

BELLTOWN PLANNED DEVELOPMENT

KNOX COUNTY, TENNESSEE

FOLLOW-UP TRAFFIC IMPACT STUDY

W. EMORY ROAD
POWELL COMMUNITY

CCI PROJECT NO. 01203-0001

PREPARED FOR:

Smithbilt Homes
4907 Ball Road
Knoxville, Tennessee 37931

SUBMITTED BY:

Cannon & Cannon, Inc.
8550 Kingston Pike
Knoxville, TN 37919
865.670.8555



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EXECUTIVE SUMMARY

This report provides a summary of a follow-up traffic impact study that was performed for a proposed planned development on West Emory Road (SR 131) in the Powell Community of Knox County, Tennessee. The project site is located on both the north and south sides of W. Emory Road, about three quarters of a mile west of the intersection of W. Emory Road with Clinton Highway (SR 9, US 25W).

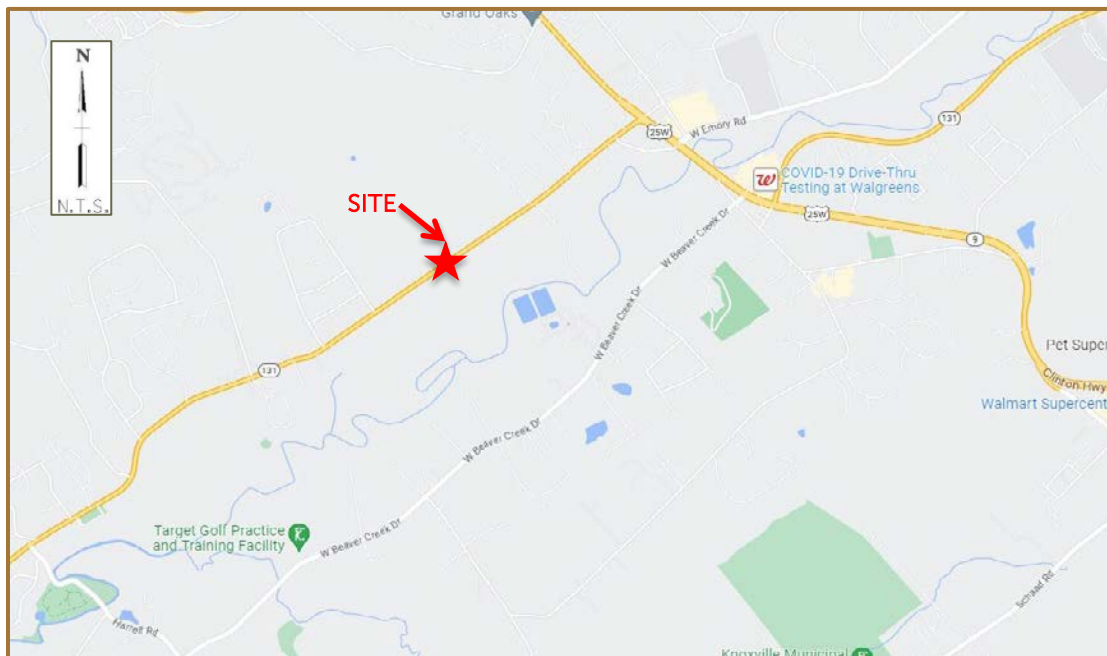
This traffic impact study is a follow-up to a study conducted by CDM Smith, whose final report revision was performed in September 2022. The primary purpose of this follow-up study is to confirm the recommendations made in the CDM Smith study. The traffic counts for that study were conducted with local schools not in session. Additionally, since that study was completed, the developer has made some minor adjustments to the site development configuration and size of some uses. Therefore, it was determined that a follow-up study is appropriate utilizing new traffic counts with local schools in session and based on the revised site development configuration and unit sizes.

The primary conclusion of this study is that the roadway and intersection improvement measures proposed in the CDM Smith study will result in satisfactory traffic operations at the study intersections in the proposed development full build-out year of 2030. This conclusion is based on the most recent traffic counts, which were conducted with local schools in session, and based on the revised site development configuration and unit sizes. Therefore, it is our recommendation that these measures be implemented in conjunction with development of the proposed project. The following is a listing of these proposed measures, which is in full agreement with the recommendations of the CDM Smith report:

1. Provide a minimum 3-lane roadway section along W. Emory Road adjacent to the project site. The added lane will be a center 2-way left-turn lane providing for eastbound and westbound left-turn movements to the proposed site access.
2. Provide a minimum 315-foot storage/deceleration for right-turn lanes from W. Emory Road to the two proposed east and west site access streets.
3. Provide a traffic signal for the proposed eastern street intersection with W. Emory Road.
4. Signalization should include pedestrian traffic control facilitating possible movements from the northside residential areas to the park/recreational amenities located to the south.
5. Provide pedestrian facilities, including sidewalks and crosswalks, connecting the residential and commercial uses with the park/recreational uses.
6. Minimize landscaping, using low growing vegetation, and signage at the proposed site access streets to W. Emory Road to ensure a minimum 500-foot line-of-sight is provided for the safe operations of the site intersections.
7. Provide a second northwest bound left-turn lane from Clinton Highway to westbound W. Emory Road. The corresponding two westbound departing lanes from this intersection should be a minimum of 300 feet in length on W. Emory Road before transitioning to a single westbound lane.
8. Provide separate left and right-turn lanes from the proposed site intersecting streets with W. Emory Road.

INTRODUCTION & PURPOSE OF STUDY

This report provides a summary of a follow-up traffic impact study that was performed for a proposed planned development on West Emory Road (SR 131) in the Powell Community of Knox County, Tennessee. The project site is located on both the north and south sides of W. Emory Road, about three quarters of a mile west of the intersection of W. Emory Road with Clinton Highway (SR 9, US 25W). FIGURE 1 is a location map showing the roadways in the vicinity of the project site.



**FIGURE 1
LOCATION MAP**

This traffic impact study is a follow-up to a study conducted by CDM Smith, whose final report revision was performed in September 2022. The primary purpose of this follow-up study is to confirm the recommendations made in the CDM Smith study. The traffic counts for that study were conducted with local schools not in session. Additionally, since that study was completed, the developer has made some minor adjustments to the site development configuration and size of some uses. Therefore, it was determined that a follow-up study is appropriate utilizing new traffic counts with local schools in session and based on the revised site development configuration and unit sizes.

As with all traffic impact studies, this study focuses on an evaluation of the traffic operational and safety impacts of the proposed development upon roadways in the vicinity of the project site. The evaluation scope and many of the assumptions used in the CDM Smith study were determined to be appropriate for this follow-up study. The study evaluations were conducted for existing and future conditions, both with and without site generated traffic, in order to determine the anticipated impacts of the proposed development and to confirm that the original recommendations made in the CDM Smith study remain appropriate. FIGURE 2 shows the current development plan for the project site.



FIGURE 2
CONCEPTUAL SITE PLAN

EXISTING CONDITIONS

EXISTING ROADWAY CONDITIONS

Roadway conditions for the major roadways in the study area were discussed in detail in the CDM Smith report. The following is a reminder of the features of each roadway most pertinent to the analyses of this study:

1. West Emory Road is a two-lane state-maintained highway (SR 131) through the study area. The only turn lanes at study intersections along this section of roadway include eastbound right turn lanes at Clinton Highway and Bill Bell Way. A few other turn lanes exist at some of the other intersections.
2. Clinton Highway is a four-lane median divided state-maintained highway (SR 9, US 25W) through the study area. A variety of left and right turn lanes exist along this section of roadway. This includes the study intersections, where appropriate left and right turn lanes exist, most notably including double left-turns southbound at Powell Drive and on the westbound side streets at Emory Road/Bill Bell Way and Powell Drive.

EXISTING TRAFFIC CONTROL OF STUDY INTERSECTIONS

The following is a listing of the study intersections by the type of traffic control existing at each:

- Signalized intersections:
 - Clinton Highway at Emory Road (west leg)
 - Clinton Highway at W. Emory Road (east leg)/Bill Bell Way
 - Clinton Highway at Powell Drive
- Un-signalized intersections-
 - W. Emory Road at Site Access (East)
 - W. Emory Road at Site Access (West)
 - W. Emory Road at Harrell Road / Carpenter Road (future traffic signal)

EXISTING SITE CONDITIONS

The proposed development is located on the north and south sides of W. Emory Road. It is primarily undeveloped farmland with relatively flat to rolling terrain. FIGURE 3 provides an aerial view of the project site and the surrounding area.



FIGURE 3
EXISTING SITE CONDITIONS

EXISTING TRAFFIC DATA

Two types of existing traffic data were obtained for this study. The first was annual average daily traffic (AADT) data, which is collected by both The Tennessee Department of Transportation (TDOT) and the Knoxville Regional Transportation Planning Organization (TPO). Two count stations were found along study roadways that were felt to have relevance for this study. The most recent available data from these stations is as follows:

- 1) TDOT count station No. 47000047 on W. Emory Road, immediately adjacent to the project site, with a value of 10,841 vehicles per day.
- 2) TDOT station No. 47000049 on Clinton Highway about one mile south of the study area, with a value of 25,986 vehicles per day.

The second type of traffic data obtained for this study were peak hour turning movement traffic counts, which were performed specifically for this study. As previously mentioned, these counts were made in January 2023 with local schools in session and these replaced similar counts performed for the CDM Smith study. FIGURE 4 provides a summary of the peak hour traffic volumes obtained from these counts, while the actual traffic count computer printout summary sheets are contained in APPENDIX A.

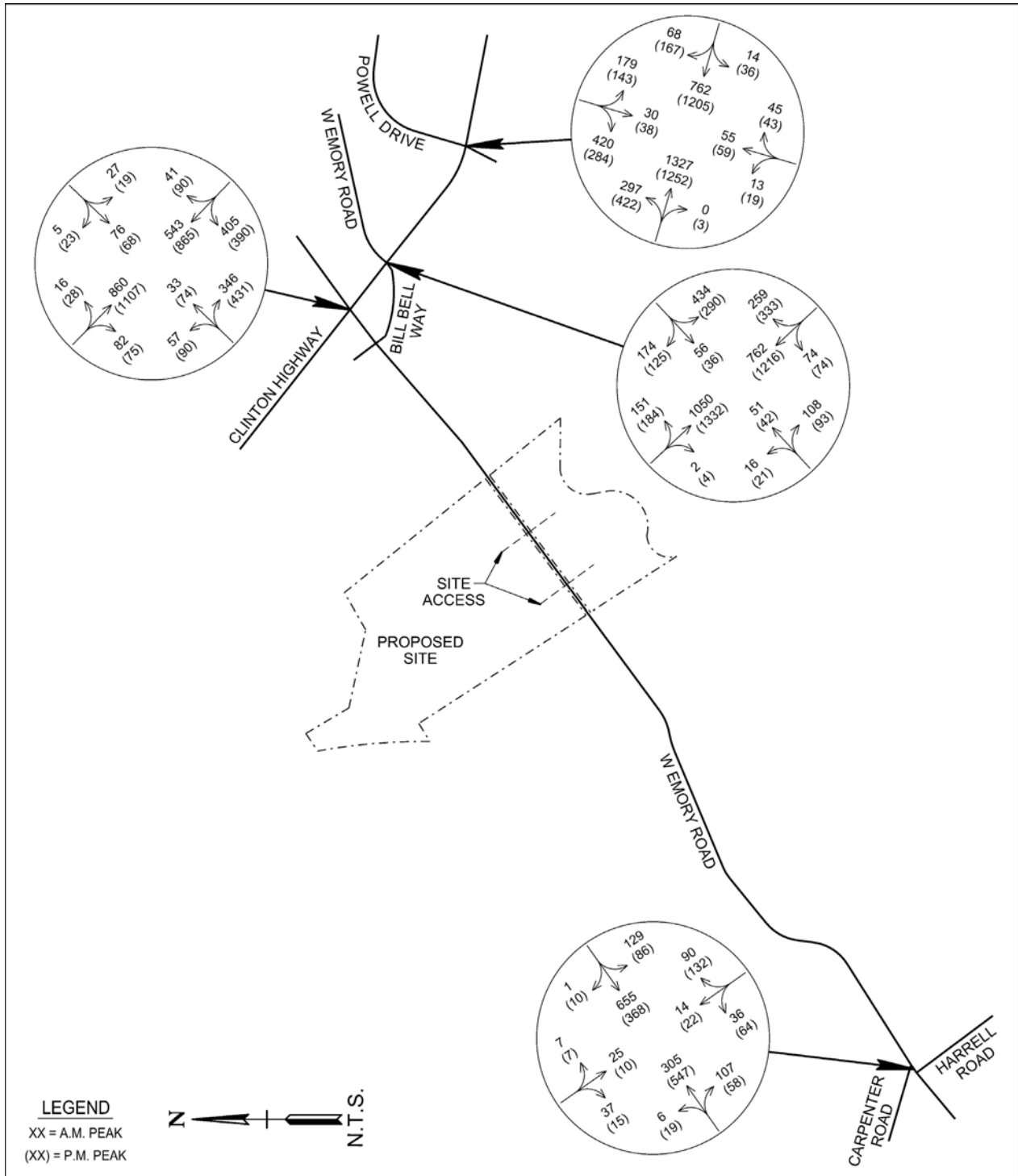


FIGURE 4
2023 EXISTING TRAFFIC VOLUMES

EXISTING CAPACITY ANALYSES / LEVELS-OF-SERVICE

Capacity analyses employing the methods of the *Highway Capacity Manual* were conducted for the existing conditions at the study intersections. These analyses were performed with the 2023 existing traffic volumes, shown in FIGURE 4, and existing intersection traffic control and lane configurations. The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in APPENDIX C. Also contained in APPENDIX C is a section entitled "Capacity and Level of Service Concepts" which provides a description of the utilized procedures.

BACKGROUND CONDITIONS

BACKGROUND TRAFFIC GROWTH

The proposed development is anticipated to be constructed over several years with completion anticipated by 2030. Therefore, year 2030 was established as the appropriate design / analysis year for this study. This year was also used in the CDM Smith study, which will allow direct comparisons to be made between the results of each. In order to determine traffic volumes resulting solely from background traffic growth to year 2030, it was necessary to establish an annual growth rate for existing traffic. The CDM Smith study arrived at a growth rate of 2.5 percent per year, and after review of their methodology, this same rate was adopted for this study. FIGURE 5 contains the background traffic volumes that would result from a 2.5 percent annual background traffic growth from year 2023 to year 2030.

BACKGROUND CAPACITY ANALYSES / LEVELS-OF-SERVICE

Capacity analyses as described in the EXISTING CONDITIONS section of this report were conducted utilizing the Year 2030 background traffic volumes shown in FIGURE 5 and existing intersection traffic control and lane configurations. The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printout sheets contained in APPENDIX C.

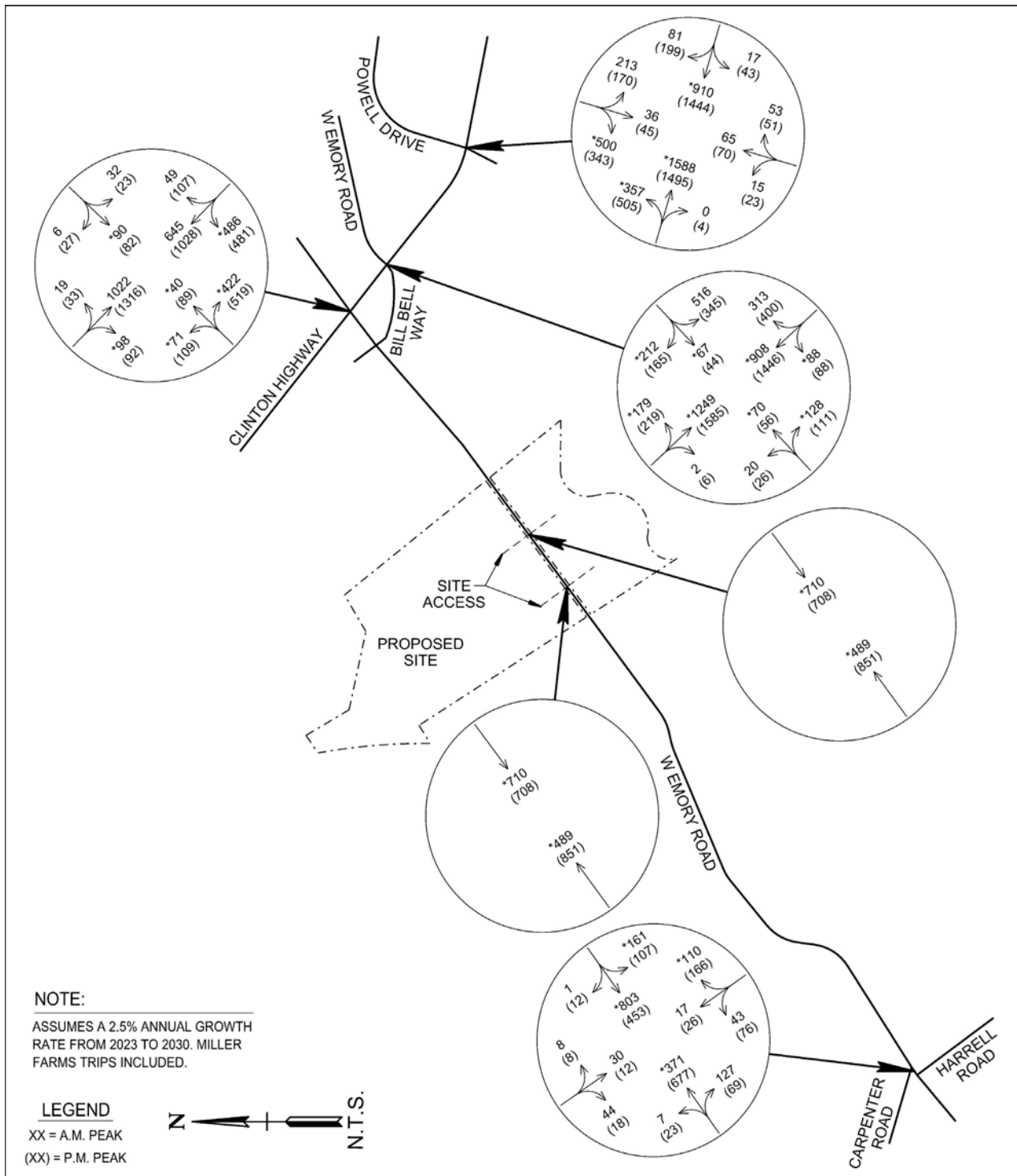


FIGURE 5
 2030 BACKGROUND TRAFFIC VOLUMES

FUTURE CONDITIONS

TRIP GENERATION

In order to estimate the expected traffic volumes to be generated by the proposed development, the procedures of *Trip Generation, 11th Edition* (Institute of Transportation Engineers-ITE) were utilized. The generated trips were determined based on the weekday AM and PM peak hour of adjacent street traffic trip generation rates for the proposed development land uses, which include Single-Family Detached Housing (ITE Land Use Code 210), Single-Family Attached Housing (ITE Land Use Code 215), Multi-Family (Low Rise) (ITE Land Use Code 220), Shopping Plaza (40k to 150k square feet) (ITE Land Use Code 821), Public Park (ITE Land Use Code 411), and Soccer Complex (ITE Land Use Code 488). The generated trips for this project will consist of three specific types; internal capture trips, pass-by trips, and non-pass-by trips.

According to ITE, *“At a development site consisting of two or more land uses, there is potential for interaction among those uses (referred to as “internal capture trips”), particularly where the trip can be made by walking. As a result, the total generation of external trips (that is, those entering and exiting the overall site) may be less than the simple sum of the trips generated by each discrete land use.”* ITE also states, *“An internal capture rate can be generally defined as the percentage of total person trips generated by a site that are made entirely within the site. The trip origin, destination, and travel path are all within the site.”* Methodology for determining an internal capture rate followed ITE procedure and is the same methodology presented in NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. Trip reductions for internal capture are separate from pass-by trip reductions and are subtracted from initial trip generation volumes before pass-by trip reductions are applied. For this specific development, internal capture trip reductions were calculated to be 2% for the AM peak hour and 11% for the PM peak hour.

The pass-by trips are those that involve vehicles that are already going past the project site, who will now turn into the site, do business, and then exit the site continuing their primary trip in the same direction. The ITE Trip Generation Handbook, 3rd Edition, provides pass-by trip rates for the specific land uses proposed in this development. Pass-by trips are not newly generated trips but rather redistributed trips from the existing roadway network to the proposed development. The pass-by trips for this development were assumed along Emory Road and consist of the following percentages for the Shopping Plaza: AM Peak = 0%, PM Peak = 40%. All other land uses do not generate pass-by trips.

The non-pass-by trips are new trips that are made for the specific purpose of doing business at the proposed development. The non-pass-by trips are represented by the remaining percentages of the pass-by trip rates presented above.

See TABLE 2 for a summary of the traffic generated for this project. The ITE trip generation worksheets and internal capture calculation spreadsheets are contained in APPENDIX B.

TABLE 1: TRIP GENERATION SUMMARY

LAND USE	ITE CODE	SIZE	WEEKDAY (TRIPS/DAY)	AM PEAK HOUR (TRIPS/HOUR)			PM PEAK HOUR (TRIPS/HOUR)		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached Housing	210	561 units	4,931	89	269	358	317	186	503
			<i>Internal Capture Reduction*</i>	<i>(-2)</i>	<i>(-5)</i>	<i>(-7)</i>	<i>(-35)</i>	<i>(-20)</i>	<i>(-55)</i>
			Reduced Trip Totals	87	264	351	282	166	448
			<i>Pass-by**</i> Non-Pass-by	<i>(-0)</i> 87	<i>(-0)</i> 264	<i>(-0)</i> 351	<i>(-0)</i> 282	<i>(-0)</i> 166	<i>(-0)</i> 448
Single-Family Attached Housing	215	213 units	1,573	26	79	105	73	51	124
			<i>Internal Capture Reduction*</i>	<i>(-1)</i>	<i>(-2)</i>	<i>(-3)</i>	<i>(-8)</i>	<i>(-6)</i>	<i>(-14)</i>
			Reduced Trip Totals	25	77	102	65	45	110
			<i>Pass-by**</i> Non-Pass-by	<i>(-0)</i> 25	<i>(-0)</i> 77	<i>(-0)</i> 102	<i>(-0)</i> 65	<i>(-0)</i> 45	<i>(-0)</i> 110
Local Apartment (Knox County)	N/A	324 units	2,746	35	123	158	125	102	227
			<i>Internal Capture Reduction*</i>	<i>(-1)</i>	<i>(-2)</i>	<i>(-3)</i>	<i>(-14)</i>	<i>(-11)</i>	<i>(-25)</i>
			Reduced Trip Totals	34	121	155	111	91	202
			<i>Pass-by**</i> Non-Pass-by	<i>(-0)</i> 34	<i>(-0)</i> 121	<i>(-0)</i> 155	<i>(-0)</i> 111	<i>(-0)</i> 91	<i>(-0)</i> 202
Shopping Plaza (40-150k)	821	72,900 SF	4,922	78	48	126	185	193	378
			<i>Internal Capture Reduction*</i>	<i>(-2)</i>	<i>(-1)</i>	<i>(-3)</i>	<i>(-20)</i>	<i>(-21)</i>	<i>(-41)</i>
			Reduced Trip Totals	76	47	123	165	172	337
			<i>Pass-by**</i> Non-Pass-by	<i>(-0)</i> 76	<i>(-0)</i> 47	<i>(-0)</i> 123	<i>(-66)</i> 99	<i>(-69)</i> 103	<i>(-135)</i> 202

SECTION 5
FUTURE CONDITIONS

Public Park	411	9 acres	94	0	0	0	0	1	1
			<i>Internal Capture Reduction*</i>	<i>(-0)</i>	<i>(-0)</i>	<i>(-0)</i>	<i>(-0)</i>	<i>(-0)</i>	<i>(-0)</i>
			Reduced Trip Totals	0	0	0	0	1	1
			<i>Pass-by**</i> Non-Pass-by	<i>(-0)</i> 0	<i>(-0)</i> 0	<i>(-0)</i> 0	<i>(-0)</i> 0	<i>(-0)</i> 1	<i>(-0)</i> 1
Soccer Complex	488	7 fields	499	4	3	7	76	39	115
			<i>Internal Capture Reduction*</i>	<i>(-0)</i>	<i>(-0)</i>	<i>(-0)</i>	<i>(-8)</i>	<i>(-4)</i>	<i>(-12)</i>
			Reduced Trip Totals	4	3	7	68	35	103
			<i>Pass-by**</i> Non-Pass-by	<i>(-0)</i> 4	<i>(-0)</i> 3	<i>(-0)</i> 7	<i>(-0)</i> 68	<i>(-0)</i> 35	<i>(-0)</i> 103
TOTAL REDISTRIBUTED PASS-BY TRIPS			0	0	0	66	69	135	
TOTAL NEW PROJECT TRIPS (NON-PASS-BY)			226	512	738	625	441	1,066	
TOTAL PROJECT TRIPS AT SITE DRIVEWAYS			226	512	738	691	510	1,201	

A.M. Peak Hour trip generation is based on Peak Hour of Adjacent Street Traffic, One Hour Between 7 & 9 a.m.

