND PROJECTED TRAFFIC VOLUMES

3.1 CONSTRUCTION

Trip estimates for the proposed project are based upon information provided by the developer. The trip generation analysis for this project is 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 arrive from passenger vehicles and trucks daily during the AM (7:00 – 9:00 AM) and depart during the PM (3:00 – 6:00 PM) peak hours. Equipment deliveries will occur at various times during the day. During construction, the vehicle traffic expected is approximately 200 vehicles to and from the site daily, 400 trips per day. The construction of the proposed facility will take from twelve to eighteen months to complete. This study assumes that all trips will enter and leave the site during the peak hour.

3.2 CONSTRUCTION ANALYSIS

The construction year analysis assumed the same roadway geometry that was used for the analysis of existing conditions. The results of the construction year for the AM peak-hour multilane analysis are summarized in Table 4. The results of the construction year for the PM peak-hour multilane is summarized in Table 5. The tables indicate that all highway segments are anticipated to continue to operate at acceptable LOS standards during construction for both peak hours with the exception of the PM peak hour

along KY-55. The analysis of the roadway segment assumes that there is a single passing constrained lane each direction because HCS2025 doesn't have the analysis functionality of the 2+1 lane configuration that exists currently. This extra passing lane extends approximately one mile and alternates sides approximately each mile. The conservative analyzation concludes that for short segments of the roadway during PM peak traffic volume and peak construction timeframe the roadway will operate at Level of Service "E". Because of the short timeframe and conservative analysis, the construction for this project will not adversely affect the operation of the studied roadways long term so long as all truck traffic utilize the primary access point on Arthur Mattingly Road.

2028 CONSTRUCTION AM PEAK HOUR				
COUNT STATION:	ROADWAY TYPE:	DIRECTIONALITY:	DENSITY (PC/MI/LN):	LOS:
115036: KY-9002	FREEWAY	EAST-WEST	EB: 11.7, WB: 11.1	B, B
115027: KY-555	TWO-LANE	NORTH-SOUTH	4.2	C
078786: KY-55	TWO-LANE	NORTH-SOUTH	11.1	D
078A82: KY-2154	TWO-LANE	NORTH-SOUTH	9.4	D
78507: KY-49	TWO-LANE	EAST-WEST	5.2	C

Table 4: Construction AM Highway Analysis

2028 CONSTRUCTION PM PEAK HOUR				
COUNT STATION:	ROADWAY TYPE:	DIRECTIONALITY:	DENSITY (PC/MI/LN):	LOS:
115036: KY-9002	FREEWAY	EAST-WEST	EB: 11.8, WB: 13.9	B, B
115027: KY-555	TWO-LANE	NORTH-SOUTH	4.5	C
078786: KY-55	TWO-LANE	NORTH-SOUTH	14.6	E
078A82: KY-2154	TWO-LANE	NORTH-SOUTH	10.7	D
78507: KY-49	TWO-LANE	EAST-WEST	4.6	C

Table 5: Construction PM Highway Analysis

3.3 OPERATION

Once operational, the solar facility will only have to be managed and monitored. Trip estimates for the proposed project are based upon information provided by the developer. The facility is estimated to have four vehicles travel to the site each day post-construction. This study assumes that all trips will enter and leave the site during the peak hour.

3.4 OPERATION ANALYSIS

The operation analysis assumed the same roadway geometry that was used for the analysis of existing conditions. The results of the operation phase for the AM peak-hour multilane analysis are summarized in Table 6. The results of the operation phase for the PM peak-hour multilane is summarized in Table 7. The tables indicate that all highway segments are anticipated to continue to operate at acceptable LOS standards post-construction for both peak hours with the exception of the PM peak hour along KY-55. The

analysis of the roadway segment assumes that there is a single passing constrained lane each direction because HCS2025 doesn't have the analysis functionality of the 2+1 lane configuration that exists currently. This extra passing lane extends approximately one mile and alternates sides approximately each mile. The conservative analyzation concludes that for short segments of the roadway during PM peak traffic volume and peak construction timeframe the roadway will operate at Level of Service "E". Because of the short timeframe and conservative analysis, This additional volume for the operational phase of the project will have no measurable impact on the traffic and/or transportation infrastructure. it is still recommended that all truck traffic utilize the primary access point on Arthur Mattingly Road due to the lack of roadway width and 90 degree turns along Frogtown Road.