P.M. Peak Hour trip generation is based on Peak Hour of Adjacent Street Traffic, One Hour Between 4 & 6 p.m.

*Internal capture trip reductions are calculated to be 2% for the AM Peak Hour and 11% for the PM Peak Hour

**Pass-by trip Redistribution:

- LUC 821 – AM Peak=0%, PM Peak=40%

TRIP DISTRIBUTION AND ASSIGNMENT

The proposed trip distribution for this development was determined through a review of existing travel patterns, local knowledge of the study area, proposed site location in relation to surrounding roadway network, and engineering judgment. FIGURES 6A through 6E provide breakdowns of how the above site generated trips would be distributed to the study intersections based on land use. FIGURES 7A through 7E provide breakdowns of how the above site generated trips would be assigned to the study intersections. FIGURE 7 provides the proposed total trip assignment volumes to the studied intersections and FIGURE 8 provides the proposed pass-by trip redistribution and assignment volumes to the studied intersections.

FUTURE TRAFFIC VOLUMES

Future projected traffic volumes for the study intersections were developed by adding the generated and assigned trips shown in FIGURES 7 & 8 to the 2030 background traffic volumes developed in the previous section and shown in FIGURE 5. These combined 2030 volumes reflect the existing traffic, the background traffic growth, and the generated traffic from the proposed development. These future volumes are shown on FIGURE 9 and are the combined volumes used in the analyses of future conditions with the proposed development fully built-out.

FUTURE CAPACITY ANALYSES / LEVELS-OF-SERVICE

Capacity analyses, as described in the EXISTING CONDITIONS section of this report, were conducted for future conditions utilizing the combined traffic volumes developed as discussed in the sections above and shown on FIGURE 9. These analyses utilized existing intersection traffic control and existing lane configurations to determine where delay and level-of-service problems can be expected once development is built-out. Where problems were identified, appropriate mitigation measures were proposed and additional capacity analyses conducted assuming implementation of these mitigation measures. Tabular summaries of all these analyses results and associated discussion are contained in the EVALUATIONS section. In addition, detailed computer printout summaries of the analyses are contained in APPENDIX C.

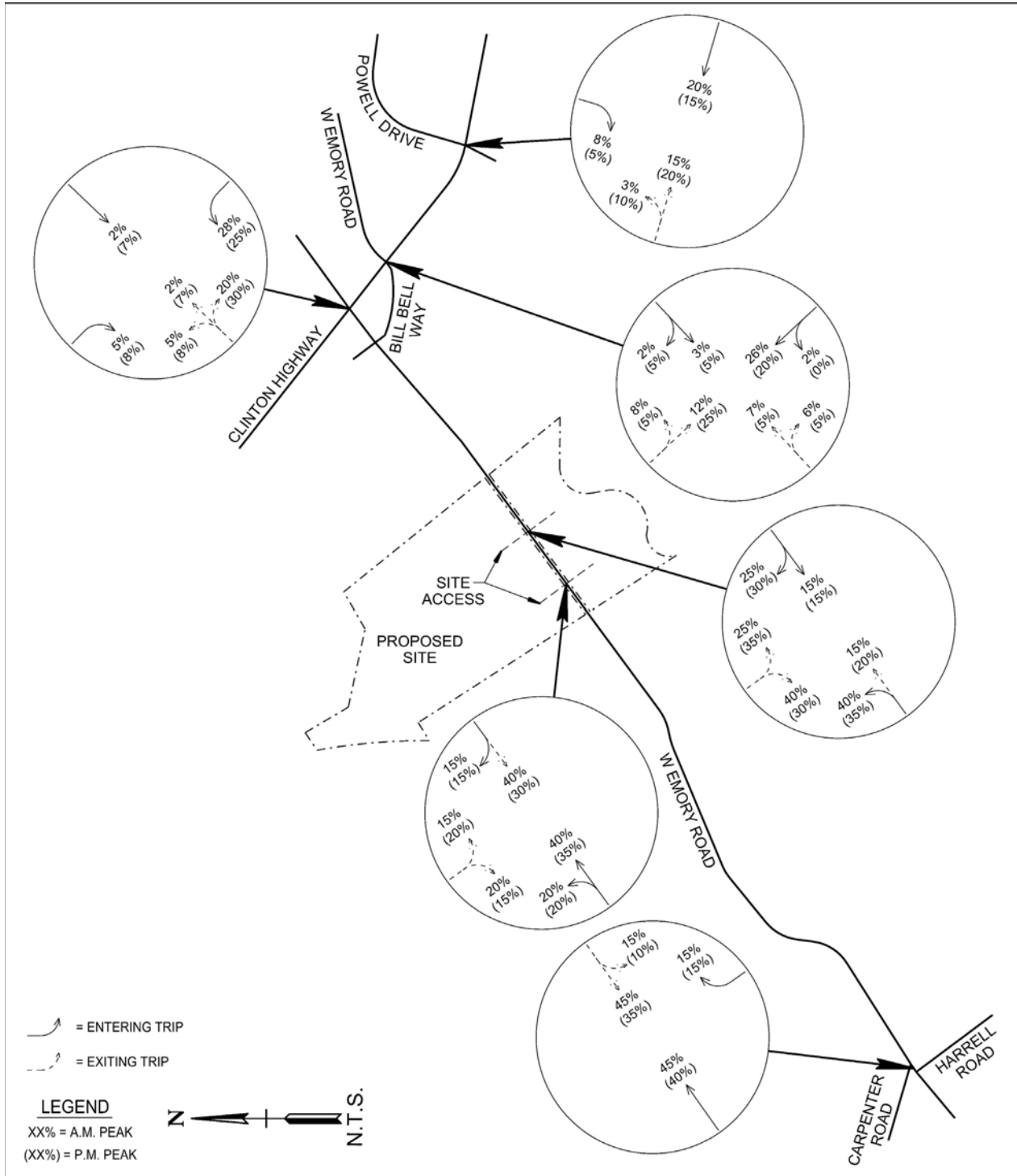


FIGURE 6A
SINGLE-FAMILY DETACHED TRIP DISTRIBUTION

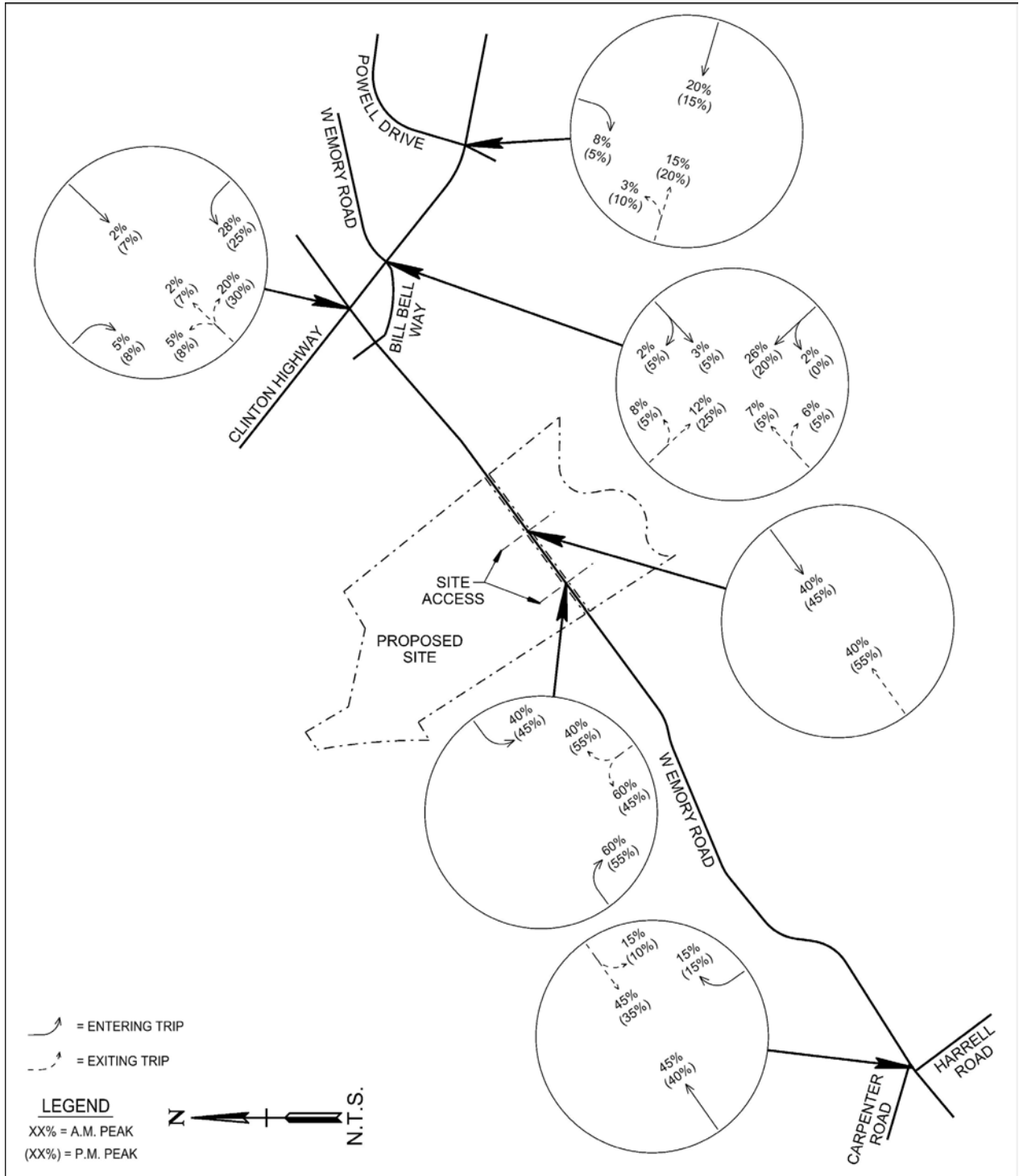


FIGURE 6B
SINGLE-FAMILY ATTACHED TRIP DISTRIBUTION

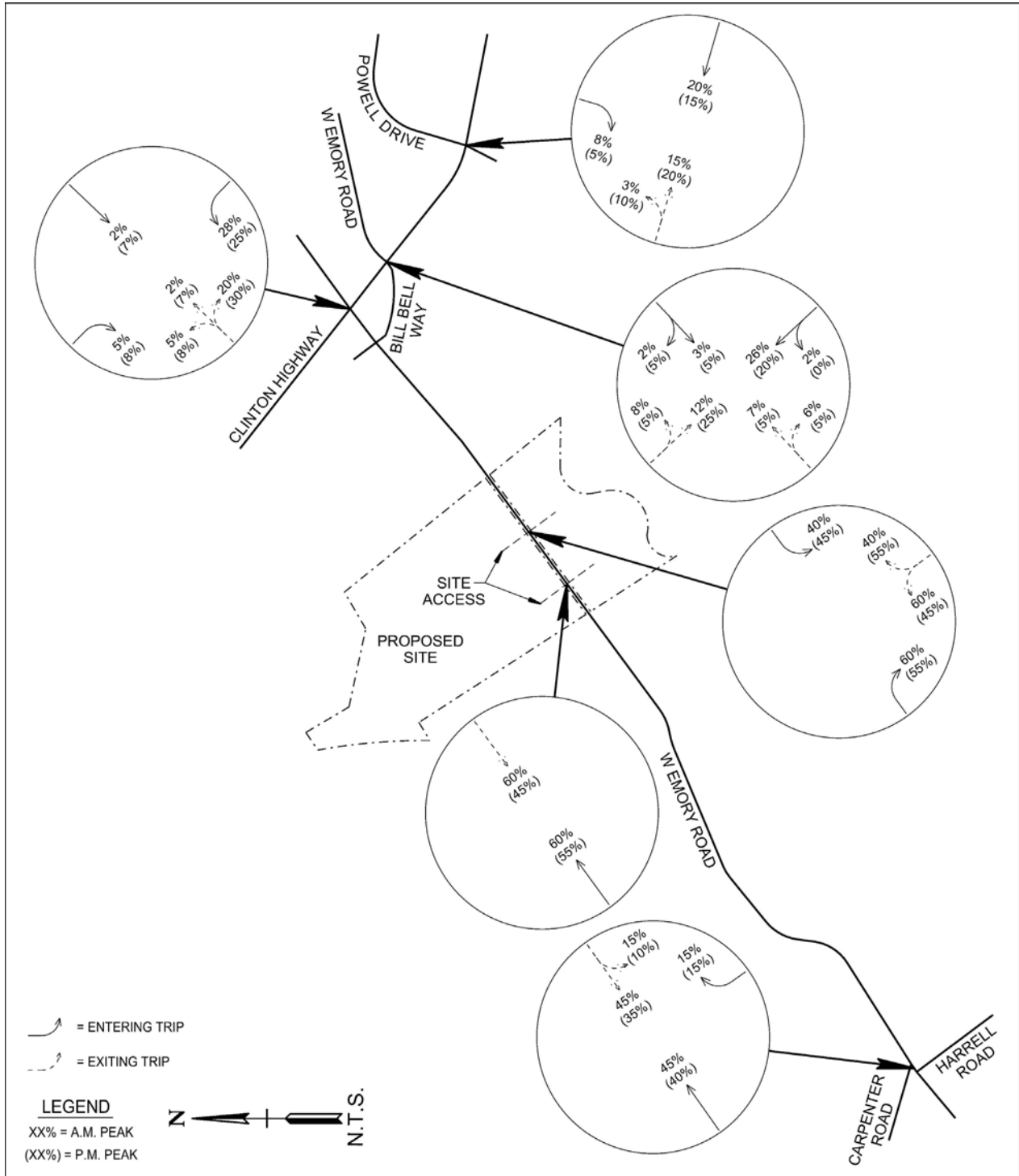


FIGURE 6C
MULTI-FAMILY TRIP DISTRIBUTION

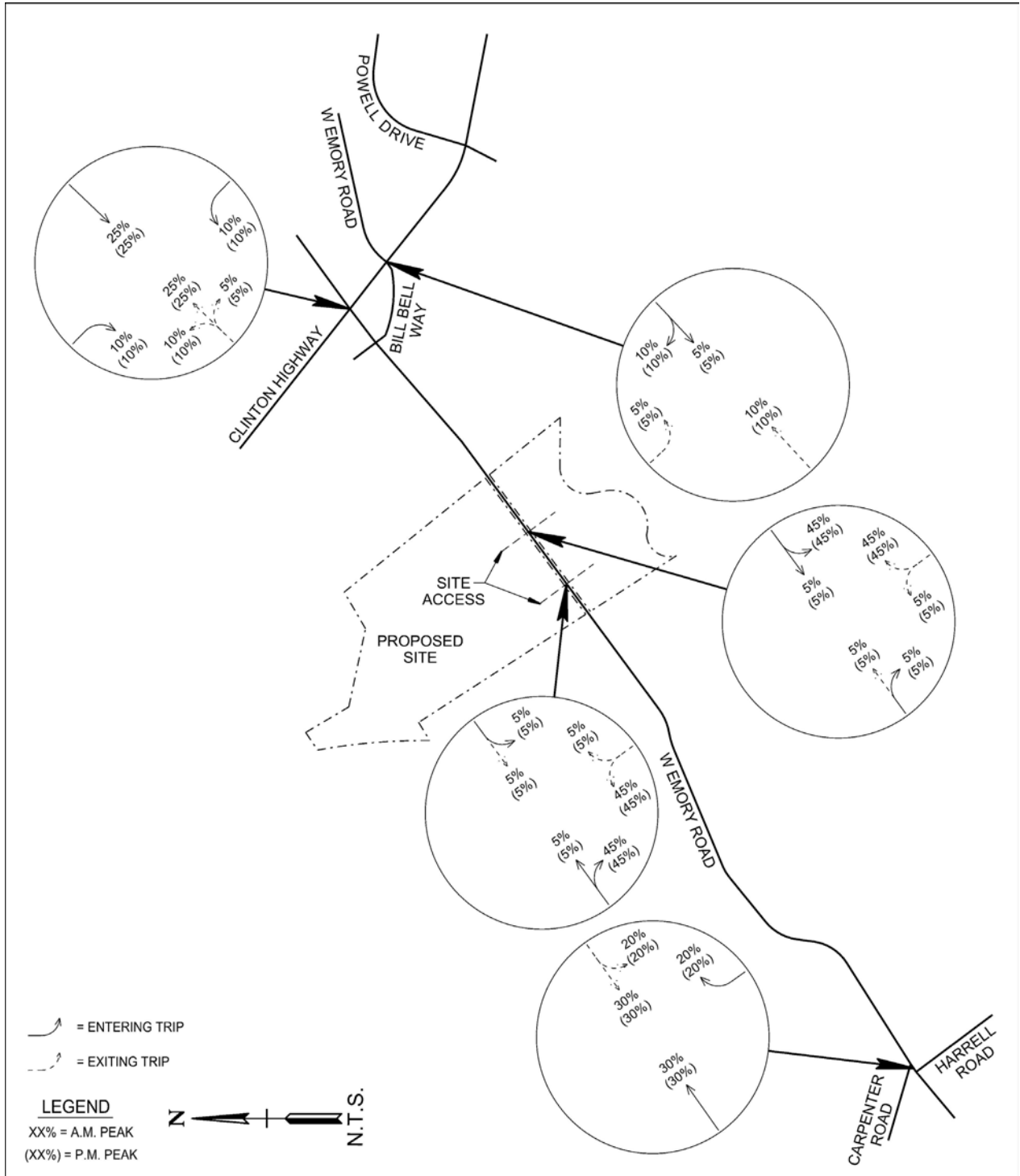


FIGURE 6D
PARK AND RECREATION TRIP DISTRIBUTION

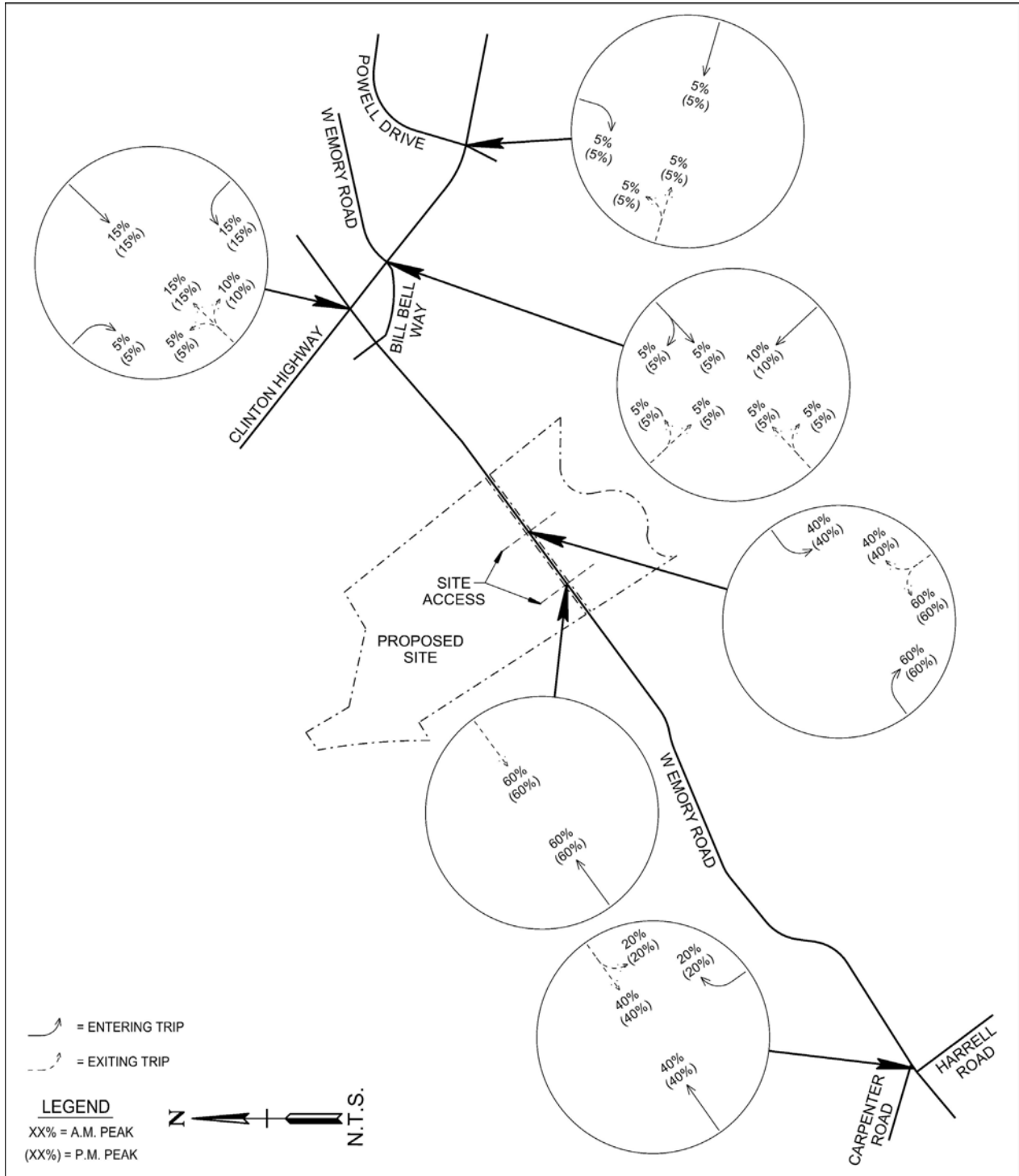


FIGURE 6E
COMMERCIAL TRIP DISTRIBUTION

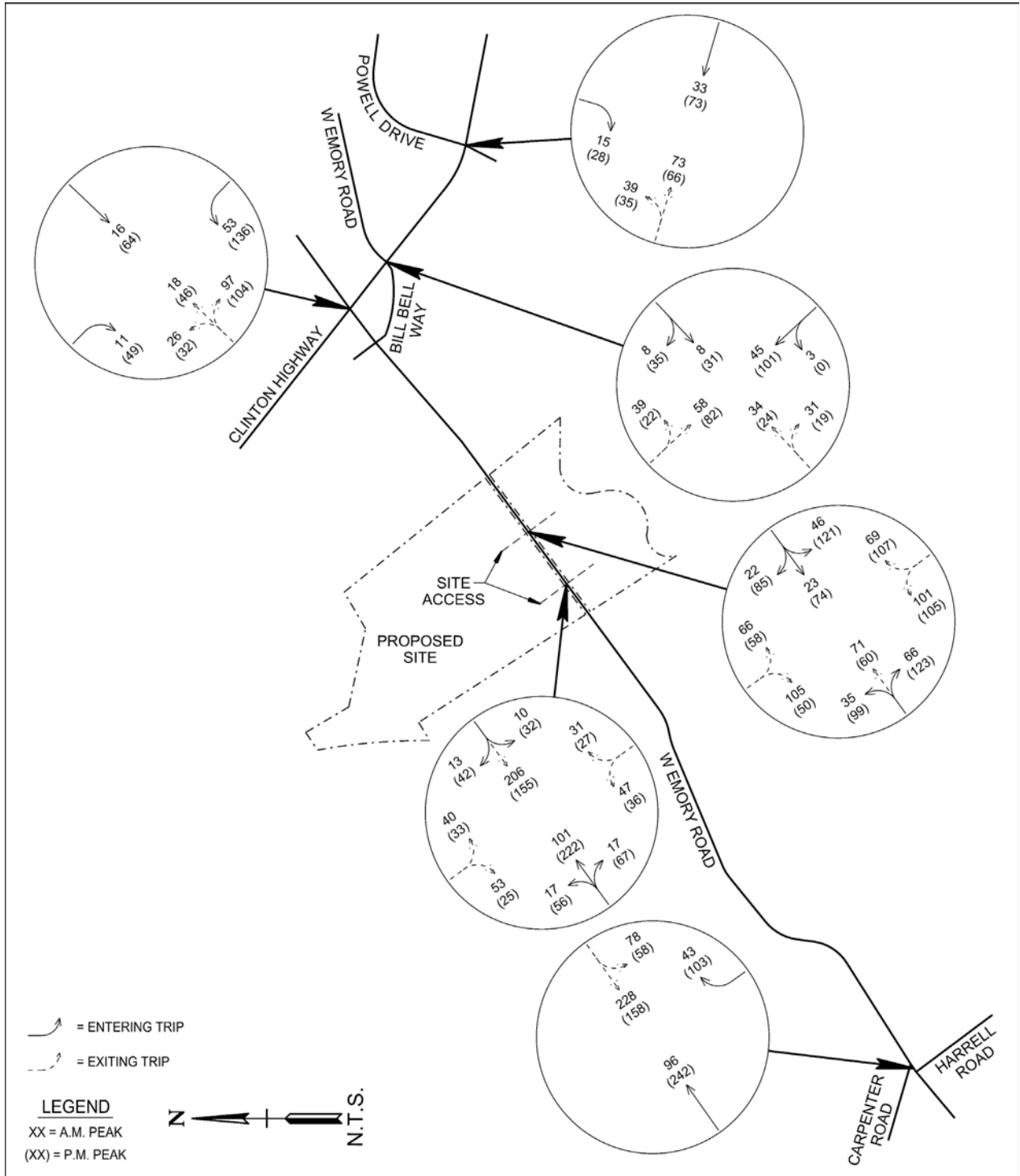


FIGURE 7
TOTAL TRIP ASSIGNMENT

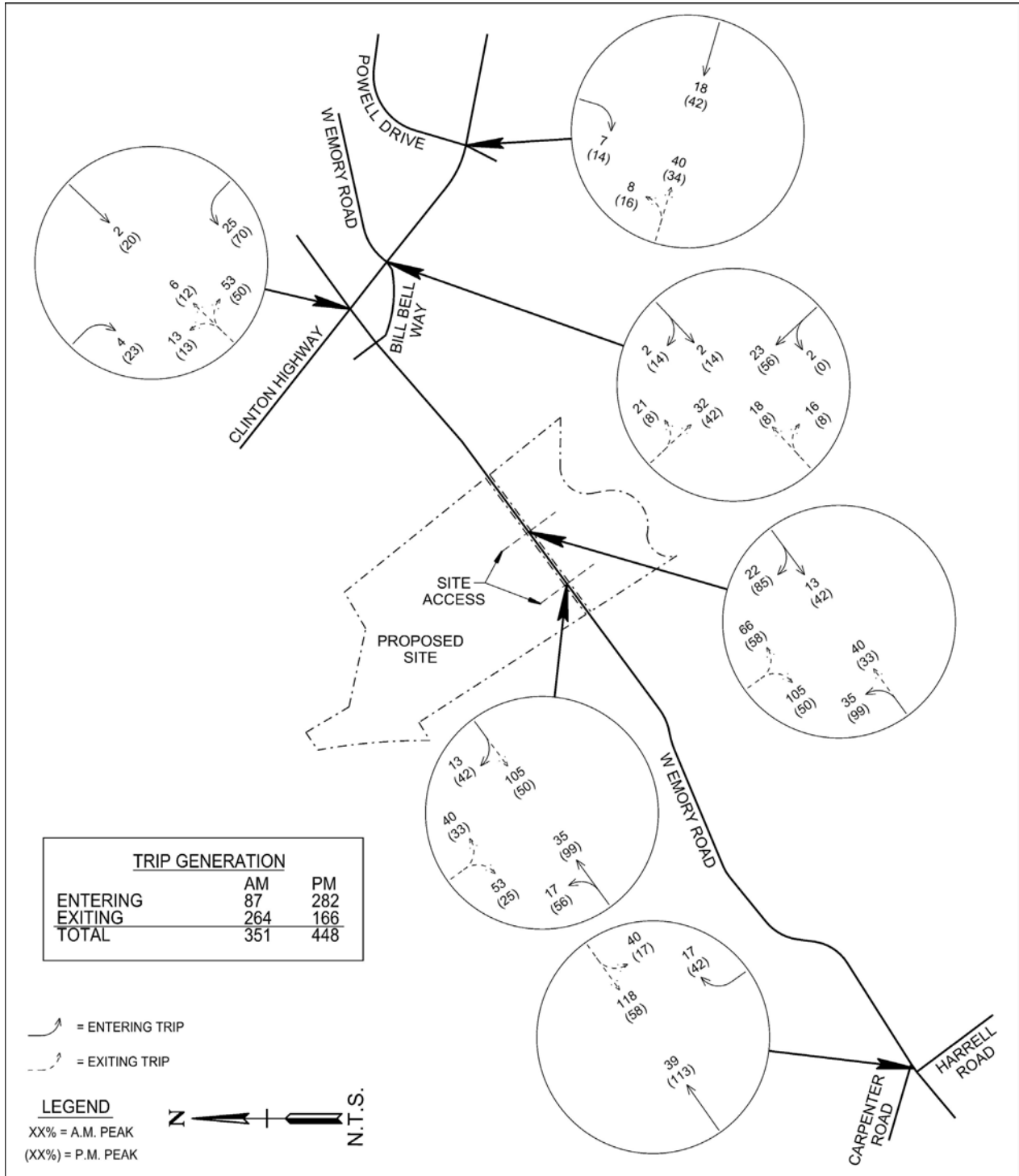


FIGURE 7A
SINGLE-FAMILY DETACHED TRIP ASSIGNMENT

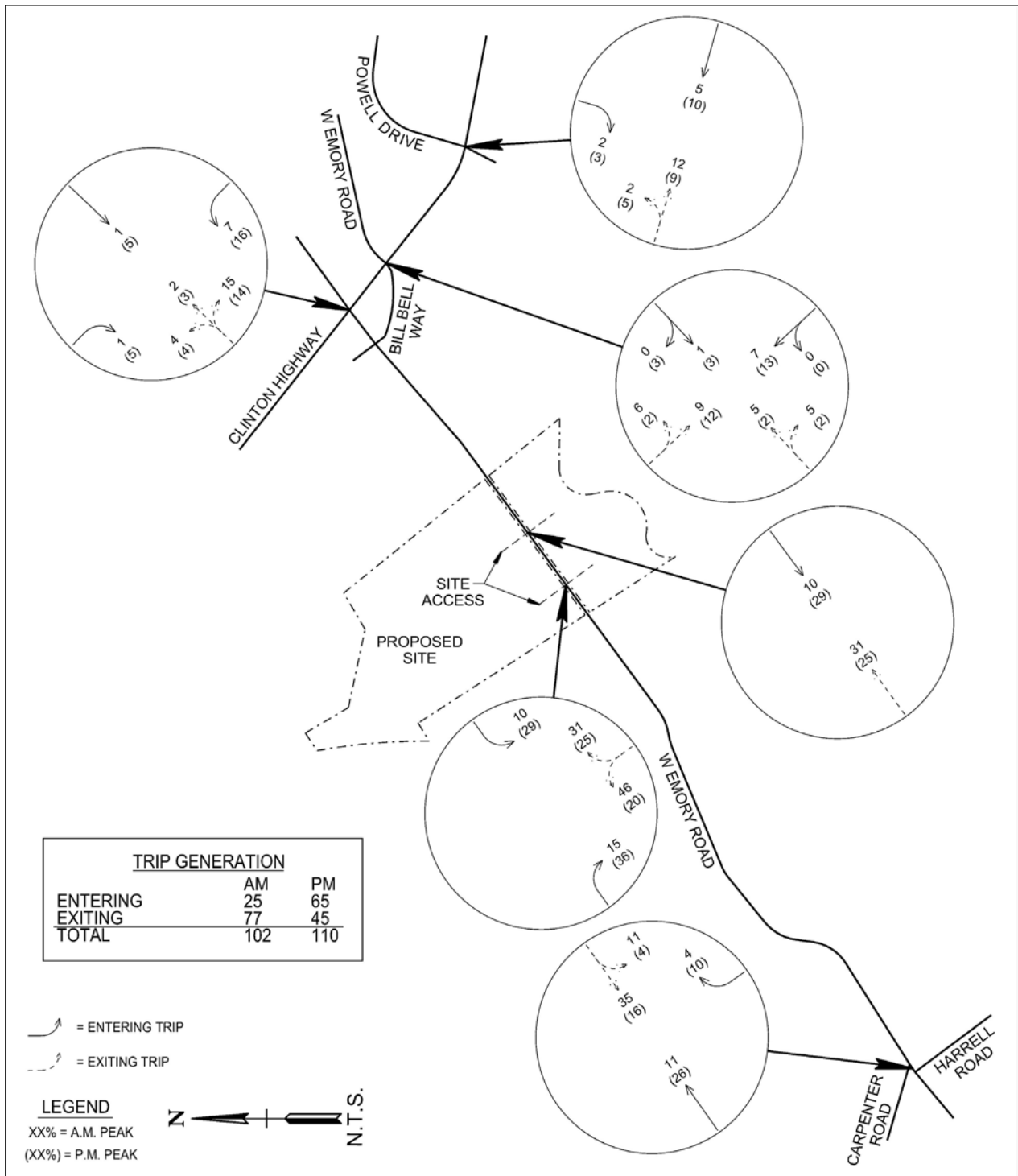


FIGURE 7B
SINGLE-FAMILY ATTACHED TRIP ASSIGNMENT

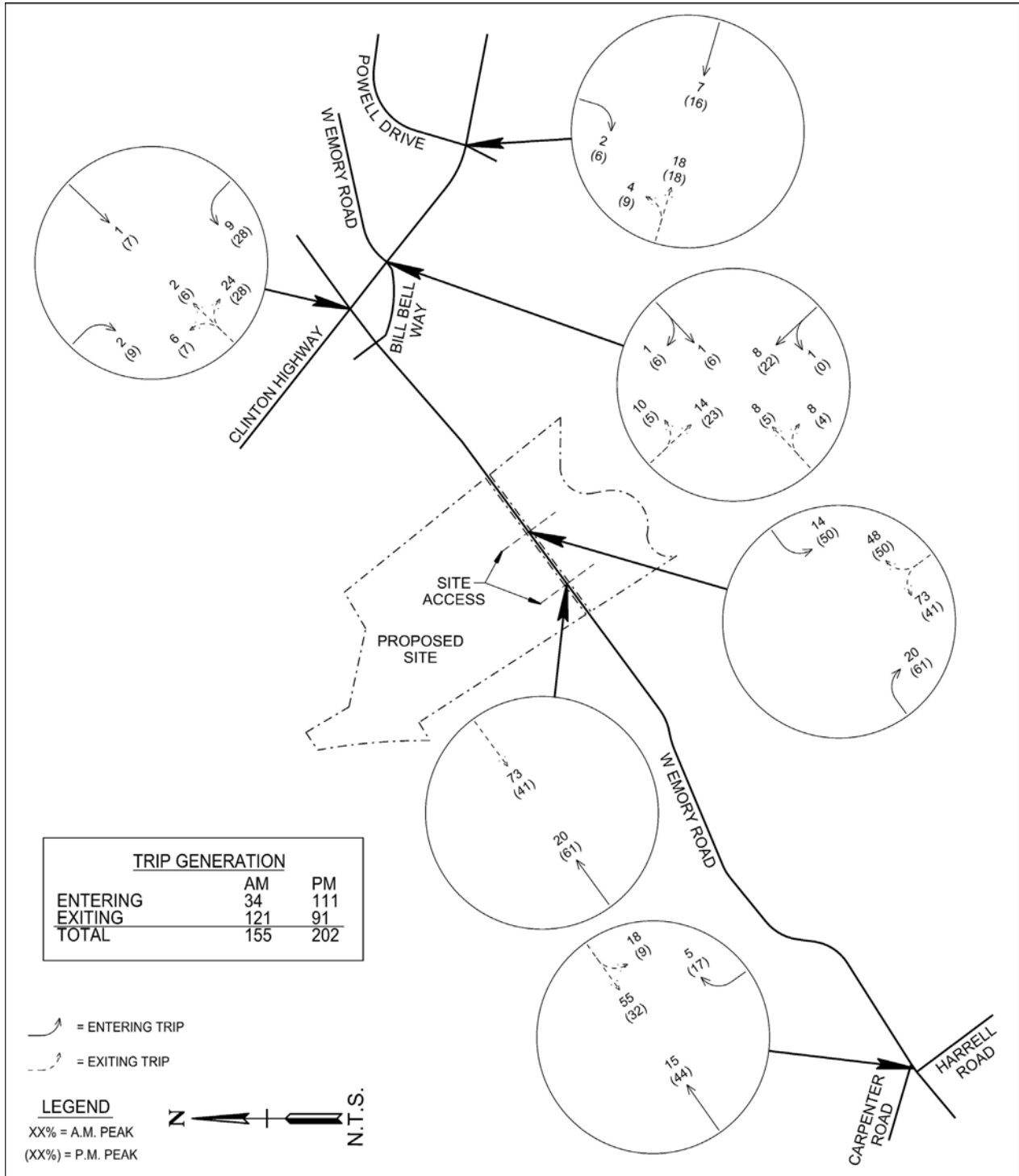


FIGURE 7C
MULTI-FAMILY TRIP ASSIGNMENT

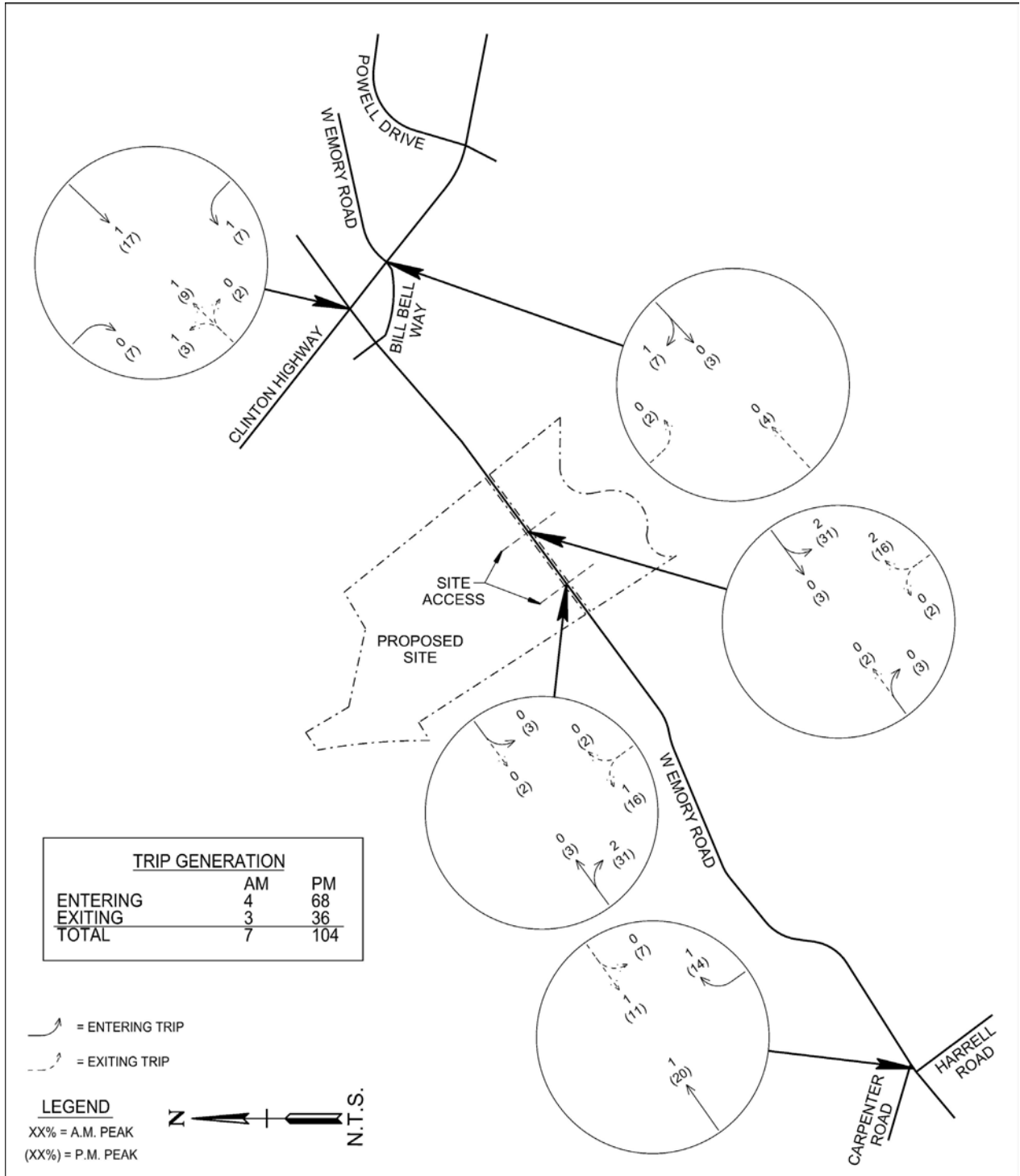


FIGURE 7D
PARK AND RECREATION TRIP ASSIGNMENT

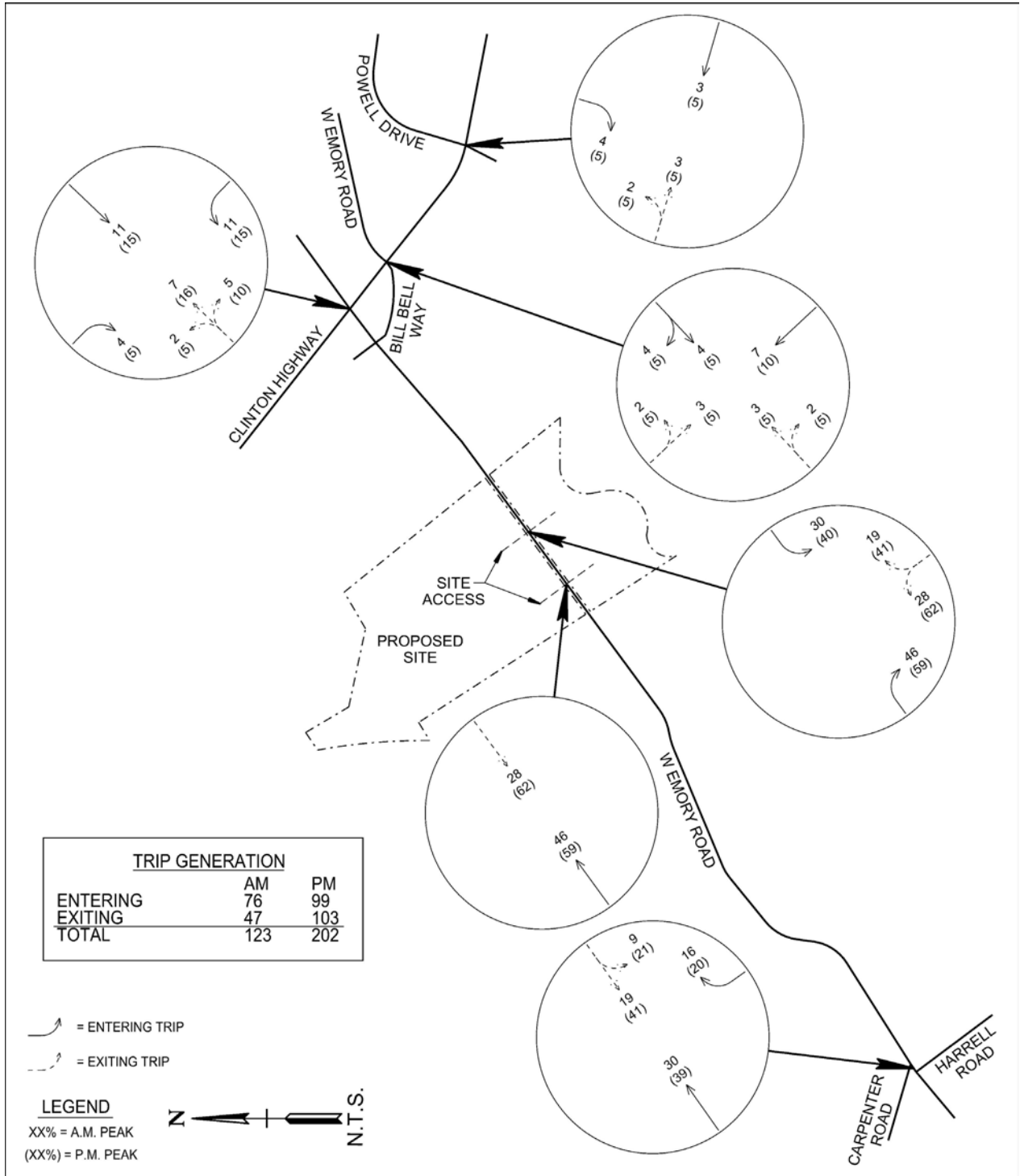


FIGURE 7E
COMMERCIAL TRIP ASSIGNMENT

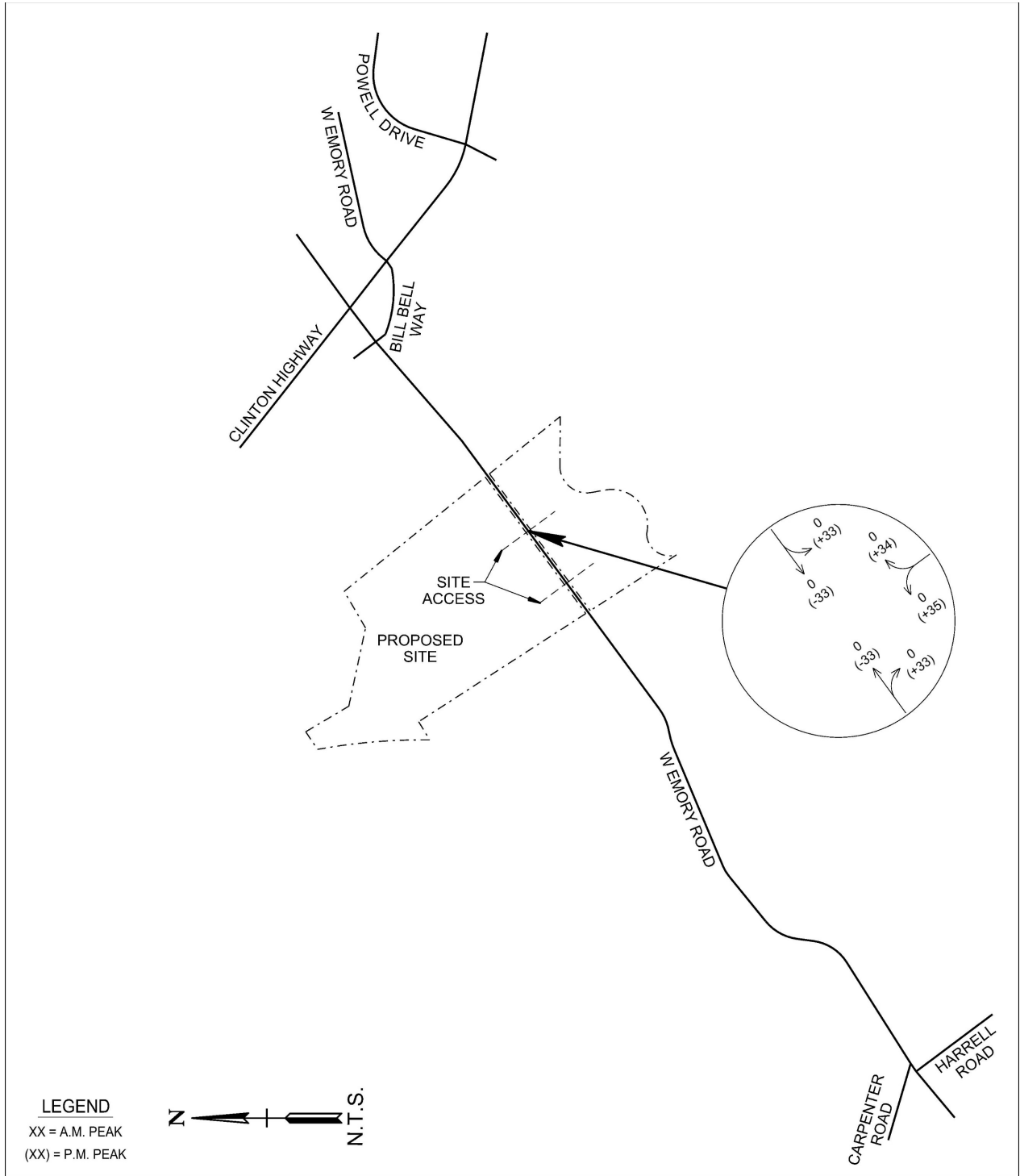


FIGURE 8
PASS-BY TRIP REDISTRIBUTION AND ASSIGNMENT

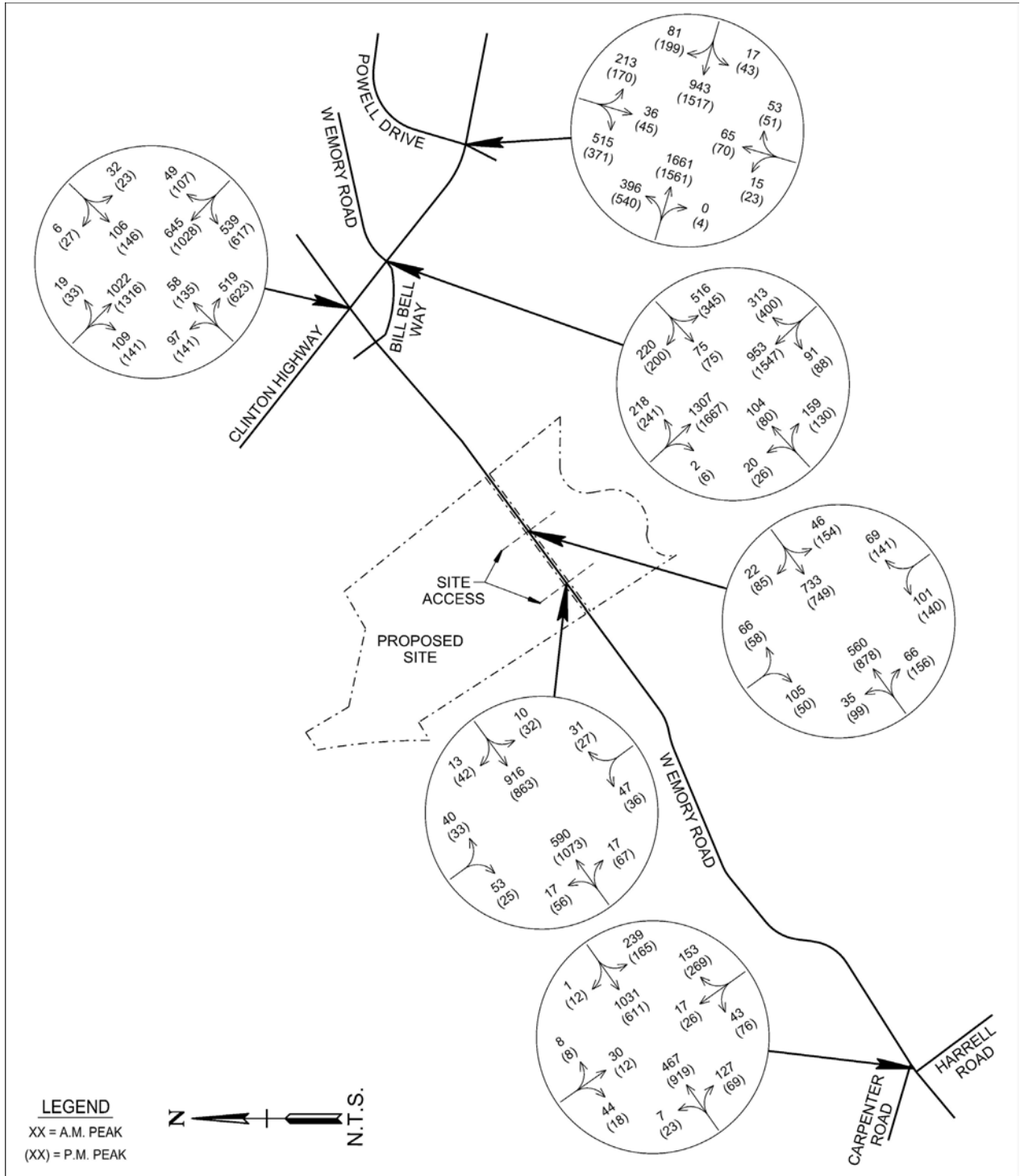


FIGURE 9
2030 COMBINED TRAFFIC VOLUMES

EVALUATIONS

INTERSECTION CAPACITY ANALYSES

As discussed in the preceding sections of this report, capacity analyses employing the methods of the Highway Capacity Manual (HCM 6th Edition) were conducted for all study intersections for multiple traffic volume and roadway scenarios. These included existing roadway condition analyses with existing traffic, background traffic and combined traffic. Where these runs included signalized intersections, the capacity analyses utilized the existing traffic signal timing. Where unsatisfactory delay and level-of-service results were identified (LOS E or F), additional capacity analyses were conducted with appropriate capacity mitigation measures assumed. A summary of the capacity analyses results is shown in TABLE 2, which includes a description of the assumed mitigation measures. The resulting conclusions and recommendations are covered in the CONCLUSIONS and RECOMMENDATIONS section of this report. The complete capacity analysis computer printout summaries are contained in APPENDIX C.

TABLE 2: CAPACITY ANALYSES SUMMARY					
INTERSECTION	TIME PERIOD	YEAR 2023 EXISTING (LOS/DELAY)	YEAR 2030 BACKGROUND (LOS/DELAY)	YEAR 2030 COMBINED (LOS/DELAY)	YEAR 2030 MITIGATION (LOS/DELAY)
Clinton Highway at W. Emory Road ¹ TRAFFIC SIGNAL CONTROL	A.M. P.M.	D 35.0 D 38.9	D 45.2 E 76.2	D 51.2 F 111.4	³ C 30.7 ³ D 54.1
Clinton Highway at Bill Bell Way / W. Emory Road ¹ TRAFFIC SIGNAL CONTROL	A.M. P.M.	C 32.0 C 33.1	D 48.4 D 49.2	D 52.1 F 89.4	⁴ D 36.5 ⁴ D 49.9
Clinton Highway Powell Drive ¹ TRAFFIC SIGNAL CONTROL	A.M. P.M.	C 29.8 D 36.0	C 34.5 E 65.2	D 35.7 F 85.7	⁴ C 26.7 ⁴ D 52.5
W. Emory Road at Harrell Road / Carpenter Road (2030 Includes TDOT Proposed Improvements) ² EXISTING SIDE STREET STOP CONTROL ¹ TRAFFIC SIGNAL CONTROL BY 2030 (TDOT)	A.M. P.M.	F 99.8 (NB) F 77.6 (NB)	B 10.5 C 20.3	B 16.1 F 92.4	⁵ B 14.2 ⁵ C 25.0
W. Emory Road at Site Access (west) ² SIDE STREET STOP CONTROL	A.M. P.M.	- -	- -	F 185.0 (NB) F 292.1 (NB)	⁶ D 27.5 (NB) ⁶ D 31.4 (SB)
W. Emory Road at Site Access (east) ¹ TRAFFIC SIGNAL CONTROL	A.M. P.M.	- -	- -	A 8.9 B 11.1	⁷ A 8.9 ⁷ B 11.1
¹ TRAFFIC SIGNAL CONTROL – Data shown are Level-of-Service and Average Vehicular Delay (seconds) for the complete intersection utilizing HCM methodology. ² SIDE STREET STOP CONTROL – Data shown are Level-of-Service and Average Vehicular Delay (seconds) for the critical side street approaches and major street left turn movements utilizing HCM methodology. ³ NORTHBOUND (NW) CLINTON HWY. 2 ND LEFT-TURN LANE ADDED AND SIGNAL TIMING OPTIMIZED AND COORDINATED ⁴ SIGNAL TIMING OPTIMIZED AND COORDINATED ⁵ SIGNAL TIMING OPTIMIZED ⁶ CENTER 2-WAY LEFT-TURN LANE ADDED ⁷ CENTER 2-WAY LEFT-TURN LANE AND TRAFFIC SIGNAL ADDED AND SIGNAL TIMING OPTIMIZED					

CONCLUSIONS & RECOMMENDATIONS

The primary conclusion of this study is that the capacity mitigation measures proposed in the CDM Smith study will result in satisfactory traffic operations at the study intersections in the proposed development full build-out year of 2030. This conclusion is based on the most recent traffic counts, which were conducted with local schools in session, and based on the revised site development configuration and unit sizes. Therefore, it is our recommendation that these measures be implemented in conjunction with development of the proposed project. The following is a listing of these proposed measures, which is in full agreement with the recommendations of the CDM Smith report:

1. Provide a minimum 3-lane roadway section along W. Emory Road adjacent to the project site. The added lane will be a center 2-way left-turn lane providing for eastbound and westbound left-turn movements to the proposed site access.
2. Provide a minimum 315-foot storage/deceleration for right-turn lanes from W. Emory Road to the two proposed east and west site access streets.
3. Provide a traffic signal for the proposed eastern street intersection with W. Emory Road.
4. Signalization should include pedestrian traffic control facilitating possible movements from the northside residential areas to the park/recreational amenities located to the south.
5. Provide pedestrian facilities, including sidewalks and crosswalks, connecting the residential and commercial uses with the park/recreational uses.
6. Minimize landscaping, using low growing vegetation, and signage at the proposed site access streets to W. Emory Road to ensure a minimum 500-foot line-of-sight is provided for the safe operations of the site intersections.
7. Provide a second northwest bound left-turn lane from Clinton Highway to westbound W. Emory Road. The corresponding two westbound departing lanes from this intersection should be a minimum of 300 feet in length on W. Emory Road before transitioning to a single westbound lane.
8. Provide separate left and right-turn lanes from the proposed site intersecting streets with W. Emory Road.

APPENDICES

APPENDIX ORDER:

A. TRAFFIC DATA

B. TRIP GENERATION INFORMATION

C. CAPACITY ANALYSES

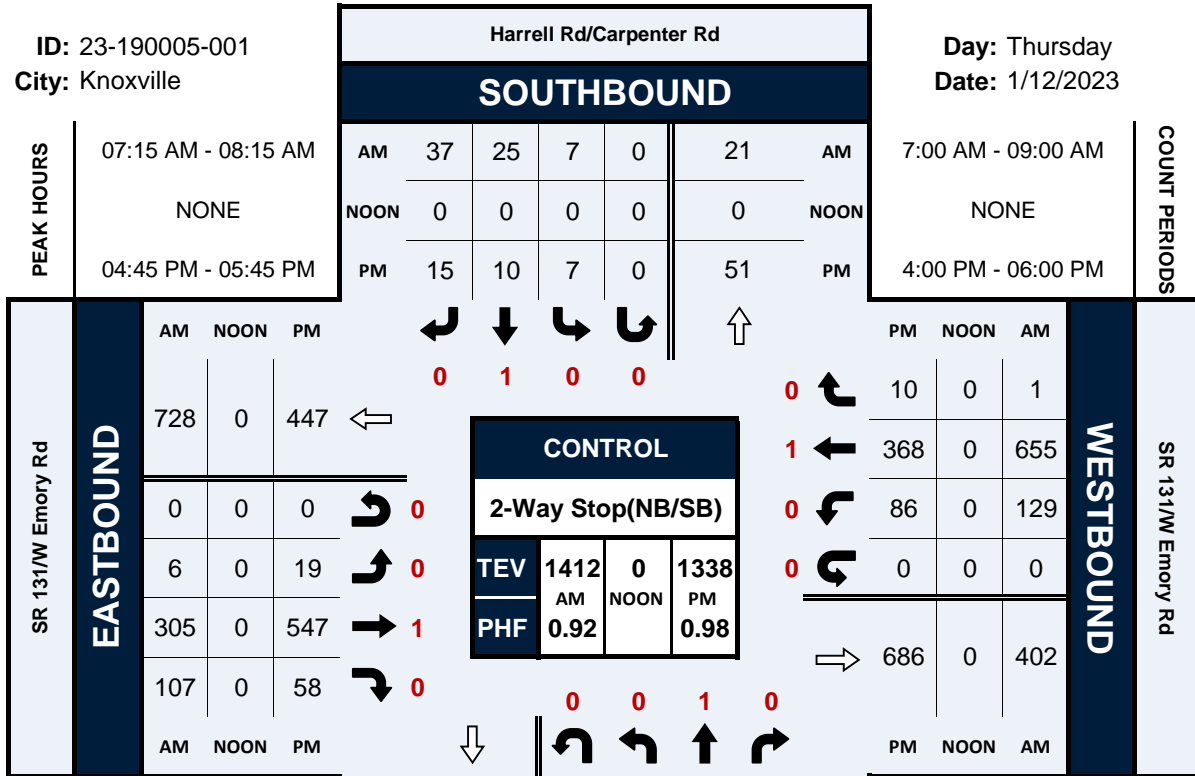
APPENDIX A – TRAFFIC DATA

Harrell Rd/Carpenter Rd & SR 131/W Emory Rd

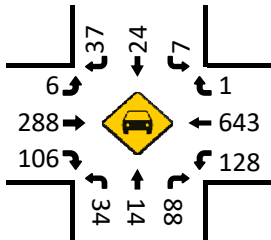
Peak Hour Turning Movement Count

ID: 23-190005-001
City: Knoxville

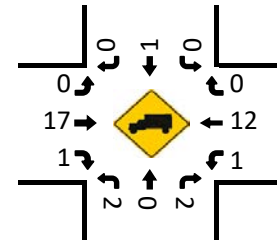
Day: Thursday
Date: 1/12/2023



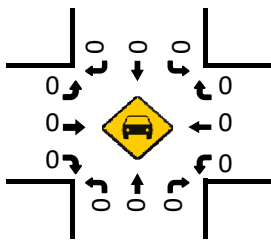
Cars (AM)



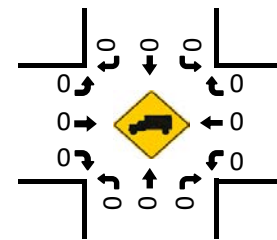
HT (AM)



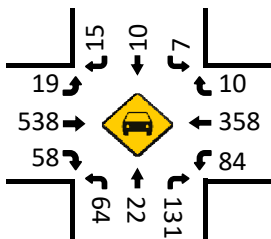
Cars (NOON)



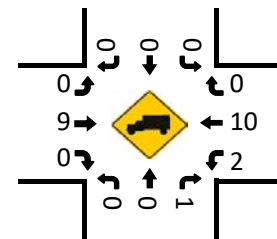
HT (NOON)



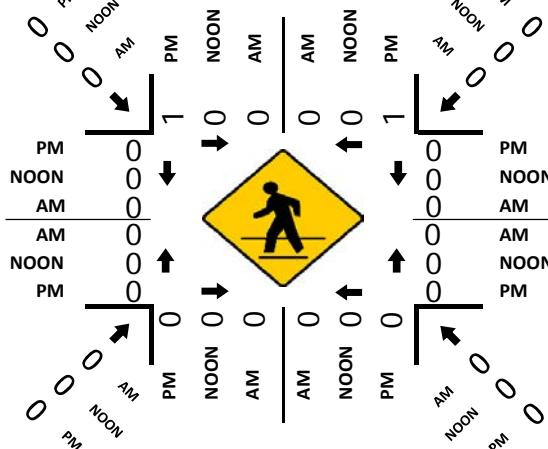
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Project ID: 23-190005-001
 Location: Harrell Rd/Carpenter Rd & SR 131/W Emory Rd
 City: Knoxville

Day: Thursday
 Date: 1/12/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Harrell Rd/Carpenter Rd Northbound						Harrell Rd/Carpenter Rd Southbound						SR 131/W Emory Rd Eastbound						SR 131/W Emory Rd Westbound						Int. Total	
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total		
7:00 AM	7	1	8	0	0	16	3	7	6	0	0	16	0	48	29	0	0	77	26	151	0	0	0	177	286	
7:15 AM	14	2	16	0	0	32	2	3	17	0	0	22	1	69	32	0	0	102	25	168	0	0	0	193	349	
7:30 AM	8	6	27	0	0	41	1	6	4	0	0	11	2	60	32	0	0	94	41	183	0	0	0	224	370	
7:45 AM	6	3	28	0	0	37	2	10	9	0	0	21	3	87	23	0	0	113	44	165	1	0	0	210	381	
Total	35	12	79	0	0	126	8	26	36	0	0	70	6	264	116	0	0	386	136	667	1	0	0	804	1386	
8:00 AM	8	3	19	0	0	30	2	6	7	0	0	15	0	89	20	0	0	109	19	139	0	0	0	158	312	
8:15 AM	12	1	18	0	0	31	1	1	0	0	0	2	0	64	14	0	0	78	12	117	0	0	0	129	240	
8:30 AM	6	2	12	0	0	20	0	4	2	0	0	6	2	59	10	0	0	71	15	120	1	0	0	136	233	
8:45 AM	7	0	11	0	0	18	0	4	4	0	0	8	2	55	14	0	0	71	27	108	1	0	0	136	233	
Total	33	6	60	0	0	99	3	15	13	0	0	31	4	267	58	0	0	329	73	484	2	0	0	559	1018	
BREAK																										
4:00 PM	12	1	37	0	0	50	2	2	5	0	0	9	2	128	13	0	0	143	18	83	6	0	0	107	309	
4:15 PM	10	6	31	0	0	47	3	1	1	0	0	5	2	154	6	0	0	162	19	55	3	0	0	77	291	
4:30 PM	10	8	29	0	0	47	3	2	6	0	0	11	4	138	14	0	0	156	16	75	1	0	0	92	306	
4:45 PM	14	3	35	0	0	52	3	3	4	0	0	10	9	126	13	0	0	148	28	86	2	0	0	116	326	
Total	46	18	132	0	0	196	11	8	16	0	0	35	17	546	46	0	0	609	81	299	12	0	0	392	1232	
5:00 PM	16	6	30	0	0	52	2	4	5	0	2	11	5	144	14	0	0	163	18	94	4	0	0	116	342	
5:15 PM	14	5	29	0	0	48	1	2	2	0	0	5	4	136	19	0	0	159	21	108	2	0	0	131	343	
5:30 PM	20	8	38	0	0	66	1	1	4	0	0	6	1	141	12	0	0	154	19	80	2	0	0	101	327	
5:45 PM	23	8	33	0	0	64	2	3	6	0	0	11	3	105	17	0	0	125	12	93	5	0	0	110	310	
Total	73	27	130	0	0	230	6	10	17	0	2	33	13	526	62	0	0	601	70	375	13	0	0	458	1322	
Grand Total	187	63	401	0	0	651	28	59	82	0	2	169	40	1603	282	0	0	1925	360	1825	28	0	0	2213	4958	
Apprch %	28.7	9.7	61.6	0.0	0.0		16.6	34.9	48.5	0.0	1.2		2.1	83.3	14.6	0.0	0.0		16.3	82.5	1.3	0.0	0.0			
Total %	3.8	1.3	8.1	0.0	0.0	13.1	0.6	1.2	1.7	0.0	0.0	3.4	0.8	32.3	5.7	0.0	0.0	38.8	7.3	36.8	0.6	0.0	0.0	44.6		
Cars, PU, Vans	184	63	391	0	0	638	27	58	82	0	167	167	40	1542	279	0	0	1861	353	1774	28	0	0	2155	4821	
% Cars, PU, Vans	98.4	100.0	97.5	0.0	0.0	98.0	96.4	98.3	100.0	0.0	98.8	98.8	100.0	96.2	98.9	0.0	0.0	96.7	98.1	97.2	100.0	0.0	0.0	97.4	97.2	
Heavy trucks	3	0	10	0	0	13	1	1	0	0	2	2	0	61	3	0	0	64	7	51	0	0	0	58	137	
%Heavy trucks	1.6	0.0	2.5	0.0	0.0	2.0	3.6	1.7	0.0	0.0	1.2	1.2	0.0	3.8	1.1	0.0	3.3	1.9	2.8	0.0	0.0	0.0	2.6	2.8		