2038 OPERATION AM PEAK HOUR				
COUNT STATION:	ROADWAY TYPE:	DIRECTIONALITY:	DENSITY (PC/MI/LN):	LOS:
115036: KY-9002	FREEWAY	EAST-WEST	EB: 12.7, WB: 11.9	B, B
115027: KY-555	TWO-LANE	NORTH-SOUTH	2.4	B
078786: KY-55	TWO-LANE	NORTH-SOUTH	11.5	D
078A82: KY-2154	TWO-LANE	NORTH-SOUTH	7.9	C
78507: KY-49	TWO-LANE	EAST-WEST	3.4	B

Table 6: Operation AM Highway Analysis

2038 OPERATION PM PEAK HOUR				
COUNT STATION:	ROADWAY TYPE:	DIRECTIONALITY:	DENSITY (PC/MI/LN):	LOS:
115036: KY-9002	FREEWAY	EAST-WEST	EB: 12.8, WB: 15.7	B, B
115027: KY-555	TWO-LANE	NORTH-SOUTH	2.9	B
078786: KY-55	TWO-LANE	NORTH-SOUTH	16.5	E
078A82: KY-2154	TWO-LANE	NORTH-SOUTH	10.1	D
78507: KY-49	TWO-LANE	EAST-WEST	2.9	B

Table 7: Operation PM Highway Analysis

4 BRIDGE LOADING ANALYSIS

In order to determine if adequate bridge infrastructure is available along the assumed travel route bridge ratings were analyzed along with the bridge location, ID's, and load ratings. These values were obtained by KYTC's Bridge Data Miner program. Each bridge along the travel path are labeled with their ID's and weight limits in Figure 3. Based on KYTC load ratings, bridge 078B00095N located along KY-49 is the critical bridge with a load rating of 22 tons.

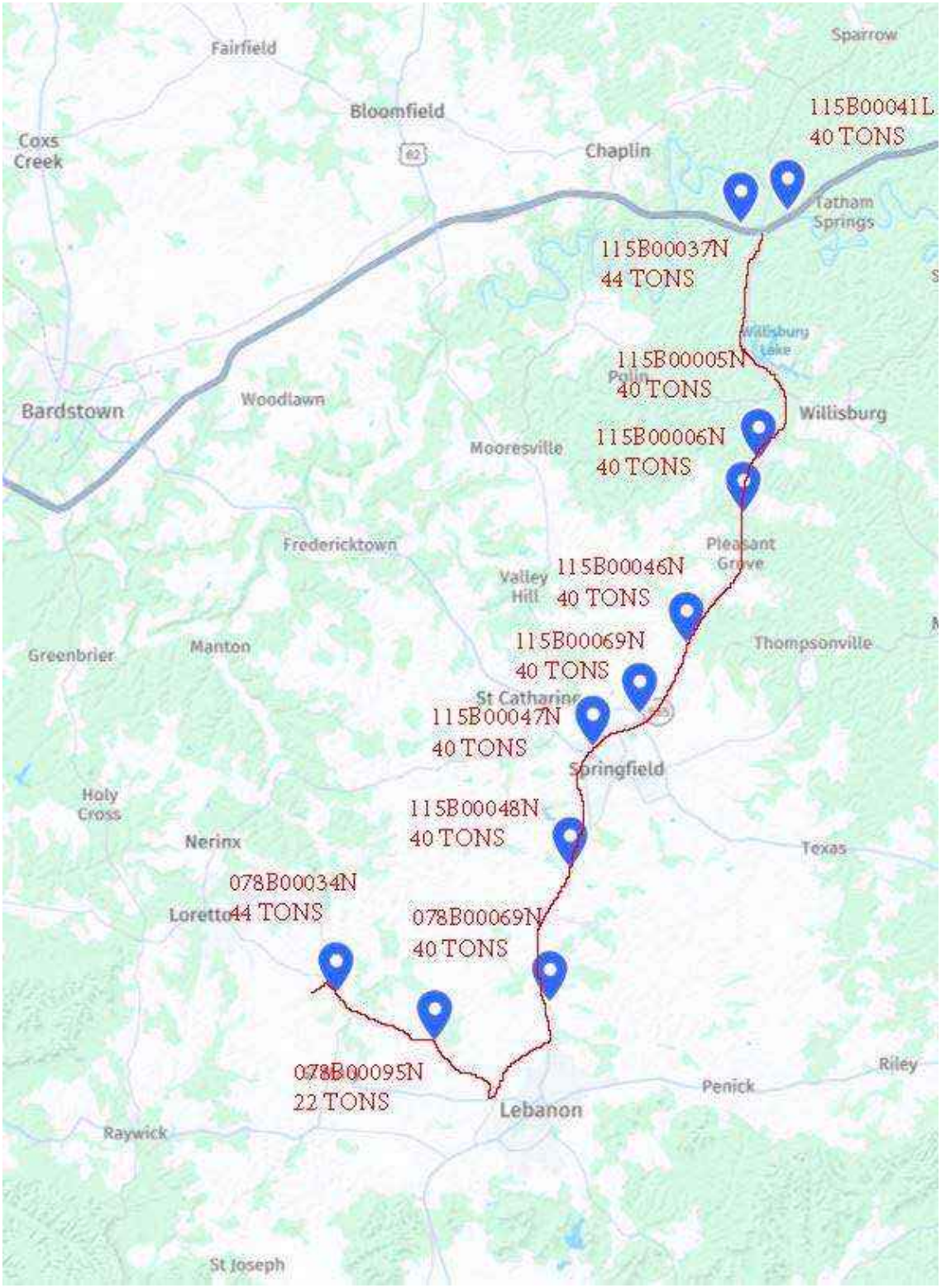

Figure 3: KYTC Bridge Locations and Load Rating Map

5 CONCLUSIONS AND RECOMMENDATIONS

As demonstrated in the traffic analysis, the construction period trip generation of workers and trucks will not generate a significant number of trips on local roadways. KY-49 will continue to operate at an acceptable LOS during the scenario of when construction traffic is added to the existing peak traffic counts and during the scenario when post-construction traffic is added to existing peak traffic counts. Although no significant or 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 the peak hour could be implemented to minimize any potential for delays during the AM and PM peak hours. It is recommended that any class 7 vehicles (according to FHWA classification, 4 or more axles) or higher be scheduled during off-peak hours to mitigate any impacts. It is also recommended that all truck traffic utilize the primary access point to the site along Arthur Mattingly Road. The roadway width and geometry along Arthur Mattingly Road and Frogtown Road will make large deliveries to the Frogtown Road access unadvisable.

APPENDIX A

TRAFFIC COUNTS AND CLASSIFICATION DATA

Kentucky Transportation Cabinet

Short-term Hourly Traffic Volume for 10/15/2024 through 10/16/2024

Site names:	115036	Seasonal Factor Grp:	2
County:	Washington	Daily Factor Grp:	2
Funct Class:	Principal Arterial - Other Freeways and	Axle Factor Grp:	02
Location:	115-BG-9002 -000 @ 43.104 From: KY 555	Growth Factor Grp:	02

	Sun, Oct 13, 2024			Mon, Oct 14, 2024			Tue, Oct 15, 2024			Wed, Oct 16, 2024			Thu, Oct 17, 2024			Fri, Oct 18, 2024			Sat, Oct 19, 2024		
	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg
00:00							197	109	88	201	108	93									
01:00							126	57	69	148	81	67									
02:00							149	81	68	135	53	82									
03:00							170	87	83	172	98	74									
04:00							233	116	117	221	125	96									
05:00							479	268	211	516	289	227									
06:00							841	455	386	839	506	333									
07:00							1,035	563	472	1,064	603	461									
08:00							1,062	563	499	1,208	699	509									
09:00							1,048	531	517	1,225	695	530									
10:00							1,134	507	627	1,273	596	677									
11:00							1,125	526	599	1,320	610	710									
12:00							1,113	577	536	1,295	637	658									
13:00							1,306	655	651	1,349	645	704									
14:00							1,418	712	706	1,473	676	797									
15:00							1,477	746	731	1,579	726	853									
16:00							1,511	711	800	1,592	709	883									
17:00							1,514	794	720	1,361	682	679									
18:00							1,135	565	570	1,191	560	631									
19:00							760	426	334	754	378	376									
20:00							679	352	327	620	296	324									
21:00							558	289	269	442	199	243									
22:00							425	219	206	356	152	204									
23:00							289	149	140	294	146	148									
Total							19,784	10,058	9,726	20,628	10,269	10,359									
AM Peak Vol							1,152	574	641	1,320	730	710									
AM Peak Fct							.929	.897	.89	.878	.903	.929									
AM Peak Hr							10: 15	7: 45	10: 15	11: 00	8: 30	11: 00									
PM Peak Vol							1,542	794	800	1,672	746	933									
PM Peak Fct							.959	.928	.893	.981	.914	.941									
PM Peak Hr							14: 45	17: 00	16: 00	15: 30	15: 30	15: 15									
Seasonal Fct							.947	.947	.947	.947	.947	.947									
Daily Fct							.992	.992	.992	.975	.975	.975									
Axle Fct							.445	.445	.445	.445	.445	.445									
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000									

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Kentucky Transportation Cabinet

Short-term Hourly Traffic Volume for 07/28/2025 through 08/01/2025

Site names:	115027	Seasonal Factor Grp:	2
County:	Washington	Daily Factor Grp:	2
Funct Class:	Principal Arterial - Other	Axle Factor Grp:	02
Location:	115-KY-0555 -000 @ 10.454 From: CARRICO	Growth Factor Grp:	02