Project ID: 23-190005-001

Location: Harrell Rd/Carpenter Rd & SR 131/W Emory Rd
 City: Knoxville

PEAK HOURS

Day: Thursday
 Date: 1/12/2023

AM

Start Time	Harrell Rd/Carpenter Rd Northbound					Harrell Rd/Carpenter Rd Southbound					SR 131/W Emory Rd Eastbound					SR 131/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	14	2	16	0	32	2	3	17	0	22	1	69	32	0	102	25	168	0	0	193	349
7:30 AM	8	6	27	0	41	1	6	4	0	11	2	60	32	0	94	41	183	0	0	224	370
7:45 AM	6	3	28	0	37	2	10	9	0	21	3	87	23	0	113	44	165	1	0	210	381
8:00 AM	8	3	19	0	30	2	6	7	0	15	0	89	20	0	109	19	139	0	0	158	312
Total Volume	36	14	90	0	140	7	25	37	0	69	6	305	107	0	418	129	655	1	0	785	1412
% App. Total	25.7	10.0	64.3	0.0	100	10.1	36.2	53.6	0.0	100	1.4	73.0	25.6	0.0	100	16.4	83.4	0.1	0.0	100	
PHF	0.854					0.784					0.921					0.878					0.920
Cars, PU, Vans	34	14	88	0	136	7	24	37	0	68	6	288	106	0	400	128	643	1	0	772	1376
% Cars, PU, Vans	94.4	100.0	97.8	0.0	97.1	100.0	96.0	100.0	0.0	98.6	100.0	94.4	99.1	0.0	95.7	99.2	98.2	100.0	0.0	98.3	97.5
Heavy trucks	2	0	2	0	4	0	1	0	0	1	0	17	1	0	18	1	12	0	0	13	36
%Heavy trucks	5.6	0.0	2.2	0.0	2.9	0.0	4.0	0.0	0.0	1.4	0.0	5.6	0.9	0.0	4.3	0.8	1.8	0.0	0.0	1.7	2.5

PM

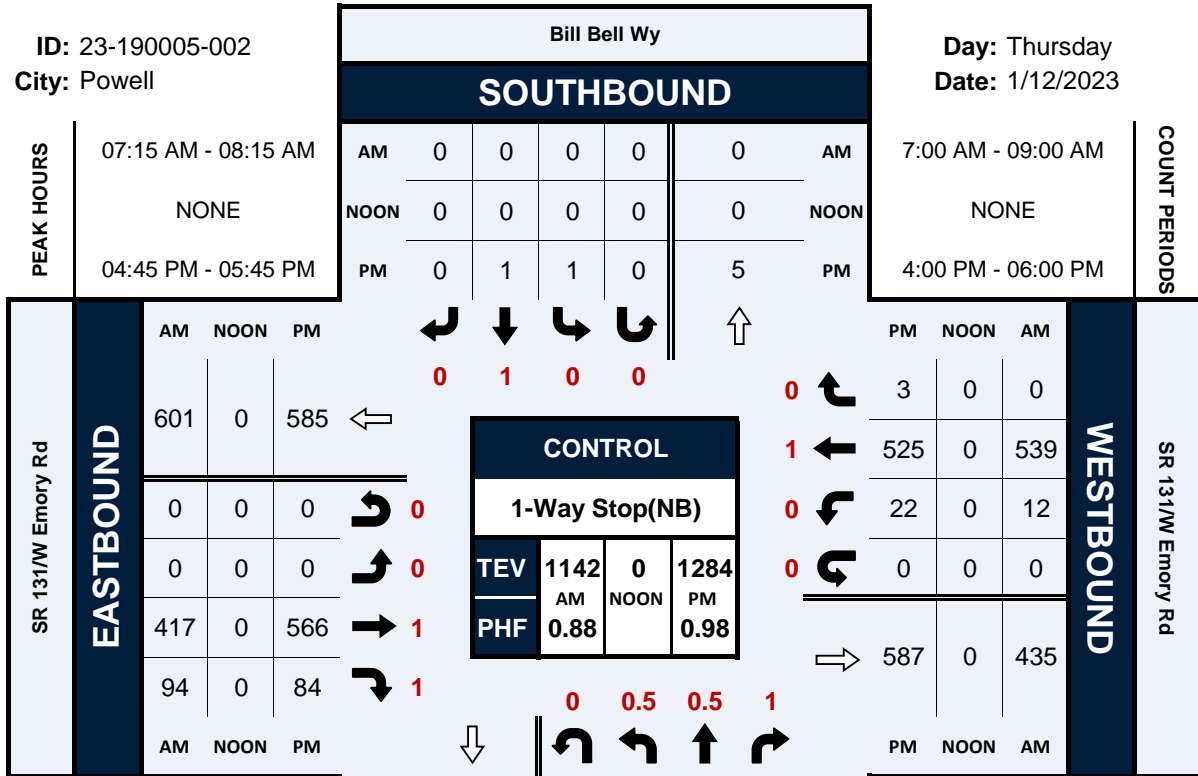
Start Time	Harrell Rd/Carpenter Rd Northbound					Harrell Rd/Carpenter Rd Southbound					SR 131/W Emory Rd Eastbound					SR 131/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	14	3	35	0	52	3	3	4	0	10	9	126	13	0	148	28	86	2	0	116	326
5:00 PM	16	6	30	0	52	2	4	5	0	11	5	144	14	0	163	18	94	4	0	116	342
5:15 PM	14	5	29	0	48	1	2	2	0	5	4	136	19	0	159	21	108	2	0	131	343
5:30 PM	20	8	38	0	66	1	1	4	0	6	1	141	12	0	154	19	80	2	0	101	327
Total Volume	64	22	132	0	218	7	10	15	0	32	19	547	58	0	624	86	368	10	0	464	1338
% App. Total	29.4	10.1	60.6	0.0	100	21.9	31.3	46.9	0.0	100	3.0	87.7	9.3	0.0	100	18.5	79.3	2.2	0.0	100	
PHF	0.826					0.727					0.957					0.885					0.976
Cars, PU, Vans	64	22	131	0	217	7	10	15	0	32	19	538	58	0	615	84	358	10	0	452	1316
% Cars, PU, Vans	100.0	100.0	99.2	0.0	99.5	100.0	100.0	100.0	0.0	100.0	100.0	98.4	100.0	0.0	98.6	97.7	97.3	100.0	0.0	97.4	98.4
Heavy trucks	0	0	1	0	1	0	0	0	0	0	0	9	0	0	9	2	10	0	0	12	22
%Heavy trucks	0.0	0.0	0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	1.4	2.3	2.7	0.0	0.0	2.6	1.6

Bill Bell Wy & SR 131/W Emory Rd

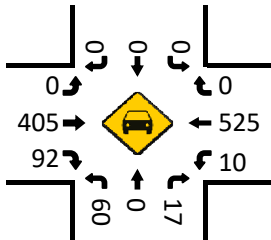
Peak Hour Turning Movement Count

ID: 23-190005-002
City: Powell

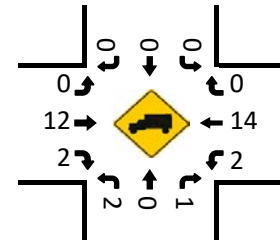
Day: Thursday
Date: 1/12/2023



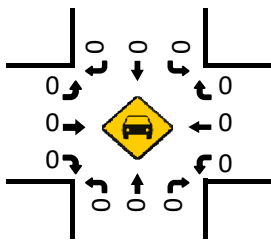
Cars (AM)



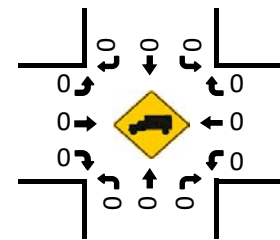
HT (AM)



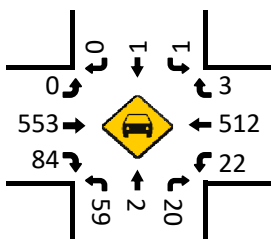
Cars (NOON)



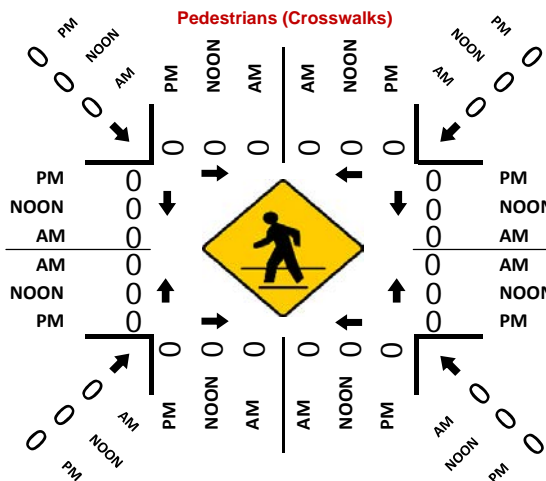
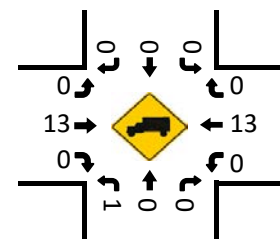
HT (NOON)



Cars (PM)



HT (PM)



Project ID: 23-190005-002
 Location: Bill Bell Wy & SR 131/W Emory Rd
 City: Powell

Day: Thursday
 Date: 1/12/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Bill Bell Wy Northbound						Bill Bell Wy Southbound						SR 131/W Emory Rd Eastbound						SR 131/W Emory Rd Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	9	0	2	0	0	11	0	0	0	0	0	0	0	87	11	0	0	98	2	106	0	0	0	108	217
7:15 AM	21	0	2	0	0	23	0	0	0	0	0	0	0	106	26	0	0	132	3	123	0	0	0	126	281
7:30 AM	14	0	3	0	0	17	0	0	0	0	0	0	0	89	20	0	0	109	3	154	0	0	0	157	283
7:45 AM	17	0	6	0	0	23	0	0	0	0	0	0	0	125	27	0	0	152	3	145	0	0	0	148	323
Total	61	0	13	0	0	74	0	0	0	0	0	0	0	407	84	0	0	491	11	528	0	0	0	539	1104
8:00 AM	10	0	7	0	0	17	0	0	0	0	0	0	0	97	21	0	0	118	3	117	0	0	0	120	255
8:15 AM	15	0	9	0	0	24	2	0	0	0	0	2	0	90	8	0	0	98	0	100	0	0	0	100	224
8:30 AM	12	0	5	0	0	17	0	0	0	0	0	0	0	81	9	0	0	90	1	109	0	0	0	110	217
8:45 AM	15	0	4	0	0	19	0	0	0	0	0	0	0	79	10	0	0	89	1	87	0	0	0	88	196
Total	52	0	25	0	0	77	2	0	0	0	0	2	0	347	48	0	0	395	5	413	0	0	0	418	892
BREAK																									
4:00 PM	11	0	3	0	0	14	0	0	1	0	0	1	0	123	14	0	0	137	4	112	0	0	0	116	268
4:15 PM	11	0	3	0	0	14	0	0	0	0	0	0	0	148	28	0	0	176	4	91	0	0	0	95	285
4:30 PM	13	0	8	0	0	21	0	0	0	0	0	0	0	123	22	0	0	145	5	109	1	0	0	115	281
4:45 PM	15	0	5	0	0	20	0	0	0	0	0	0	0	139	26	0	0	165	4	130	1	0	0	135	320
Total	50	0	19	0	0	69	0	0	1	0	0	1	0	533	90	0	0	623	17	442	2	0	0	461	1154
5:00 PM	16	2	3	0	0	21	1	0	0	0	0	1	0	142	20	0	0	162	10	132	1	0	0	143	327
5:15 PM	13	0	7	0	0	20	0	1	0	0	0	1	0	145	22	0	0	167	6	132	1	0	0	139	327
5:30 PM	16	0	5	0	0	21	0	0	0	0	0	0	0	140	16	0	0	156	2	131	0	0	0	133	310
5:45 PM	9	0	8	0	0	17	0	1	0	0	0	1	0	102	10	0	0	112	5	116	0	0	0	121	251
Total	54	2	23	0	0	79	1	2	0	0	0	3	0	529	68	0	0	597	23	511	2	0	0	536	1215
Grand Total	217	2	80	0	0	299	3	2	1	0	0	6	0	1816	290	0	0	2106	56	1894	4	0	0	1954	4365
Apprch %	72.6	0.7	26.8	0.0	0.0		50.0	33.3	16.7	0.0	0.0		0.0	86.2	13.8	0.0	0.0		2.9	96.9	0.2	0.0	0.0		
Total %	5.0	0.0	1.8	0.0	0.0	6.8	0.1	0.0	0.0	0.0	0.0	0.1	0.0	41.6	6.6	0.0	0.0	48.2	1.3	43.4	0.1	0.0	0.0	44.8	
Cars, PU, Vans	202	2	77	0		281	2	2	1	0		5	0	1758	282	0		2040	53	1836	4	0		1893	4219
% Cars, PU, Vans	93.1	100.0	96.3	0.0		94.0	66.7	100.0	100.0	0.0		83.3	0.0	96.8	97.2	0.0		96.9	94.6	96.9	100.0	0.0		96.9	96.7
Heavy trucks	15	0	3	0		18	1	0	0	0		1	0	58	8	0		66	3	58	0	0		61	146
%Heavy trucks	6.9	0.0	3.8	0.0		6.0	33.3	0.0	0.0	0.0		16.7	0.0	3.2	2.8	0.0		3.1	5.4	3.1	0.0	0.0		3.1	3.3

Project ID: 23-190005-002
 Location: Bill Bell Wy & SR 131/W Emory Rd
 City: Powell

PEAK HOURS

Day: Thursday
 Date: 1/12/2023

AM

Start Time	Bill Bell Wy Northbound					Bill Bell Wy Southbound					SR 131/W Emory Rd Eastbound					SR 131/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	21	0	2	0	23	0	0	0	0	0	0	106	26	0	132	3	123	0	0	126	281
7:30 AM	14	0	3	0	17	0	0	0	0	0	0	89	20	0	109	3	154	0	0	157	283
7:45 AM	17	0	6	0	23	0	0	0	0	0	0	125	27	0	152	3	145	0	0	148	323
8:00 AM	10	0	7	0	17	0	0	0	0	0	0	97	21	0	118	3	117	0	0	120	255
Total Volume	62	0	18	0	80	0	0	0	0	0	0	417	94	0	511	12	539	0	0	551	1142
% App. Total	77.5	0.0	22.5	0.0	100	0.0	0.0	0.0	0.0	0	0.0	81.6	18.4	0.0	100	2.2	97.8	0.0	0.0	100	
PHF	0.870										0.840					0.877					0.884
Cars, PU, Vans	60	0	17	0	77	0	0	0	0	0	0	405	92	0	497	10	525	0	0	535	1109
% Cars, PU, Vans	96.8	0.0	94.4	0.0	96.3	0.0	0.0	0.0	0.0	0.0	0.0	97.1	97.9	0.0	97.3	83.3	97.4	0.0	0.0	97.1	97.1
Heavy trucks	2	0	1	0	3	0	0	0	0	0	0	12	2	0	14	2	14	0	0	16	33
%Heavy trucks	3.2	0.0	5.6	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	0.0	2.7	16.7	2.6	0.0	0.0	2.9	2.9

PM

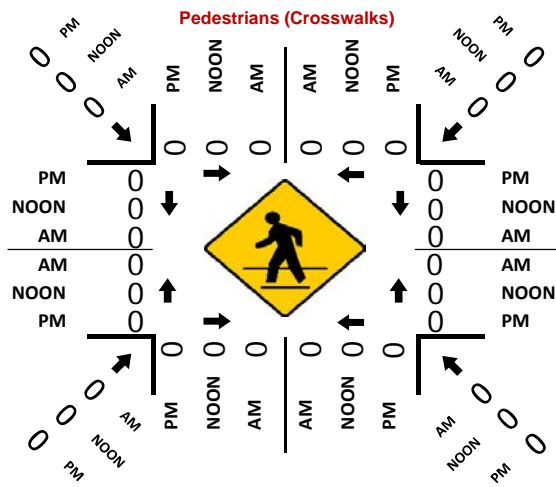
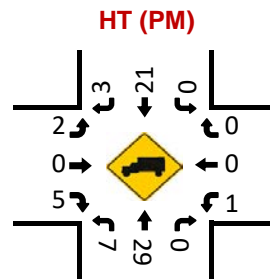
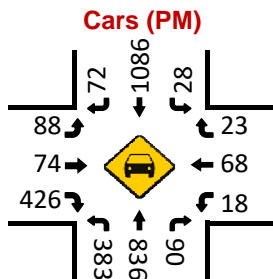
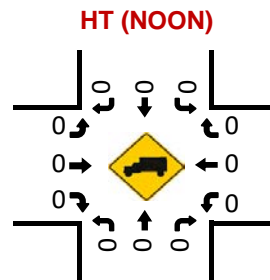
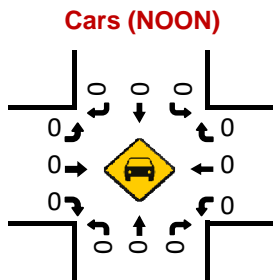
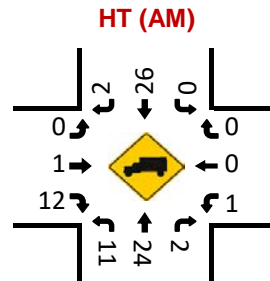
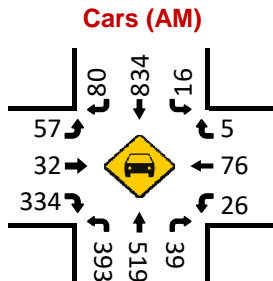
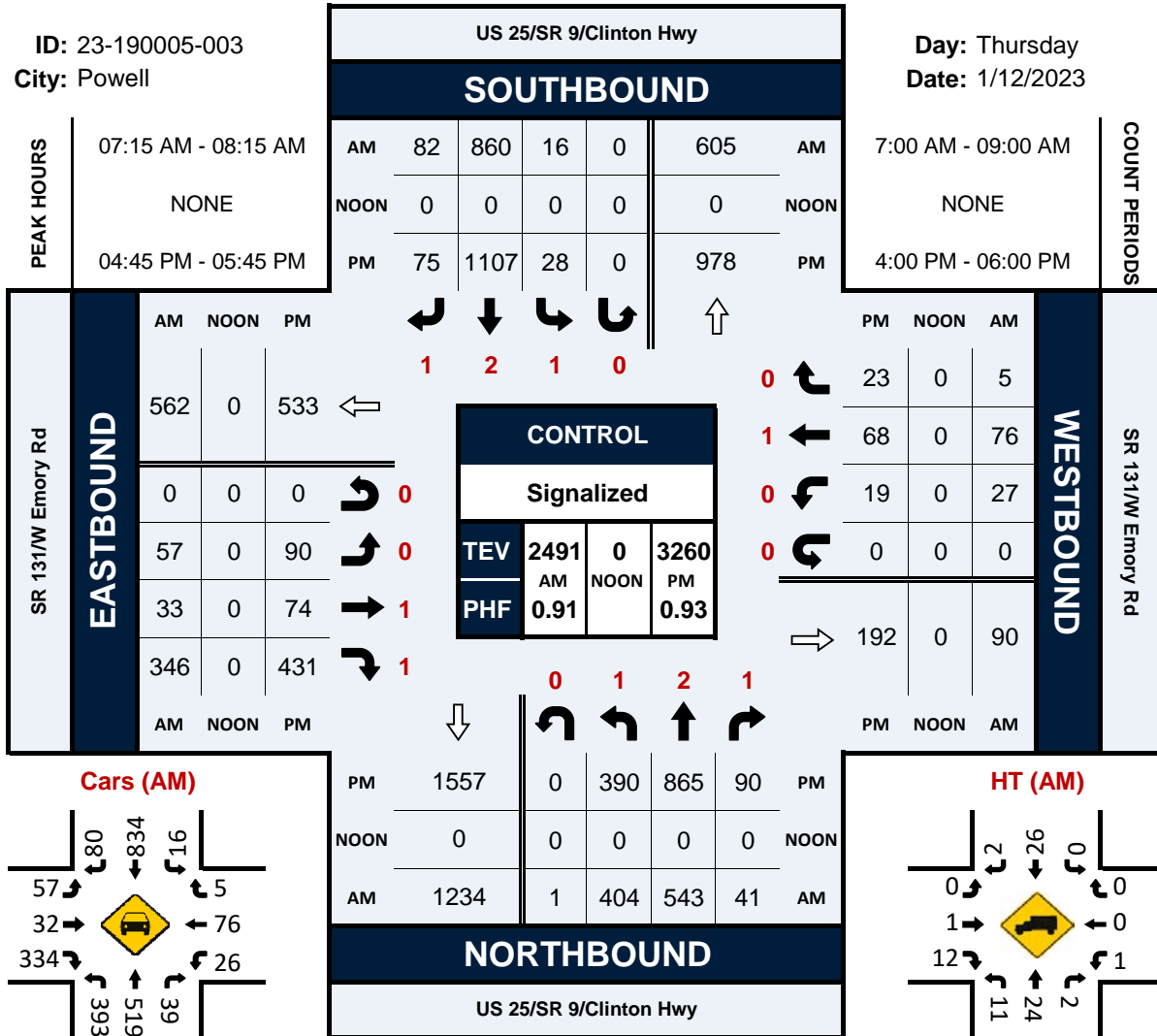
Start Time	Bill Bell Wy Northbound					Bill Bell Wy Southbound					SR 131/W Emory Rd Eastbound					SR 131/W Emory Rd Westbound					Int. Total	
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total		
Peak Hour Analysis from 04:00 PM - 06:00 PM																						
Peak Hour for Entire Intersection Begins at 04:45 PM																						
4:45 PM	15	0	5	0	20	0	0	0	0	0	0	139	26	0	165	4	130	1	0	135	320	
5:00 PM	16	2	3	0	21	1	0	0	0	1	0	142	20	0	162	10	132	1	0	143	327	
5:15 PM	13	0	7	0	20	0	1	0	0	1	0	145	22	0	167	6	132	1	0	139	327	
5:30 PM	16	0	5	0	21	0	0	0	0	0	0	140	16	0	156	2	131	0	0	133	310	
Total Volume	60	2	20	0	82	1	1	0	0	2	0	566	84	0	650	22	525	3	0	550	1284	
% App. Total	73.2	2.4	24.4	0.0	100	50.0	50.0	0.0	0.0	100	0.0	87.1	12.9	0.0	100	4.0	95.5	0.5	0.0	100		
PHF	0.976					0.500					0.973					0.962					0.982	
Cars, PU, Vans	59	2	20	0	81	1	1	0	0	2	0	553	84	0	637	22	512	3	0	537	1257	
% Cars, PU, Vans	98.3	100.0	100.0	0.0	98.8	100.0	100.0	0.0	0.0	100.0	0.0	97.7	100.0	0.0	98.0	100.0	97.5	100.0	0.0	0.0	97.6	97.9
Heavy trucks	1	0	0	0	1	0	0	0	0	0	0	13	0	0	13	0	13	0	0	13	27	
%Heavy trucks	1.7	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.0	0.0	2.5	0.0	0.0	2.4	2.1	