	Sun, Jul 27, 2025			Mon, Jul 28, 2025			Tue, Jul 29, 2025			Wed, Jul 30, 2025			Thu, Jul 31, 2025			Fri, Aug 1, 2025			Sat, Aug 2, 2025		
	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg
00:00							34	9	25	48	13	35	43	13	30	42	20	22			
01:00							17	7	10	26	9	17	23	10	13	28	16	12			
02:00							15	9	6	31	21	10	20	14	6	21	13	8			
03:00							35	27	8	41	30	11	41	28	13	30	18	12			
04:00							68	44	24	50	34	16	64	48	16	67	44	23			
05:00							152	98	54	182	130	52	170	109	61	152	104	48			
06:00							261	168	93	249	157	92	236	146	90	208	122	86			
07:00							310	189	121	313	188	125	278	173	105	258	141	117			
08:00							268	139	129	306	174	132	276	160	116	279	156	123			
09:00							277	150	127	292	165	127	257	133	124						
10:00							250	131	119	248	120	128	286	148	138						
11:00							251	121	130	296	147	149	300	169	131						
12:00							262	151	111	270	139	131	289	152	137						
13:00							265	126	139	301	143	158	306	153	153						
14:00							320	166	154	318	172	146	344	178	166						
15:00							337	162	175	332	160	172	338	162	176						
16:00				324	149	175	384	182	202	362	136	226	407	168	239						
17:00				351	140	211	368	137	231	402	176	226	386	152	234						
18:00				241	87	154	263	85	178	277	110	167	260	82	178						
19:00				174	80	94	185	63	122	208	74	134	185	66	119						
20:00				162	69	93	139	62	77	166	70	96	148	57	91						
21:00				112	40	72	122	47	75	138	52	86	146	46	100						
22:00				76	35	41	103	46	57	90	42	48	81	26	55						
23:00				45	18	27	54	17	37	51	20	31	62	30	32						
Total				1,485	618	867	4,740	2,336	2,404	4,997	2,482	2,515	4,946	2,423	2,523	1,085	634	451			
AM Peak Vol							310	190	139	313	190	149	309	177	151						
AM Peak Fct							.901	.896	.827	.889	.848	.887	.878	.868	.878						
AM Peak Hr							7: 00	6: 45	7: 45	7: 00	6: 30	11: 00	10: 45	6: 45	8: 30						
PM Peak Vol							387	185	240	414	187	227	425	181	251						
PM Peak Fct							.841	.746	.896	.892	.899	.887	.9	.808	.86						
PM Peak Hr							15: 45	15: 45	17: 15	16: 45	16: 45	16: 45	16: 30	15: 30	16: 15						
Seasonal Fct				.968	.968	.968	.968	.968	.968	.968	.968	.968	.968	.968	.968	.951	.951	.951			
Daily Fct				.986	.986	.986	.988	.988	.988	.949	.949	.949	1.012	1.012	1.012	.879	.879	.879			
Axle Fct				.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500			
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

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Kentucky Transportation Cabinet

Short-term Hourly Traffic Volume for 11/02/2022 through 11/04/2022

Site names: 078786,
County: Marion
Funct Class: Principal Arterial - Other
Location: 078-KY-0055 -000 @ 3.268 From: KY 2154

Seasonal Factor Grp: 2
Daily Factor Grp: 2
Axle Factor Grp: 02
Growth Factor Grp: 02

	Sun, Oct 30, 2022			Mon, Oct 31, 2022			Tue, Nov 1, 2022			Wed, Nov 2, 2022			Thu, Nov 3, 2022			Fri, Nov 4, 2022			Sat, Nov 5, 2022		
	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg
00:00													61			52					
01:00													60			92					
02:00													82			93					
03:00													203			168					
04:00													336			320					
05:00													506			496					
06:00													769			697					
07:00													755			695					
08:00													787			683					
09:00													765			765					
10:00													801			819					
11:00													812			842					
12:00													818			900					
13:00													906								
14:00										907			992								
15:00										961			1,023								
16:00										873			882								
17:00										575			673								
18:00										420			513								
19:00										324			318								
20:00										238			255								
21:00										220			237								
22:00										112			126								
23:00										59			71								
Total										4,689			12,751			6,622					
AM Peak Vol													868			868					
AM Peak Fct													.875			.875					
AM Peak Hr													6: 30			10: 45					
PM Peak Vol													1,067								
PM Peak Fct													.907								
PM Peak Hr													14: 30			:					
Seasonal Fct										1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017			
Daily Fct										.932	.932	.932	.966	.966	.966	.908	.908	.908			
Axle Fct										.433	.433	.433	.433	.433	.433	.433	.433	.433			
Pulse Fct										2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

Kentucky Transportation Cabinet

Short-term Hourly Traffic Volume for 09/01/2020 through 09/03/2020

Site names: 078A82
County: Marion
Funct Class: Principal Arterial - Other
Location: 078-KY-2154 -000 @ 2.782 From: KY 429

Seasonal Factor Grp: 2
Daily Factor Grp: 2
Axle Factor Grp: 02
Growth Factor Grp: 02

	Sun, Aug 30, 2020			Mon, Aug 31, 2020			Tue, Sep 1, 2020			Wed, Sep 2, 2020			Thu, Sep 3, 2020			Fri, Sep 4, 2020			Sat, Sep 5, 2020		
	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg
00:00										40	24	16	50	24	26						
01:00										32	17	15	31	20	11						
02:00										43	26	17	44	24	20						
03:00										61	33	28	72	31	41						
04:00										135	35	100	121	36	85						
05:00										243	56	187	238	56	182						
06:00										367	153	214	389	171	218						
07:00										501	205	296	499	211	288						
08:00							350	166	184	366	162	204									
09:00							337	174	163	314	167	147									
10:00							401	187	214	355	172	183									
11:00							393	219	174	403	201	202									
12:00							432	210	222	452	247	205									
13:00							493	235	258	422	209	213									
14:00							570	344	226	566	353	213									
15:00							701	400	301	674	369	305									
16:00							692	399	293	632	366	266									
17:00							631	349	282	562	335	227									
18:00							425	247	178	422	227	195									
19:00							303	179	124	339	189	150									
20:00							226	122	104	202	89	113									
21:00							176	93	83	152	75	77									
22:00							140	81	59	144	100	44									
23:00							70	40	30	72	43	29									
Total							6,340	3,445	2,895	7,499	3,853	3,646	1,444	573	871						
AM Peak Vol										504	216	296									
AM Peak Fct										.728	.692	.779									
AM Peak Hr							:	:	:	7: 15	7: 30	7: 00									
PM Peak Vol							740	427	323	674	388	305									
PM Peak Fct							.894	.774	.928	.926	.758	.847									
PM Peak Hr							15: 15	15: 30	15: 15	15: 00	14: 15	15: 00									
Seasonal Fct							.924	.924	.924	.924	.924	.924	.924	.924	.924						
Daily Fct							.989	.989	.989	.986	.986	.986	.961	.961	.961						
Axle Fct							.500	.500	.500	.500	.500	.500	.500	.500	.500						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Created 08/05/2025 9:06 AM ROAD AADT 6,952 PDir AADT 3,583 NDir AADT 3,369

Kentucky Transportation Cabinet

Short-term Hourly Traffic Volume for 05/21/2025 through 05/23/2025

Site names: 078507
County: Marion
Funct Class: Major Collector
Location: 078-KY-0049 -000 @ 21.319 From: KY 84

Seasonal Factor Grp: 2
Daily Factor Grp: 2
Axle Factor Grp: 07
Growth Factor Grp: 07

	Sun, May 18, 2025			Mon, May 19, 2025			Tue, May 20, 2025			Wed, May 21, 2025			Thu, May 22, 2025			Fri, May 23, 2025			Sat, May 24, 2025		
	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg	Road	Pos	Neg
00:00													19	7	12	18	8	10			
01:00													8	6	2	5	3	2			
02:00													9	5	4	7	4	3			
03:00													8	3	5	10	6	4			
04:00													32	10	22	24	7	17			
05:00													99	31	68	80	32	48			
06:00													149	58	91	127	47	80			
07:00													317	98	219	305	99	206			
08:00													223	104	119	248	102	146			
09:00													207	117	90	238	119	119			
10:00													232	103	129	217	101	116			
11:00													233	106	127	293	161	132			
12:00													225	117	108	263	174	89			
13:00										220	118	102	203	125	78						
14:00										246	175	71	271	165	106						
15:00										342	208	134	366	231	135						
16:00										302	205	97	299	188	111						
17:00										263	158	105	314	163	151						
18:00										131	80	51	187	106	81						
19:00										136	89	47	138	98	40						
20:00										110	73	37	121	74	47						
21:00										72	39	33	73	49	24						
22:00										45	24	21	46	23	23						
23:00										15	13	2	23	17	6						
Total										1,882	1,182	700	3,802	2,004	1,798	1,835	863	972			
AM Peak Vol													339	117	237	330	161	225			
AM Peak Fct													.731	.813	.644	.73	.875	.618			
AM Peak Hr													7: 15	9: 00	7: 15	7: 30	11: 00	7: 30			
PM Peak Vol													366	233	151						
PM Peak Fct													.897	.869	.858						
PM Peak Hr													15: 00	15: 15	17: 00	:	:	:			
Seasonal Fct										1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Daily Fct										1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Axle Fct										.500	.500	.500	.500	.500	.500	.500	.500	.500			
Pulse Fct										2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