US 25/SR 9/Clinton Hwy & SR 131/W Emory Rd

Peak Hour Turning Movement Count

ID: 23-190005-003
City: Powell

Day: Thursday
Date: 1/12/2023



Project ID: 23-190005-003

Location: US 25/SR 9/Clinton Hwy & SR 131/W Emory Rd
 City: Powell

Day: Thursday
 Date: 1/12/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	US 25/SR 9/Clinton Hwy Northbound						US 25/SR 9/Clinton Hwy Southbound						SR 131/W Emory Rd Eastbound						SR 131/W Emory Rd Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	75	96	6	0	0	177	6	192	15	1	0	214	9	3	74	0	0	86	7	19	0	0	0	26	503
7:15 AM	90	118	5	0	0	213	2	236	19	0	0	257	11	6	89	0	0	106	3	17	2	0	0	22	598
7:30 AM	98	144	14	0	0	256	5	238	29	0	0	272	12	5	78	0	0	95	10	31	0	0	0	41	664
7:45 AM	124	151	10	0	0	285	7	214	20	0	0	241	19	14	99	0	0	132	5	18	1	0	0	24	682
Total	387	509	35	0	0	931	20	880	83	1	0	984	51	28	340	0	0	419	25	85	3	0	0	113	2447
8:00 AM	92	130	12	1	0	235	2	172	14	0	0	188	15	8	80	0	0	103	9	10	2	0	0	21	547
8:15 AM	80	125	7	0	0	212	2	164	8	0	0	174	18	7	75	0	0	100	8	13	3	0	0	24	510
8:30 AM	86	115	9	0	0	210	3	170	10	0	0	183	11	4	76	0	0	91	4	16	3	0	0	23	507
8:45 AM	76	129	7	0	0	212	4	146	10	0	0	160	10	3	69	0	0	82	3	8	7	0	0	18	472
Total	334	499	35	1	0	869	11	652	42	0	0	705	54	22	300	0	0	376	24	47	15	0	0	86	2036
BREAK																									
4:00 PM	94	189	19	1	0	303	4	189	13	0	0	206	31	15	104	0	0	150	6	9	1	0	0	16	675
4:15 PM	83	205	22	0	0	310	4	237	8	0	0	249	19	14	108	0	0	141	2	10	5	0	0	17	717
4:30 PM	76	230	18	0	0	324	6	229	18	1	1	254	16	17	85	0	0	118	3	13	2	0	0	18	714
4:45 PM	99	205	17	0	0	321	6	262	17	0	0	285	20	26	94	0	0	140	4	20	3	0	0	27	773
Total	352	829	76	1	0	1258	20	917	56	1	1	994	86	72	391	0	0	549	15	52	11	0	0	78	2879
5:00 PM	97	209	28	0	0	334	7	262	19	0	0	288	21	11	108	0	0	140	7	22	8	0	0	37	799
5:15 PM	96	219	23	0	0	338	8	323	19	0	0	350	26	23	113	0	0	162	5	14	3	0	0	22	872
5:30 PM	98	232	22	0	0	352	7	260	20	0	0	287	23	14	116	0	0	153	3	12	9	0	0	24	816
5:45 PM	95	212	15	0	0	322	7	250	12	0	0	269	21	16	74	0	0	111	2	11	10	0	0	23	725
Total	386	872	88	0	0	1346	29	1095	70	0	0	1194	91	64	411	0	0	566	17	59	30	0	0	106	3212
Grand Total	1459	2709	234	2	0	4404	80	3544	251	2	1	3877	282	186	1442	0	0	1910	81	243	59	0	0	383	10574
Apprch %	33.1	61.5	5.3	0.0	0.0		2.1	91.4	6.5	0.1	0.0		14.8	9.7	75.5	0.0	0.0		21.1	63.4	15.4	0.0	0.0		
Total %	13.8	25.6	2.2	0.0	0.0	41.6	0.8	33.5	2.4	0.0	0.0	36.7	2.7	1.8	13.6	0.0	0.0	18.1	0.8	2.3	0.6	0.0	0.0	3.6	
Cars, PU, Vans	1416	2603	231	2		4252	80	3436	244	2		3762	272	185	1397	0		1854	78	241	59	0		378	10246
% Cars, PU, Vans	97.1	96.1	98.7	100.0		96.5	100.0	97.0	97.2	100.0		97.0	96.5	99.5	96.9	0.0		97.1	96.3	99.2	100.0	0.0		98.7	96.9
Heavy trucks	43	106	3	0		152	0	108	7	0		115	10	1	45	0		56	3	2	0	0		5	328
%Heavy trucks	2.9	3.9	1.3	0.0		3.5	0.0	3.0	2.8	0.0		3.0	3.5	0.5	3.1	0.0		2.9	3.7	0.8	0.0	0.0		1.3	3.1

Project ID: 23-190005-003

Location: US 25/SR 9/Clinton Hwy & SR 131/W Emory Rd
 City: Powell

PEAK HOURS

Day: Thursday
 Date: 1/12/2023

AM

Start Time	US 25/SR 9/Clinton Hwy Northbound					US 25/SR 9/Clinton Hwy Southbound					SR 131/W Emory Rd Eastbound					SR 131/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	90	118	5	0	213	2	236	19	0	257	11	6	89	0	106	3	17	2	0	22	598
7:30 AM	98	144	14	0	256	5	238	29	0	272	12	5	78	0	95	10	31	0	0	41	664
7:45 AM	124	151	10	0	285	7	214	20	0	241	19	14	99	0	132	5	18	1	0	24	682
8:00 AM	92	130	12	1	235	2	172	14	0	188	15	8	80	0	103	9	10	2	0	21	547
Total Volume	404	543	41	1	989	16	860	82	0	958	57	33	346	0	436	27	76	5	0	108	2491
% App. Total	40.8	54.9	4.1	0.1	100	1.7	89.8	8.6	0.0	100	13.1	7.6	79.4	0.0	100	25.0	70.4	4.6	0.0	100	
PHF	0.868					0.881					0.826					0.659					0.913
Cars, PU, Vans	393	519	39	1	952	16	834	80	0	930	57	32	334	0	423	26	76	5	0	107	2412
% Cars, PU, Vans	97.3	95.6	95.1	100.0	96.3	100.0	97.0	97.6	0.0	97.1	100.0	97.0	96.5	0.0	97.0	96.3	100.0	100.0	0.0	99.1	96.8
Heavy trucks	11	24	2	0	37	0	26	2	0	28	0	1	12	0	13	1	0	0	0	1	79
%Heavy trucks	2.7	4.4	4.9	0.0	3.7	0.0	3.0	2.4	0.0	2.9	0.0	3.0	3.5	0.0	3.0	3.7	0.0	0.0	0.0	0.9	3.2

PM

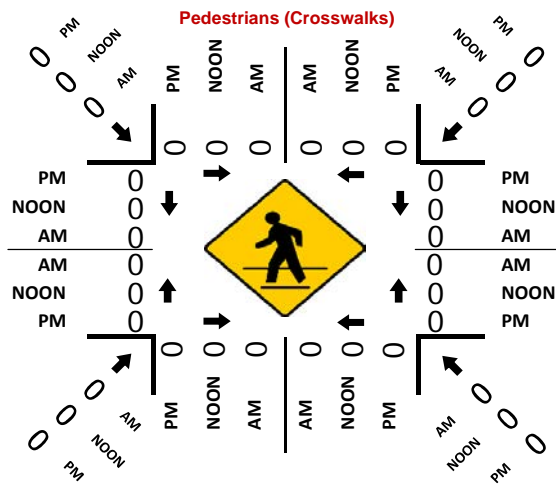
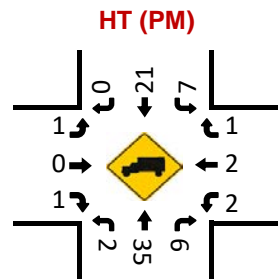
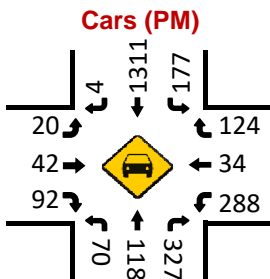
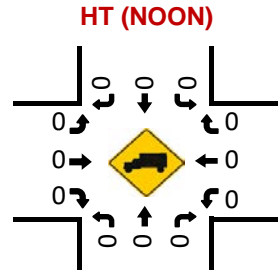
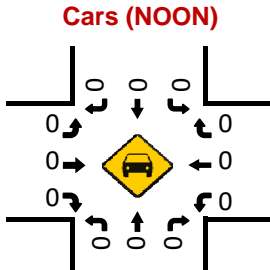
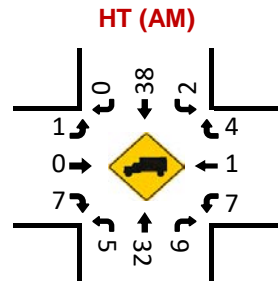
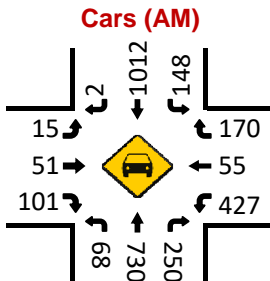
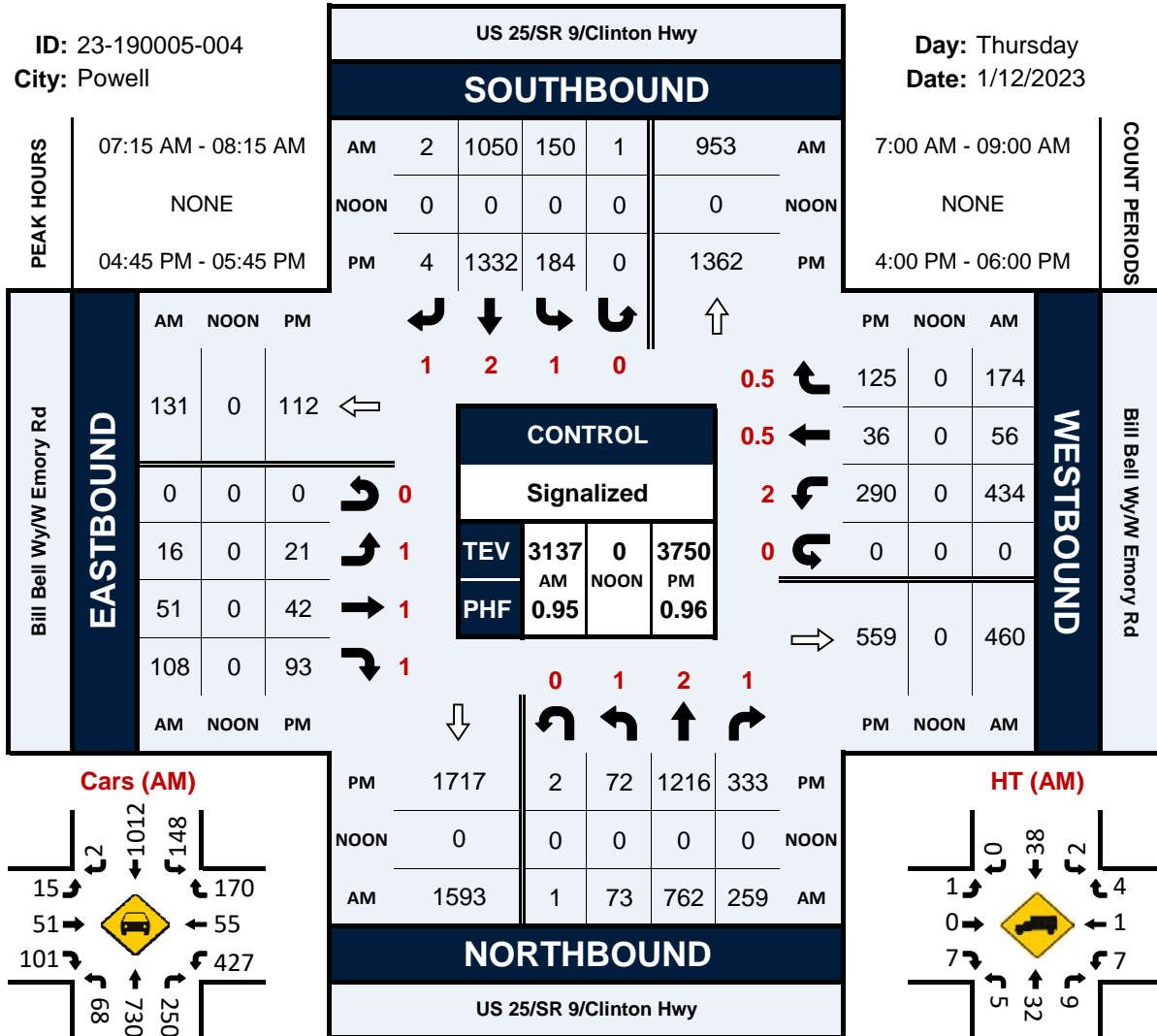
Start Time	US 25/SR 9/Clinton Hwy Northbound					US 25/SR 9/Clinton Hwy Southbound					SR 131/W Emory Rd Eastbound					SR 131/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	99	205	17	0	321	6	262	17	0	285	20	26	94	0	140	4	20	3	0	27	773
5:00 PM	97	209	28	0	334	7	262	19	0	288	21	11	108	0	140	7	22	8	0	37	799
5:15 PM	96	219	23	0	338	8	323	19	0	350	26	23	113	0	162	5	14	3	0	22	872
5:30 PM	98	232	22	0	352	7	260	20	0	287	23	14	116	0	153	3	12	9	0	24	816
Total Volume	390	865	90	0	1345	28	1107	75	0	1210	90	74	431	0	595	19	68	23	0	110	3260
% App. Total	29.0	64.3	6.7	0.0	100	2.3	91.5	6.2	0.0	100	15.1	12.4	72.4	0.0	100	17.3	61.8	20.9	0.0	100	
PHF	0.955					0.864					0.918					0.743					0.935
Cars, PU, Vans	383	836	90	0	1309	28	1086	72	0	1186	88	74	426	0	588	18	68	23	0	109	3192
% Cars, PU, Vans	98.2	96.6	100.0	0.0	97.3	100.0	98.1	96.0	0.0	98.0	97.8	100.0	98.8	0.0	98.8	94.7	100.0	100.0	0.0	99.1	97.9
Heavy trucks	7	29	0	0	36	0	21	3	0	24	2	0	5	0	7	1	0	0	0	1	68
%Heavy trucks	1.8	3.4	0.0	0.0	2.7	0.0	1.9	4.0	0.0	2.0	2.2	0.0	1.2	0.0	1.2	5.3	0.0	0.0	0.0	0.9	2.1

US 25/SR 9/Clinton Hwy & Bill Bell Wy/W Emory Rd

Peak Hour Turning Movement Count

ID: 23-190005-004
City: Powell

Day: Thursday
Date: 1/12/2023



Project ID: 23-190005-004

Location: US 25/SR 9/Clinton Hwy & Bill Bell Wy/W Emory Rd
 City: Powell

Day: Thursday
 Date: 1/12/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	US 25/SR 9/Clinton Hwy Northbound						US 25/SR 9/Clinton Hwy Southbound						Bill Bell Wy/W Emory Rd Eastbound						Bill Bell Wy/W Emory Rd Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	11	151	16	0	0	178	31	224	0	0	0	255	5	9	15	0	0	29	66	8	25	0	0	99	561
7:15 AM	17	165	43	0	0	225	49	268	0	0	0	317	2	12	30	0	0	44	79	17	39	0	0	135	721
7:30 AM	17	195	46	1	0	259	33	285	0	1	0	319	2	11	26	0	0	39	116	14	62	0	0	192	809
7:45 AM	19	202	88	0	0	309	34	276	1	0	0	311	6	15	27	0	0	48	98	18	45	0	0	161	829
Total	64	713	193	1	0	971	147	1053	1	1	0	1202	15	47	98	0	0	160	359	57	171	0	0	587	2920
8:00 AM	20	200	82	0	0	302	34	221	1	0	0	256	6	13	25	0	0	44	141	7	28	0	0	176	778
8:15 AM	14	182	54	0	0	250	20	219	1	0	0	240	3	8	27	0	0	38	104	25	35	0	0	164	692
8:30 AM	12	164	30	0	0	206	23	216	0	0	0	239	5	6	18	0	0	29	102	9	33	0	0	144	618
8:45 AM	16	171	32	0	0	219	25	190	0	0	0	215	4	4	17	0	0	25	56	12	35	0	0	103	562
Total	62	717	198	0	0	977	102	846	2	0	0	950	18	31	87	0	0	136	403	53	131	0	0	587	2650
BREAK																									
4:00 PM	11	272	56	0	0	339	46	251	1	0	0	298	1	4	16	0	0	21	65	5	40	0	0	110	768
4:15 PM	16	272	75	0	0	363	40	300	0	0	0	340	4	6	29	0	0	39	74	9	34	0	0	117	859
4:30 PM	17	295	60	0	0	372	39	283	1	0	0	323	7	13	22	0	0	42	67	8	33	0	0	108	845
4:45 PM	17	296	87	1	0	401	47	303	0	0	0	350	1	11	18	0	0	30	66	8	28	0	0	102	883
Total	61	1135	278	1	0	1475	172	1137	2	0	0	1311	13	34	85	0	0	132	272	30	135	0	0	437	3355
5:00 PM	26	294	81	0	0	401	36	323	2	0	0	361	7	11	26	0	0	44	90	12	32	0	0	134	940
5:15 PM	15	308	71	1	0	395	50	373	0	0	0	423	9	12	24	0	0	45	74	9	33	0	0	116	979
5:30 PM	14	318	94	0	0	426	51	333	2	0	0	386	4	8	25	0	0	37	60	7	32	0	0	99	948
5:45 PM	14	283	77	0	0	374	40	290	0	0	0	330	5	9	15	0	1	29	71	10	31	0	0	112	845
Total	69	1203	323	1	0	1596	177	1319	4	0	0	1500	25	40	90	0	1	155	295	38	128	0	0	461	3712
Grand Total	256	3768	992	3	0	5019	598	4355	9	1	0	4963	71	152	360	0	1	583	1329	178	565	0	0	2072	12637
Apprch %	5.1	75.1	19.8	0.1	0.0		12.0	87.7	0.2	0.0	0.0		12.2	26.1	61.7	0.0	0.2		64.1	8.6	27.3	0.0	0.0		
Total %	2.0	29.8	7.8	0.0	0.0	39.7	4.7	34.5	0.1	0.0	0.0	39.3	0.6	1.2	2.8	0.0	0.0	4.6	10.5	1.4	4.5	0.0	0.0	16.4	
Cars, PU, Vans	241	3631	971	3		4846	581	4216	9	1		4807	67	152	338	0		557	1316	164	548	0		2028	12238
% Cars, PU, Vans	94.1	96.4	97.9	100.0		96.6	97.2	96.8	100.0	100.0		96.9	94.4	100.0	93.9	0.0		95.5	99.0	92.1	97.0	0.0		97.9	96.8
Heavy trucks	15	137	21	0		173	17	139	0	0		156	4	0	22	0		26	13	14	17	0		44	399
%Heavy trucks	5.9	3.6	2.1	0.0		3.4	2.8	3.2	0.0	0.0		3.1	5.6	0.0	6.1	0.0		4.5	1.0	7.9	3.0	0.0		2.1	3.2

Project ID: 23-190005-004

Location: US 25/SR 9/Clinton Hwy & Bill Bell Wy/W Emory R
 City: Powell

PEAK HOURS

Day: Thursday
 Date: 1/12/2023

AM

Start Time	US 25/SR 9/Clinton Hwy Northbound					US 25/SR 9/Clinton Hwy Southbound					Bill Bell Wy/W Emory Rd Eastbound					Bill Bell Wy/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	17	165	43	0	225	49	268	0	0	317	2	12	30	0	44	79	17	39	0	135	721
7:30 AM	17	195	46	1	259	33	285	0	1	319	2	11	26	0	39	116	14	62	0	192	809
7:45 AM	19	202	88	0	309	34	276	1	0	311	6	15	27	0	48	98	18	45	0	161	829
8:00 AM	20	200	82	0	302	34	221	1	0	256	6	13	25	0	44	141	7	28	0	176	778
Total Volume	73	762	259	1	1095	150	1050	2	1	1203	16	51	108	0	175	434	56	174	0	664	3137
% App. Total	6.7	69.6	23.7	0.1	100	12.5	87.3	0.2	0.1	100	9.1	29.1	61.7	0.0	100	65.4	8.4	26.2	0.0	100	
PHF	0.886					0.943					0.911					0.865					0.946
Cars, PU, Vans	68	730	250	1	1049	148	1012	2	1	1163	15	51	101	0	167	427	55	170	0	652	3031
% Cars, PU, Vans	93.2	95.8	96.5	100.0	95.8	98.7	96.4	100.0	100.0	96.7	93.8	100.0	93.5	0.0	95.4	98.4	98.2	97.7	0.0	98.2	96.6
Heavy trucks	5	32	9	0	46	2	38	0	0	40	1	0	7	0	8	7	1	4	0	12	106
%Heavy trucks	6.8	4.2	3.5	0.0	4.2	1.3	3.6	0.0	0.0	3.3	6.3	0.0	6.5	0.0	4.6	1.6	1.8	2.3	0.0	1.8	3.4