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APPENDIX B

HIGHWAY CAPACITY SOFTWARE RESULTS

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 AM Existing	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	798	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.90	Flow Rate (v_p), pc/h/ln	640
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.28

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	9.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 AM Existing WB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	776	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.93	Flow Rate (v_p), pc/h/ln	603
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.26

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	8.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 PM Existing EB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	815	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.91	Flow Rate (v_p), pc/h/ln	647
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.28

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	9.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 PM Existing WB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1020	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.93	Flow Rate (v_p), pc/h/ln	792
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.34

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 AM Construction EB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	998	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.90	Flow Rate (v_p), pc/h/ln	801
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.34

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 AM Construction WB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	976	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.93	Flow Rate (v_p), pc/h/ln	758
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.33

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 PM Construction EB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1015	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.91	Flow Rate (v_p), pc/h/ln	806
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.35

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 PM Construction WB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1220	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.93	Flow Rate (v_p), pc/h/ln	948
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.41

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 AM Operation EB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1076	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.90	Flow Rate (v_p), pc/h/ln	864
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.37

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	12.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 AM Operation WB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1047	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.93	Flow Rate (v_p), pc/h/ln	814
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (ET)	2.00	Volume-to-Capacity Ratio (v/c)	0.35

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 PM Operation EB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1100	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.91	Flow Rate (v_p), pc/h/ln	874
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.38

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	12.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Basic Freeway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115036 PM Operation WB	Units	U.S. Customary

Geometric Data			
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	70.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12.0	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors			
Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	0.968
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000

Demand and Capacity			
Demand Volume (V), veh/h	1374	Heavy Vehicle Adjustment Factor (f_{HV})	0.692
Peak Hour Factor (PHF)	0.93	Flow Rate (v_p), pc/h/ln	1068
Total Trucks, %	44.50	Capacity (c), pc/h/ln	2399
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2323
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2323
Passenger Car Equivalent (ET)	2.00	Volume-to-Capacity Ratio (v/c)	0.46

Speed and Density			
Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	68.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	68.2		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115027 AM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	245	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.85	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.14

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	61.0
Speed Slope Coefficient (m)	3.86827	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.28291	PF Power Coefficient (p)	0.77045
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	1.5
%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	5280	-	-	59.3

Vehicle Results			
Average Speed, mi/h	59.3	Percent Followers, %	35.2
Segment Travel Time, minutes	1.01	Adj. Follower Density, followers/mi/ln	1.5
Vehicle LOS	A		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115027 PM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	276	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.90	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.16

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	61.0
Speed Slope Coefficient (m)	3.86827	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.28291	PF Power Coefficient (p)	0.77045
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	1.8
%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	5280	-	-	59.2

Vehicle Results			
Average Speed, mi/h	59.2	Percent Followers, %	37.8
Segment Travel Time, minutes	1.01	Adj. Follower Density, followers/mi/ln	1.8
Vehicle LOS	A		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115027 AM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	480	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.85	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.28

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	61.0
Speed Slope Coefficient (m)	3.86827	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.28291	PF Power Coefficient (p)	0.77045
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	4.2
%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	5280	-	-	58.5

Vehicle Results			
Average Speed, mi/h	58.5	Percent Followers, %	51.8
Segment Travel Time, minutes	1.03	Adj. Follower Density, followers/mi/ln	4.2
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115027 PM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	498	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.90	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.29

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	61.0
Speed Slope Coefficient (m)	3.86827	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.28291	PF Power Coefficient (p)	0.77045
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	4.5
%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	5280	-	-	58.4

Vehicle Results			
Average Speed, mi/h	58.4	Percent Followers, %	52.7
Segment Travel Time, minutes	1.03	Adj. Follower Density, followers/mi/ln	4.5
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115027 AM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	333	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.85	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.20

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	61.0
Speed Slope Coefficient (m)	3.86827	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.28291	PF Power Coefficient (p)	0.77045
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	2.4
%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	5280	-	-	58.9

Vehicle Results			
Average Speed, mi/h	58.9	Percent Followers, %	42.3
Segment Travel Time, minutes	1.02	Adj. Follower Density, followers/mi/ln	2.4
Vehicle LOS	B		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 115027 PM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	6
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	374	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.90	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.22

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	61.0
Speed Slope Coefficient (m)	3.86827	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.28291	PF Power Coefficient (p)	0.77045
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	2.9
%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	5280	-	-	58.8

Vehicle Results			
Average Speed, mi/h	58.8	Percent Followers, %	45.2
Segment Travel Time, minutes	1.02	Adj. Follower Density, followers/mi/ln	2.9
Vehicle LOS	B		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078786 AM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	724	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.88	Total Trucks, %	43.30
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.43

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	64.1
Speed Slope Coefficient (m)	4.03212	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25658	PF Power Coefficient (p)	0.77732
In Passing Lane Effective Length?	No	Follower Density, followers/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	5280	-	-	60.7

Vehicle Results			
Average Speed, mi/h	60.7	Percent Followers, %	62.4
Segment Travel Time, minutes	0.99	Adj. Follower Density, followers/mi/ln	7.4
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078786 PM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	937	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.91	Total Trucks, %	43.30
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.55

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	64.1
Speed Slope Coefficient (m)	4.03212	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25658	PF Power Coefficient (p)	0.77732
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	10.8
%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	5280	-	-	60.3

Vehicle Results			
Average Speed, mi/h	60.3	Percent Followers, %	69.7
Segment Travel Time, minutes	0.99	Adj. Follower Density, followers/mi/ln	10.8
Vehicle LOS	D		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078786 AM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	951	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.88	Total Trucks, %	43.30
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.56

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	64.1
Speed Slope Coefficient (m)	4.03212	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25658	PF Power Coefficient (p)	0.77732
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	11.1
%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	5280	-	-	60.3

Vehicle Results			
Average Speed, mi/h	60.3	Percent Followers, %	70.1
Segment Travel Time, minutes	1.00	Adj. Follower Density, followers/mi/ln	11.1
Vehicle LOS	D		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078786 PM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	1157	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.91	Total Trucks, %	43.30
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.68

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	64.1
Speed Slope Coefficient (m)	4.03212	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25658	PF Power Coefficient (p)	0.77732
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	14.6
%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	5280	-	-	59.9

Vehicle Results			
Average Speed, mi/h	59.9	Percent Followers, %	75.5
Segment Travel Time, minutes	1.00	Adj. Follower Density, followers/mi/ln	14.6
Vehicle LOS	E		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078786 AM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	977	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.88	Total Trucks, %	43.30
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.57

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	64.1
Speed Slope Coefficient (m)	4.03212	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25658	PF Power Coefficient (p)	0.77732
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	11.5
%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	5280	-	-	60.2

Vehicle Results			
Average Speed, mi/h	60.2	Percent Followers, %	70.9
Segment Travel Time, minutes	1.00	Adj. Follower Density, followers/mi/ln	11.5
Vehicle LOS	D		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078786 PM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	1265	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.91	Total Trucks, %	43.30
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.74

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	64.1
Speed Slope Coefficient (m)	4.03212	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25658	PF Power Coefficient (p)	0.77732
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	16.5
%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	5280	-	-	59.8

Vehicle Results			
Average Speed, mi/h	59.8	Percent Followers, %	77.9
Segment Travel Time, minutes	1.00	Adj. Follower Density, followers/mi/ln	16.5
Vehicle LOS	E		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078A82 AM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	8
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	543	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.69	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.32

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	62.4
Speed Slope Coefficient (m)	3.94415	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.27059	PF Power Coefficient (p)	0.77410
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	5.0
%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	5280	-	-	59.6

Vehicle Results			
Average Speed, mi/h	59.6	Percent Followers, %	54.7
Segment Travel Time, minutes	1.01	Adj. Follower Density, followers/mi/ln	5.0
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078A82 PM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	8
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	1042	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.76	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.61

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	62.4
Speed Slope Coefficient (m)	3.94415	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.27059	PF Power Coefficient (p)	0.77410
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	13.0
%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	5280	-	-	58.6

Vehicle Results			
Average Speed, mi/h	58.6	Percent Followers, %	73.1
Segment Travel Time, minutes	1.02	Adj. Follower Density, followers/mi/ln	13.0
Vehicle LOS	E		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078A82 AM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	8
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	833	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.69	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.49

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	62.4
Speed Slope Coefficient (m)	3.94415	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.27059	PF Power Coefficient (p)	0.77410
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	9.4
%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	5280	-	-	59.0

Vehicle Results			
Average Speed, mi/h	59.0	Percent Followers, %	66.8
Segment Travel Time, minutes	1.02	Adj. Follower Density, followers/mi/ln	9.4
Vehicle LOS	D		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078A82 PM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	8
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	911	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.76	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.54