PM

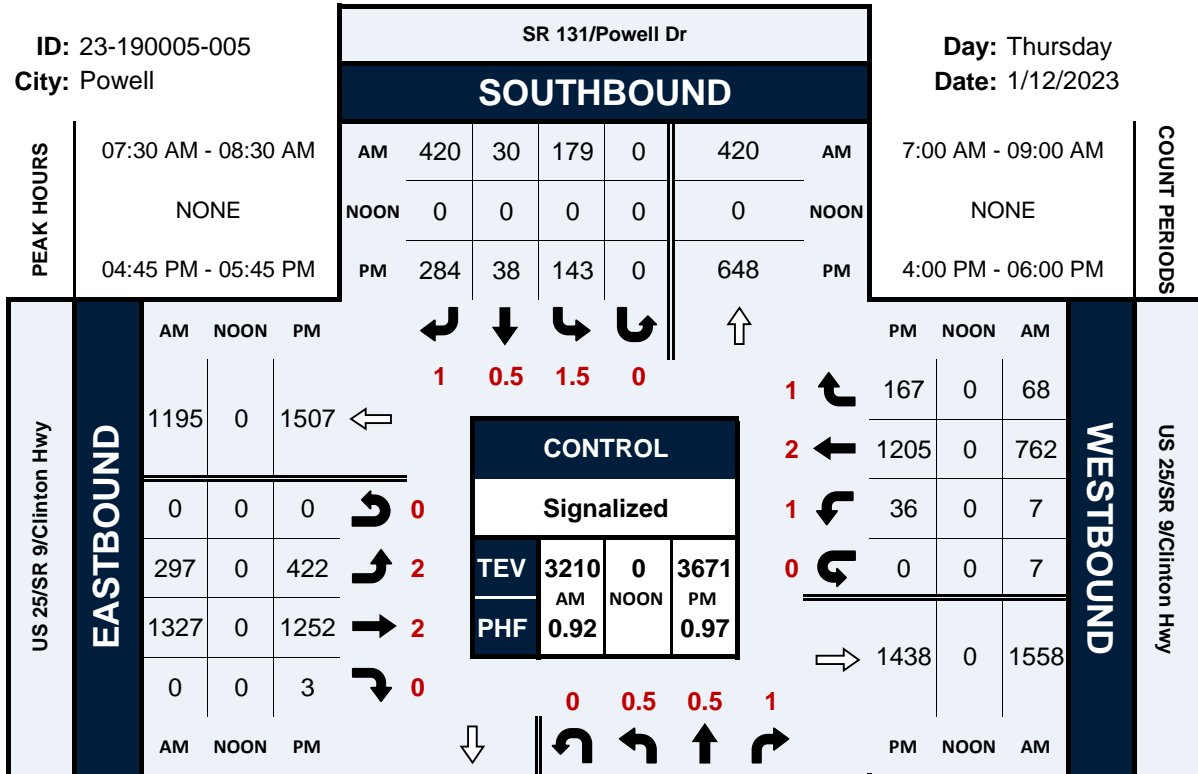
Start Time	US 25/SR 9/Clinton Hwy Northbound					US 25/SR 9/Clinton Hwy Southbound					Bill Bell Wy/W Emory Rd Eastbound					Bill Bell Wy/W Emory Rd Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	17	296	87	1	401	47	303	0	0	350	1	11	18	0	30	66	8	28	0	102	883
5:00 PM	26	294	81	0	401	36	323	2	0	361	7	11	26	0	44	90	12	32	0	134	940
5:15 PM	15	308	71	1	395	50	373	0	0	423	9	12	24	0	45	74	9	33	0	116	979
5:30 PM	14	318	94	0	426	51	333	2	0	386	4	8	25	0	37	60	7	32	0	99	948
Total Volume	72	1216	333	2	1623	184	1332	4	0	1520	21	42	93	0	156	290	36	125	0	451	3750
% App. Total	4.4	74.9	20.5	0.1	100	12.1	87.6	0.3	0.0	100	13.5	26.9	59.6	0.0	100	64.3	8.0	27.7	0.0	100	
PHF	0.952					0.898					0.867					0.841					0.958
Cars, PU, Vans	70	1181	327	2	1580	177	1311	4	0	1492	20	42	92	0	154	288	34	124	0	446	3672
% Cars, PU, Vans	97.2	97.1	98.2	100.0	97.4	96.2	98.4	100.0	0.0	98.2	95.2	100.0	98.9	0.0	98.7	99.3	94.4	99.2	0.0	98.9	97.9
Heavy trucks	2	35	6	0	43	7	21	0	0	28	1	0	1	0	2	2	2	1	0	5	78
%Heavy trucks	2.8	2.9	1.8	0.0	2.6	3.8	1.6	0.0	0.0	1.8	4.8	0.0	1.1	0.0	1.3	0.7	5.6	0.8	0.0	1.1	2.1

SR 131/Powell Dr & US 25/SR 9/Clinton Hwy

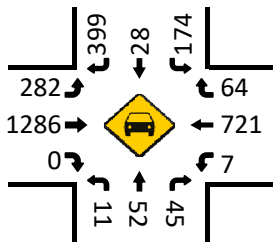
Peak Hour Turning Movement Count

ID: 23-190005-005
 City: Powell

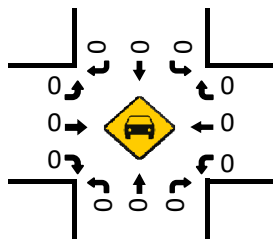
Day: Thursday
 Date: 1/12/2023



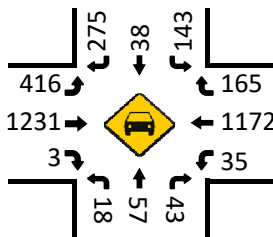
Cars (AM)



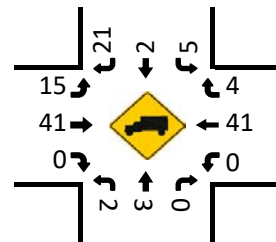
Cars (NOON)



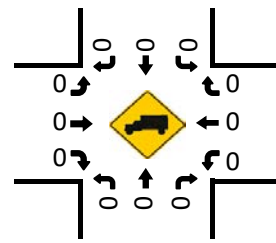
Cars (PM)



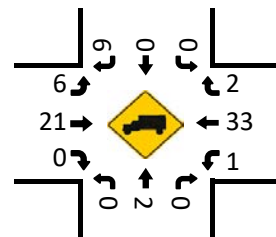
HT (AM)



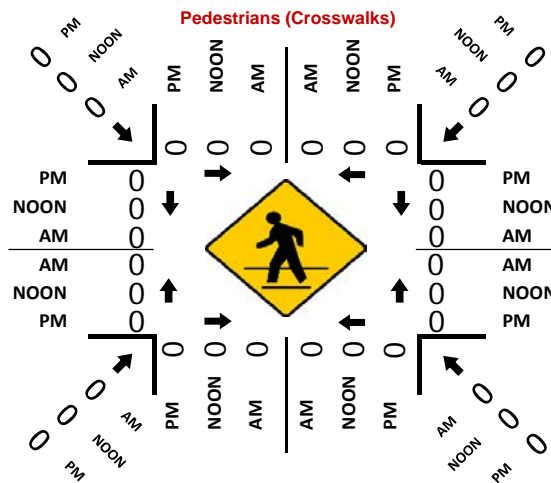
HT (NOON)



HT (PM)



NORTHBOUND



Project ID: 23-190005-005
 Location: SR 131/Powell Dr & US 25/SR 9/Clinton Hwy
 City: Powell

Day: Thursday
 Date: 1/12/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	SR 131/Powell Dr Northbound						SR 131/Powell Dr Southbound						US 25/SR 9/Clinton Hwy Eastbound						US 25/SR 9/Clinton Hwy Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	1	9	8	0	0	18	10	8	95	0	0	113	36	275	0	0	0	311	2	101	14	0	0	117	559
7:15 AM	4	16	10	0	0	30	35	5	98	0	0	138	59	312	0	0	0	371	4	146	13	2	0	165	704
7:30 AM	3	23	14	0	0	40	47	10	121	0	0	178	81	355	0	0	0	436	3	196	14	1	0	214	868
7:45 AM	7	12	15	0	0	34	46	9	105	0	0	160	79	342	0	0	0	421	3	201	13	3	0	220	835
Total	15	60	47	0	0	122	138	32	419	0	0	589	255	1284	0	0	0	1539	12	644	54	6	0	716	2966
8:00 AM	1	10	7	0	0	18	40	7	97	0	0	144	75	320	0	0	0	395	1	201	24	1	0	227	784
8:15 AM	2	10	9	0	0	21	46	4	97	0	0	147	62	310	0	0	0	372	0	164	17	2	0	183	723
8:30 AM	1	6	5	0	0	12	31	3	76	0	0	110	78	267	0	0	0	345	3	143	15	1	0	162	629
8:45 AM	2	6	6	0	0	14	29	6	79	0	0	114	35	194	0	0	0	229	1	131	10	1	0	143	500
Total	6	32	27	0	0	65	146	20	349	0	0	515	250	1091	0	0	0	1341	5	639	66	5	0	715	2636
BREAK																									
4:00 PM	2	12	13	0	0	27	36	7	57	0	0	100	81	259	2	0	0	342	4	264	35	0	0	303	772
4:15 PM	2	13	6	0	0	21	29	6	63	0	0	98	98	286	0	1	0	385	3	276	38	0	0	317	821
4:30 PM	6	16	3	0	0	25	39	11	76	0	0	126	77	285	0	0	0	362	0	278	22	0	0	300	813
4:45 PM	4	11	10	0	0	25	38	10	79	0	0	127	107	259	0	0	0	366	6	273	50	0	0	329	847
Total	14	52	32	0	0	98	142	34	275	0	0	451	363	1089	2	1	0	1455	13	1091	145	0	0	1249	3253
5:00 PM	6	22	11	0	0	39	37	11	74	0	0	122	111	330	2	0	0	443	9	290	43	0	0	342	946
5:15 PM	5	16	16	0	0	37	30	6	65	0	0	101	94	351	0	0	0	445	15	321	32	0	0	368	951
5:30 PM	3	10	6	1	0	20	38	11	66	0	0	115	110	312	1	0	0	423	6	321	42	0	0	369	927
5:45 PM	6	7	14	0	0	27	40	9	48	0	0	97	79	323	1	0	0	403	6	268	29	0	0	303	830
Total	20	55	47	1	0	123	145	37	253	0	0	435	394	1316	4	0	0	1714	36	1200	146	0	0	1382	3654
Grand Total	55	199	153	1	0	408	571	123	1296	0	0	1990	1262	4780	6	1	0	6049	66	3574	411	11	0	4062	12509
Apprch %	13.5	48.8	37.5	0.2	0.0		28.7	6.2	65.1	0.0	0.0		20.9	79.0	0.1	0.0	0.0		1.6	88.0	10.1	0.3	0.0		
Total %	0.4	1.6	1.2	0.0	0.0	3.3	4.6	1.0	10.4	0.0	0.0	15.9	10.1	38.2	0.0	0.0	0.0	48.4	0.5	28.6	3.3	0.1	0.0	32.5	
Cars, PU, Vans	52	193	152	1		398	556	120	1245	0		1921	1224	4641	6	1		5872	65	3453	396	11		3925	12116
% Cars, PU, Vans	94.5	97.0	99.3	100.0		97.5	97.4	97.6	96.1	0.0		96.5	97.0	97.1	100.0	100.0		97.1	98.5	96.6	96.4	100.0		96.6	96.9
Heavy trucks	3	6	1	0		10	15	3	51	0		69	38	139	0	0		177	1	121	15	0		137	393
%Heavy trucks	5.5	3.0	0.7	0.0		2.5	2.6	2.4	3.9	0.0		3.5	3.0	2.9	0.0	0.0		2.9	1.5	3.4	3.6	0.0		3.4	3.1

Project ID: 23-190005-005

Location: SR 131/Powell Dr & US 25/SR 9/Clinton Hwy

City: Powell

PEAK HOURS

Day: Thursday

Date: 1/12/2023

AM

Start Time	SR 131/Powell Dr Northbound					SR 131/Powell Dr Southbound					US 25/SR 9/Clinton Hwy Eastbound					US 25/SR 9/Clinton Hwy Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
7:30 AM	3	23	14	0	40	47	10	121	0	178	81	355	0	0	436	3	196	14	1	214	868
7:45 AM	7	12	15	0	34	46	9	105	0	160	79	342	0	0	421	3	201	13	3	220	835
8:00 AM	1	10	7	0	18	40	7	97	0	144	75	320	0	0	395	1	201	24	1	227	784
8:15 AM	2	10	9	0	21	46	4	97	0	147	62	310	0	0	372	0	164	17	2	183	723
Total Volume	13	55	45	0	113	179	30	420	0	629	297	1327	0	0	1624	7	762	68	7	844	3210
% App. Total	11.5	48.7	39.8	0.0	100	28.5	4.8	66.8	0.0	100	18.3	81.7	0.0	0.0	100	0.8	90.3	8.1	0.8	100	
PHF	0.706					0.883					0.931					0.930					0.925
Cars, PU, Vans	11	52	45	0	108	174	28	399	0	601	282	1286	0	0	1568	7	721	64	7	799	3076
% Cars, PU, Vans	84.6	94.5	100.0	0.0	95.6	97.2	93.3	95.0	0.0	95.5	94.9	96.9	0.0	0.0	96.6	100.0	94.6	94.1	100.0	94.7	95.8
Heavy trucks	2	3	0	0	5	5	2	21	0	28	15	41	0	0	56	0	41	4	0	45	134
%Heavy trucks	15.4	5.5	0.0	0.0	4.4	2.8	6.7	5.0	0.0	4.5	5.1	3.1	0.0	0.0	3.4	0.0	5.4	5.9	0.0	5.3	4.2

PM

Start Time	SR 131/Powell Dr Northbound					SR 131/Powell Dr Southbound					US 25/SR 9/Clinton Hwy Eastbound					US 25/SR 9/Clinton Hwy Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	4	11	10	0	25	38	10	79	0	127	107	259	0	0	366	6	273	50	0	329	847
5:00 PM	6	22	11	0	39	37	11	74	0	122	111	330	2	0	443	9	290	43	0	342	946
5:15 PM	5	16	16	0	37	30	6	65	0	101	94	351	0	0	445	15	321	32	0	368	951
5:30 PM	3	10	6	1	20	38	11	66	0	115	110	312	1	0	423	6	321	42	0	369	927
Total Volume	18	59	43	1	121	143	38	284	0	465	422	1252	3	0	1677	36	1205	167	0	1408	3671
% App. Total	14.9	48.8	35.5	0.8	100	30.8	8.2	61.1	0.0	100	25.2	74.7	0.2	0.0	100	2.6	85.6	11.9	0.0	100	
PHF	0.776					0.915					0.942					0.954					0.965
Cars, PU, Vans	18	57	43	1	119	143	38	275	0	456	416	1231	3	0	1650	35	1172	165	0	1372	3597
% Cars, PU, Vans	100.0	96.6	100.0	100.0	98.3	100.0	100.0	96.8	0.0	98.1	98.6	98.3	100.0	0.0	98.4	97.2	97.3	98.8	0.0	97.4	98.0
Heavy trucks	0	2	0	0	2	0	0	9	0	9	6	21	0	0	27	1	33	2	0	36	74
%Heavy trucks	0.0	3.4	0.0	0.0	1.7	0.0	0.0	3.2	0.0	1.9	1.4	1.7	0.0	0.0	1.6	2.8	2.7	1.2	0.0	2.6	2.0

APPENDIX B – TRIP GENERATION INFORMATION

Land Use: 210

Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077, 1078, 1079

Single-Family Detached Housing (210)

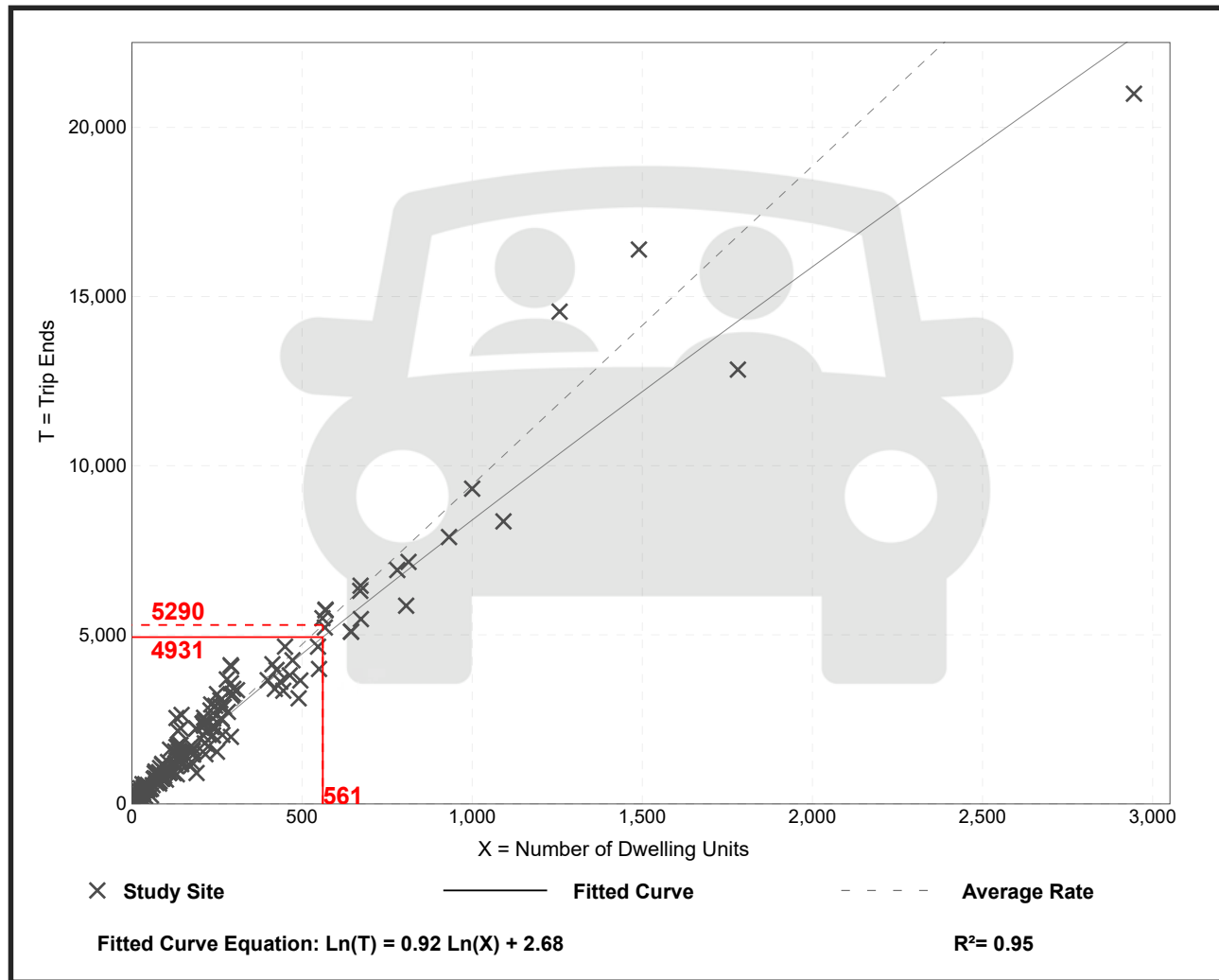
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



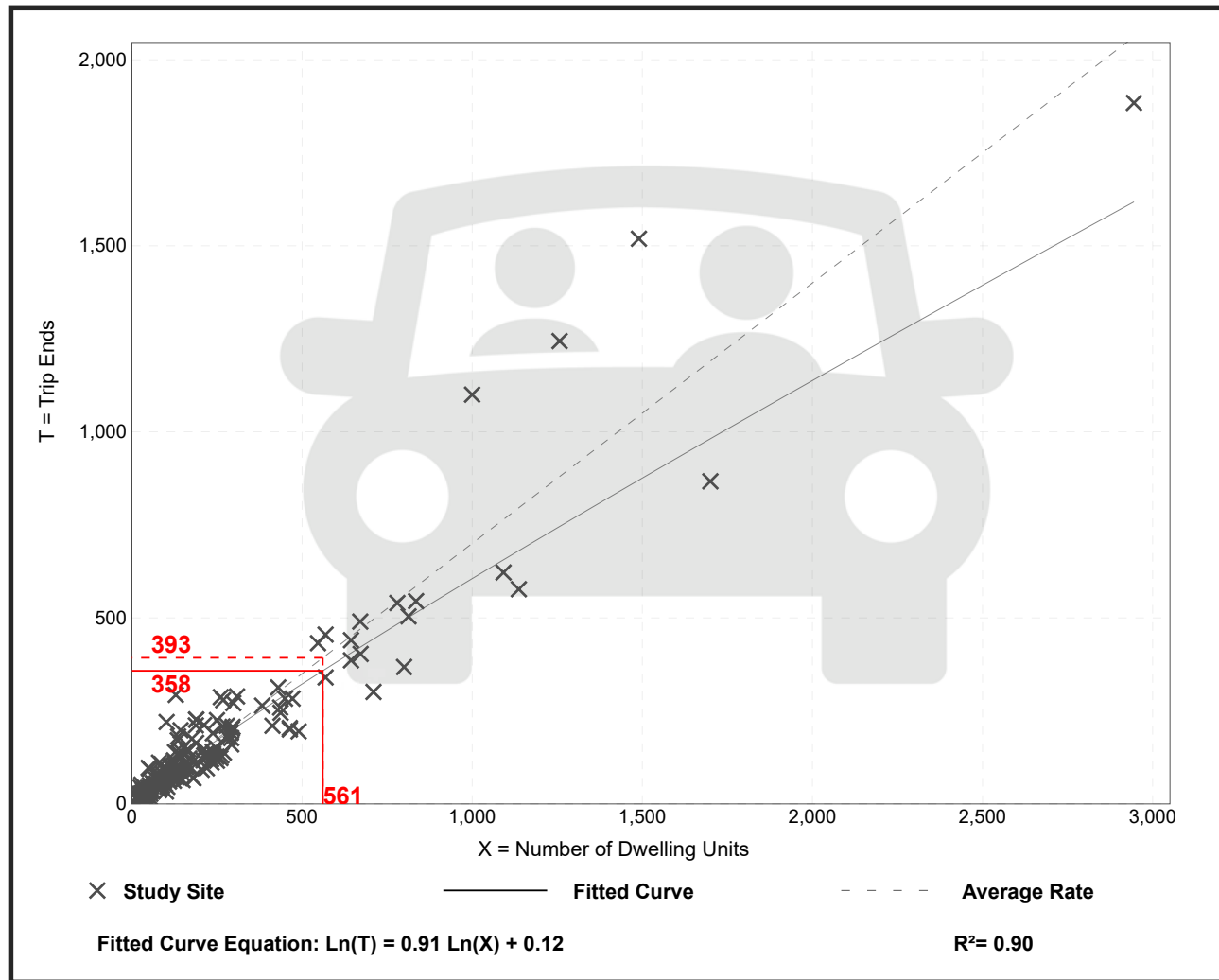
Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 192
 Avg. Num. of Dwelling Units: 226
 Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



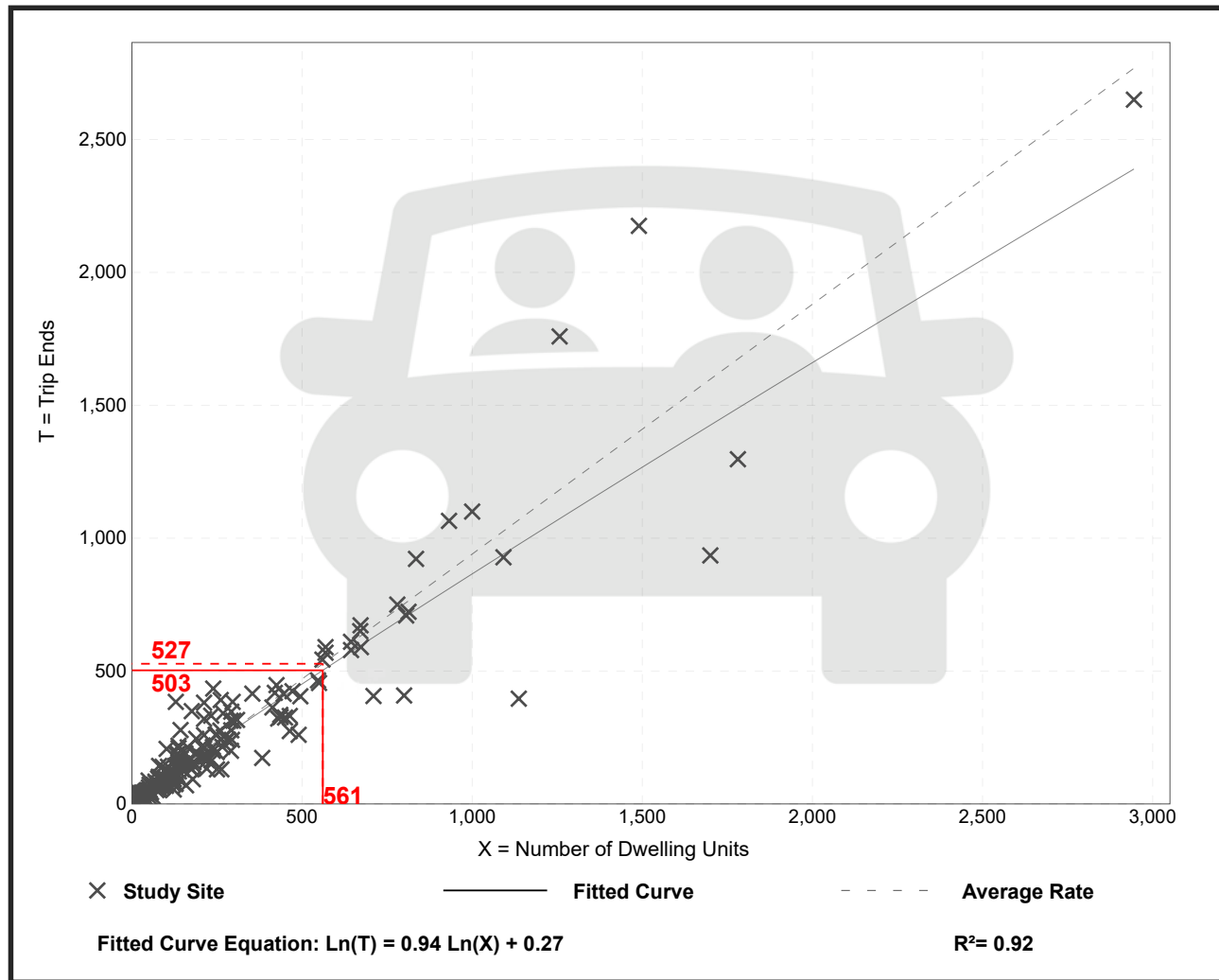
Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 208
 Avg. Num. of Dwelling Units: 248
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Land Use: 215

Single-Family Attached Housing

Description

Single-family attached housing includes any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space.