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	62.4
Speed Slope Coefficient (m)	3.94415	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.27059	PF Power Coefficient (p)	0.77410
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	10.7
%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	5280	-	-	58.8

Vehicle Results			
Average Speed, mi/h	58.8	Percent Followers, %	69.3
Segment Travel Time, minutes	1.02	Adj. Follower Density, followers/mi/ln	10.7
Vehicle LOS	D		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078A82 AM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	8
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	736	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.69	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.43

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	62.4
Speed Slope Coefficient (m)	3.94415	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.27059	PF Power Coefficient (p)	0.77410
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	7.9
%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	5280	-	-	59.2

Vehicle Results			
Average Speed, mi/h	59.2	Percent Followers, %	63.3
Segment Travel Time, minutes	1.01	Adj. Follower Density, followers/mi/ln	7.9
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078A82 PM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	8
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	875	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.76	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.51

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	62.4
Speed Slope Coefficient (m)	3.94415	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.27059	PF Power Coefficient (p)	0.77410
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	10.1
%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	5280	-	-	58.9

Vehicle Results			
Average Speed, mi/h	58.9	Percent Followers, %	68.2
Segment Travel Time, minutes	1.02	Adj. Follower Density, followers/mi/ln	10.1
Vehicle LOS	D		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078507 AM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	320	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.81	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.19

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	63.8
Speed Slope Coefficient (m)	4.02003	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25787	PF Power Coefficient (p)	0.77773
In Passing Lane Effective Length?	No	Follower Density, followers/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	5280	-	-	61.7

Vehicle Results			
Average Speed, mi/h	61.7	Percent Followers, %	40.4
Segment Travel Time, minutes	0.97	Adj. Follower Density, followers/mi/ln	2.1
Vehicle LOS	B		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2026
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078507 PM Existing	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	293	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.87	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.17

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	63.8
Speed Slope Coefficient (m)	4.02003	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25787	PF Power Coefficient (p)	0.77773
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	1.8
%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	5280	-	-	61.8

Vehicle Results			
Average Speed, mi/h	61.8	Percent Followers, %	38.4
Segment Travel Time, minutes	0.97	Adj. Follower Density, followers/mi/ln	1.8
Vehicle LOS	A		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078507 AM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	567	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.81	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.33

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	63.8
Speed Slope Coefficient (m)	4.02003	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25787	PF Power Coefficient (p)	0.77773
In Passing Lane Effective Length?	No	Follower Density, followers/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	5280	-	-	60.9

Vehicle Results			
Average Speed, mi/h	60.9	Percent Followers, %	55.5
Segment Travel Time, minutes	0.99	Adj. Follower Density, followers/mi/ln	5.2
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2028
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078507 PM Construction	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	523	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.87	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.31

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	63.8
Speed Slope Coefficient (m)	4.02003	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25787	PF Power Coefficient (p)	0.77773
In Passing Lane Effective Length?	No	Follower Density, followers/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	5280	-	-	61.0

Vehicle Results			
Average Speed, mi/h	61.0	Percent Followers, %	53.2
Segment Travel Time, minutes	0.98	Adj. Follower Density, followers/mi/ln	4.6
Vehicle LOS	C		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078507 AM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	430	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.81	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.25

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	63.8
Speed Slope Coefficient (m)	4.02003	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25787	PF Power Coefficient (p)	0.77773
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	3.4
%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	5280	-	-	61.3

Vehicle Results			
Average Speed, mi/h	61.3	Percent Followers, %	47.9
Segment Travel Time, minutes	0.98	Adj. Follower Density, followers/mi/ln	3.4
Vehicle LOS	B		

HCS Two-Lane Highway Report

Project Information			
Analyst		Date	8/12/2025
Agency	Palmer Engineering	Analysis Year	2038
Jurisdiction		Time Analyzed	
Project Description	CRAB RUN - Station 078507 PM Operation	Units	U.S. Customary

Segment 1

Vehicle Inputs			
Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	12	Shoulder Width, ft	10
Speed Limit, mi/h	55	Access Point Density, pts/mi	0.0

Demand and Capacity			
Directional Demand Flow Rate, veh/h	393	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.87	Total Trucks, %	50.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.23

Intermediate Results			
Segment Vertical Class	1	Free-Flow Speed, mi/h	63.8
Speed Slope Coefficient (m)	4.02003	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.25787	PF Power Coefficient (p)	0.77773
In Passing Lane Effective Length?	No	Follower Density, followers/mi/ln	2.9
%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	5280	-	-	61.4

Vehicle Results			
Average Speed, mi/h	61.4	Percent Followers, %	45.6
Segment Travel Time, minutes	0.98	Adj. Follower Density, followers/mi/ln	2.9
Vehicle LOS	B		