Additional Data

The database for this land use includes duplexes (defined as a single structure with two distinct dwelling units, typically joined side-by-side and each with at least one outside entrance) and townhouses/rowhouses (defined as a single structure with three or more distinct dwelling units, joined side-by-side in a row and each with an outside entrance).

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Utah, Virginia, and Wisconsin.

Source Numbers

168, 204, 211, 237, 305, 306, 319, 321, 357, 390, 418, 525, 571, 583, 638, 735, 868, 869, 870, 896, 912, 959, 1009, 1046, 1056, 1058, 1077

Single-Family Attached Housing (215)

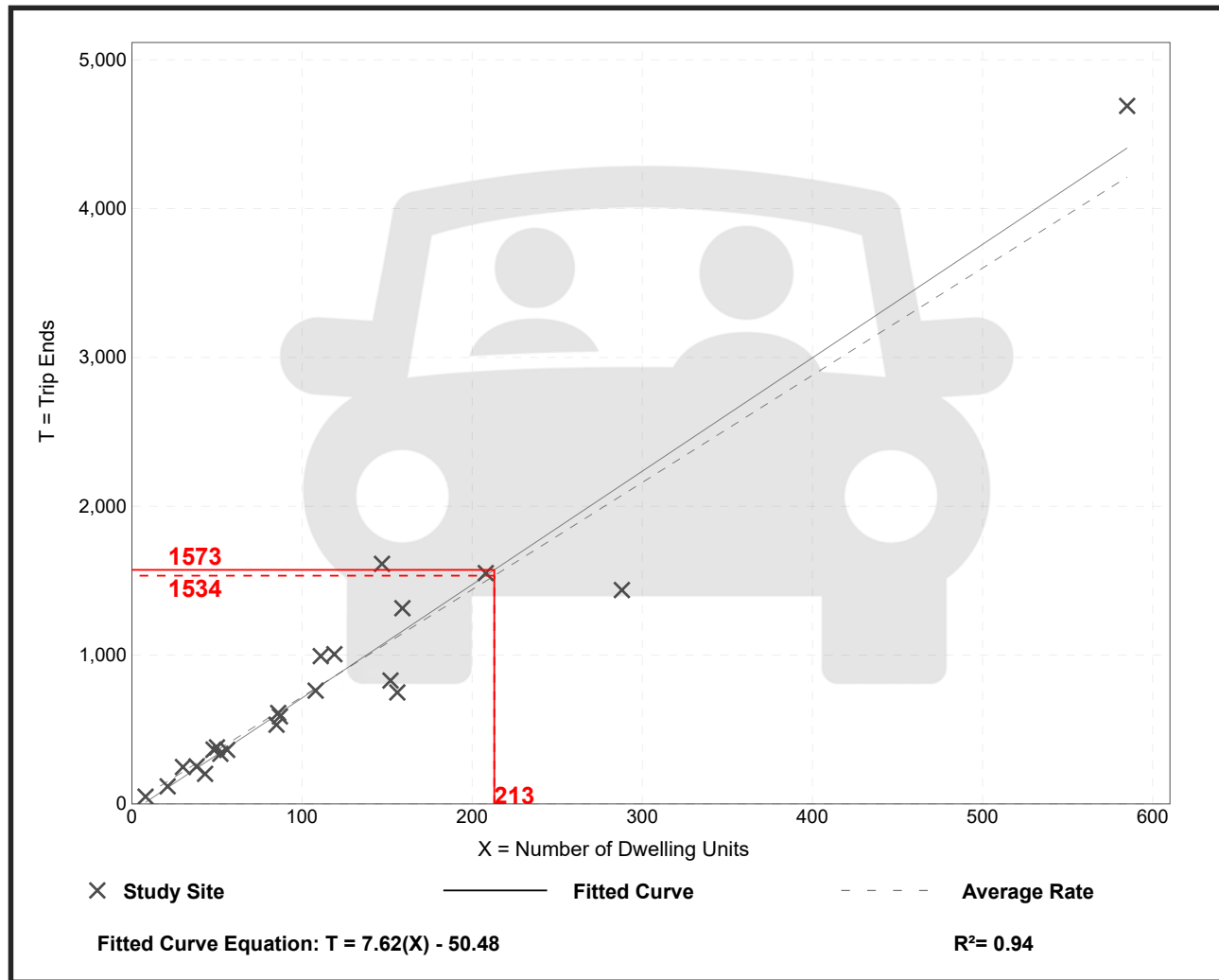
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 120
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.20	4.70 - 10.97	1.61

Data Plot and Equation



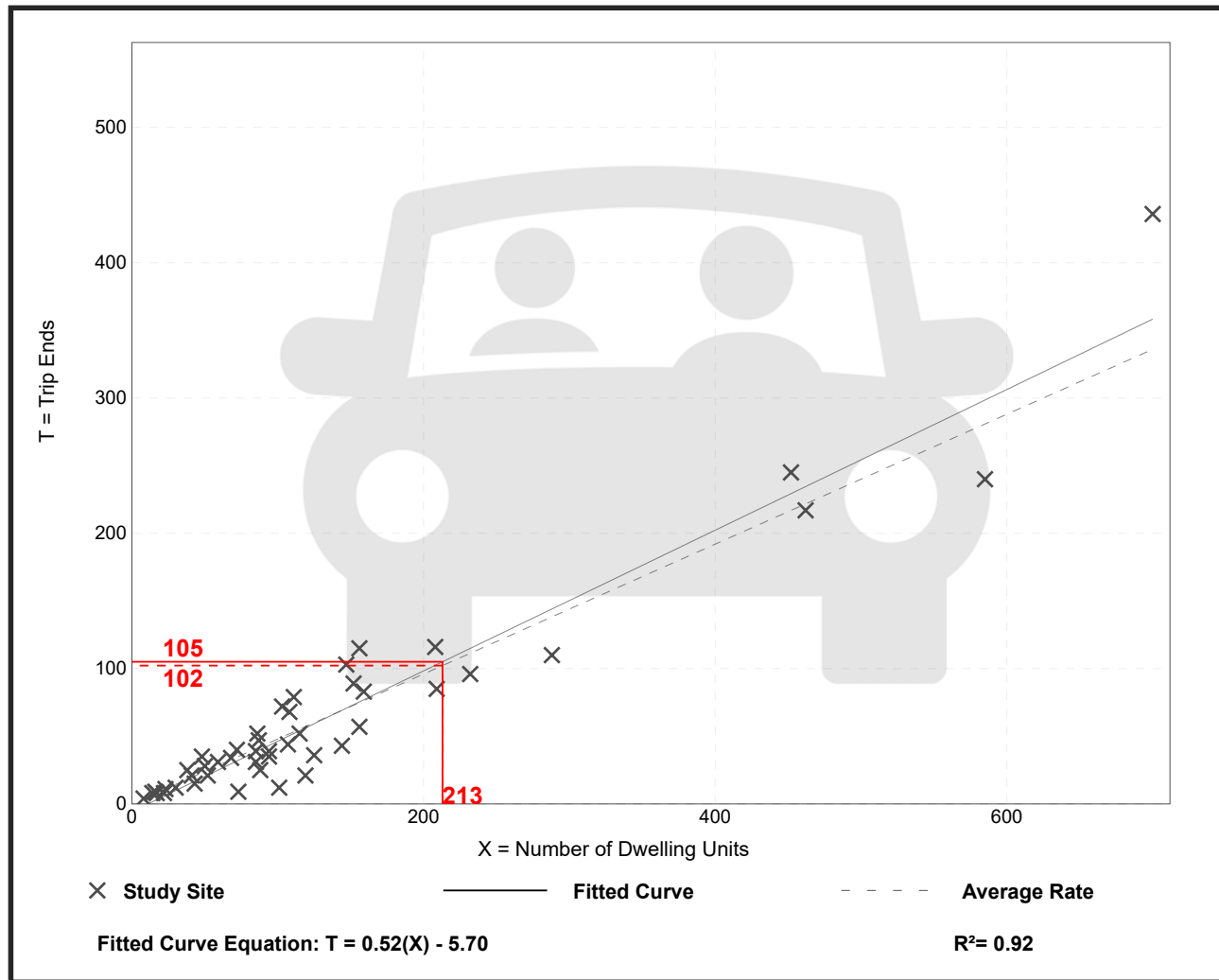
Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 46
 Avg. Num. of Dwelling Units: 135
 Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



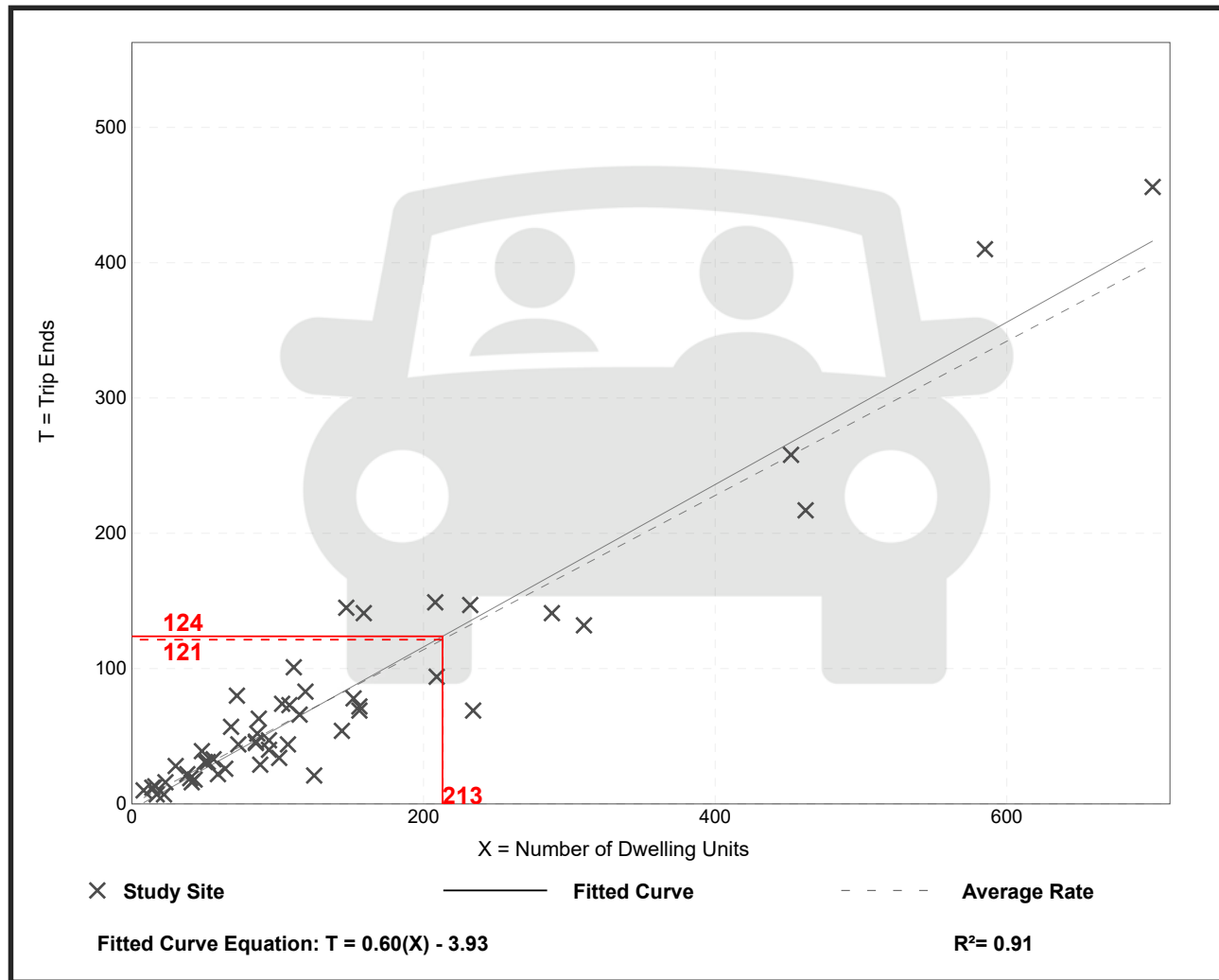
Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 51
 Avg. Num. of Dwelling Units: 136
 Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



KNOX COUNTY
LOCAL APARTMENT TRIP GENERATION STUDY

PURPOSE

A Traffic Impact Study (TIS) is currently required in Knox County when a proposed development is projected to generate in excess of 750 trips per day. The determinations of when the threshold is met as well as all subsequent analyses in the TIS are performed using the rates and equations given in the Institute of Transportation Engineers (ITE) Trip Generation Manual. Local governmental agencies rely heavily on the accuracy of these trip generation rates in order to correctly predict the impacts of a proposed development on the transportation system. Therefore, in certain instances, it is logical to verify whether the "national" rates and equations given in the ITE Trip Generation Manual are appropriate for use in a specific local area or region.

The decision was made to study the local trip-making characteristics of apartments because of the discrepancy between the trip generation rates for apartments and single family residential land uses as given in the ITE Trip Generation Manual. While these two land uses are similar in nature, the Trip Generation Manual predicts about three less trips per dwelling unit generated by apartments for the average weekday. Additionally the Trip Generation Manual points out that due to the age of their database, which dates back to the 1960's, "the rates for apartments probably had changed over time". It is also assumed that some of the ITE data had come from larger metropolitan areas with denser development and greater transit use than Knox County, which would contribute to lower trip generation rates. Therefore, this study will be used to either verify the rates given in the Trip Generation Manual or generate new ones that can be applied to locally proposed apartment developments.

PROCEDURE

The procedures recommended by ITE in conducting local trip generation studies were generally followed for this study, along with some important assumptions that have made. ITE has published a proposed recommended practice entitled "Trip Generation Handbook" which specifically outlines procedures for conducting local trip generation studies and establishing new rates and equations.

The first step in the study was to define the number and location of the sites to be studied, as well as the counting methodology. Initially 14 sites were selected, although one apartment complex - the College Park Apartments - was later omitted due to uncharacteristically high traffic generation numbers. The number of sites used in this study far exceeds the recommended minimum amount suggested by ITE, which is five sites. Traffic counts were taken for week-long periods at 15-minute intervals between July 22, 1996 and August 9, 1996 at the access points to the apartment complexes. A Technical Appendix to this report contains the traffic count data collected at each apartment complex.

RESULTS

The traffic count data was analyzed using spreadsheets in order to determine the weighted average rates and regression equations. In order to be considered valid, the local rates and equations for each time period of analysis that were generated must meet certain statistical criteria. First, the standard deviation of the independent variable (dwelling units) should be no more than 110 percent of the weighted average rate; and secondly, the regression equations require a computed coefficient of determination (R^2) value of at least 0.75 before good data fit is indicated. This statistical criteria is met by the local data results, and in fact it often exceeds the level of data fit given by their counterparts in the ITE Trip Generation Manual. Finally, in order to simplify the use of the local data, plots were generated that appear identical to the actual ones in the ITE Trip Generation Manual.

The resulting rates and equations calculated from the local data indicate that the average weekday trip generation of apartments in this area is well above the national rates reported in the ITE manual. For example, the locally computed average rate for number of trips generated during a weekday is 35% higher than the rate given by ITE (increase from 6.63 trips per dwelling unit to 9.03 trips per dwelling unit). The trip generation rates do not increase as much for the AM and PM peak hours however. The local rate is roughly 8% higher for the AM peak, and 16% higher for the PM peak. The plots from the ITE Trip Generation Manual are included in the Technical Appendix for comparison purposes.

ASSUMPTIONS MADE

Some important assumptions have been made which may affect the results of the local data that was collected:

- It is important to note that the local trip generation rates were computed for the *total* number of dwelling units in the apartment complex, and not necessarily for the number of *occupied* dwelling units. There are several reasons why this was done, chiefly because of the need for comparability with the rates given in ITE Trip Generation Manual, as it does not specify whether the dwelling units are occupied. According to ITE procedures the selected sites must only be of "reasonably full occupancy (i.e. at least 85%)". The Apartment Association of Greater Knoxville (AAGK) publishes quarterly reports on occupancy levels of apartment complexes, and the report covering the period of the data collection was reviewed to determine occupancy levels. According to the AAGK report from July 1, 1996 – September 30, 1996 all of the apartment complexes surveyed in this study met the minimum 85% occupancy level, with an average occupancy rate for all sites studied of 94%.
- The count data that was collected at each apartment complex was used "raw" meaning that it was not factored for possible daily or seasonal variations. Once again, according to an ITE representative it is not known whether the data used in the Trip Generation Manual was factored or not, so therefore in order to be able to compare

local rates to those in the manual you must assume that count data should not be factored. Additionally, it was felt that apartment complexes would generally not be as susceptible to major seasonal fluctuations as other land uses might be. The local rates were also developed using count data that was collected and averaged over an entire week, which should limit some of the daily variations. Finally, reliable local daily and seasonal variation factors do not truly exist.

CONCLUSION

The local apartment study methodology and results were distributed for comment to a group of local transportation professionals who are directly responsible for either preparing or reviewing traffic impact studies. A meeting was held between this group on February 16, 2000 in order to gather comments and discuss the study in greater detail. The following conclusions are based on the discussion and consensus reached at this meeting:

1. The trip generation rates and equations meet statistical requirements and resulted from a study that followed accepted procedures; therefore they should be adopted for future use. Furthermore, the rates and equations are recommended for use in reviewing the traffic impact of any development termed as "multi-family", such as townhouse and condominium developments due to their similarity to apartment complexes.
2. The Traffic Access and Impact Study Guidelines and Procedures adopted by MPC should be amended with the language that local data should be used when available, which will allow the implementation of these new multi-family trip generation rates.
3. The following suggestions were made for future consideration:
 - This study should be updated with data collected from local townhouse and condominium developments in order to further justify the use of the new trip generation rates.
 - A statistical comparison should be made between any newly developed rates and the ITE single family trip generation rates to determine if there is a significant difference. If there is no difference then perhaps ITE single-family rates could be used for any residential development proposed in Knox County.

Local Apartment Trip Generation Study

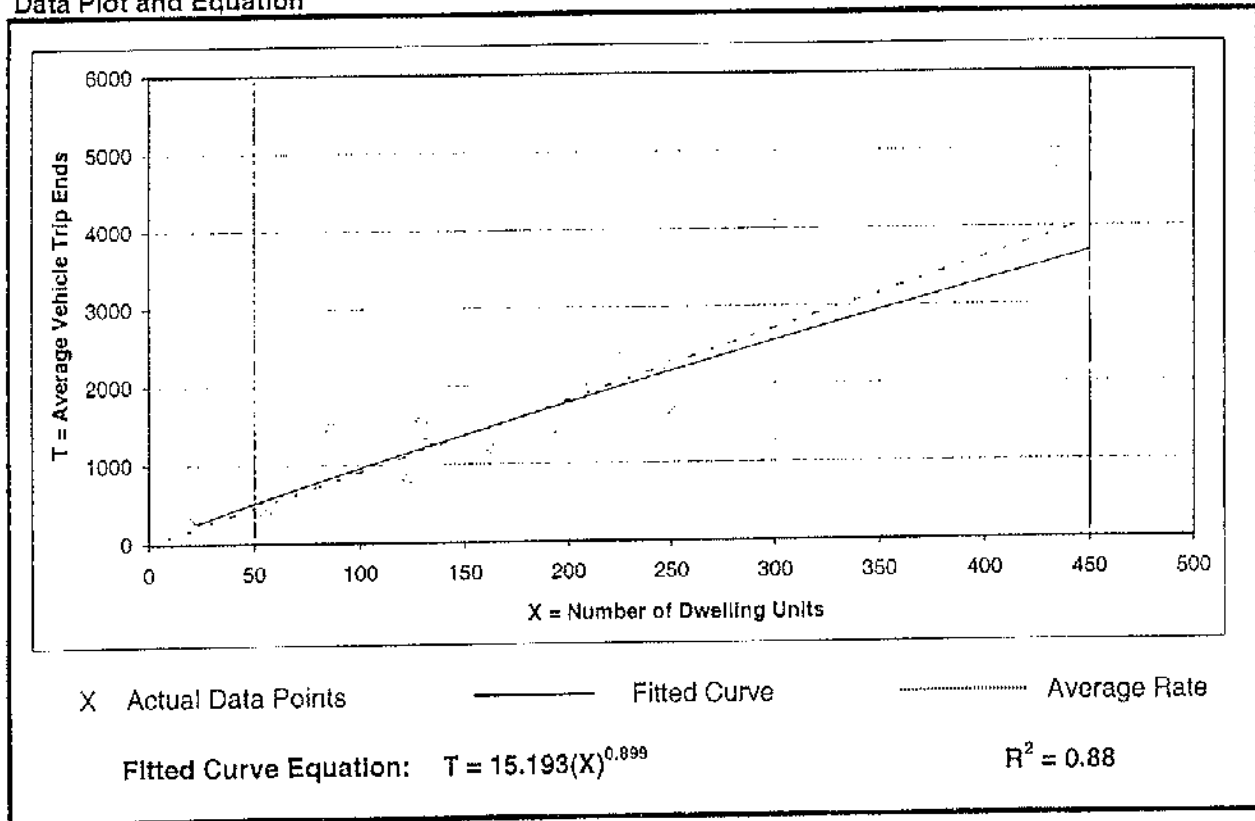
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 13
Average Number of Dwelling Units: 193
Directional Distribution: 50% entering, 50% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
9.03	6.59 - 17.41	2.47

Data Plot and Equation



Local Apartment Trip Generation Study

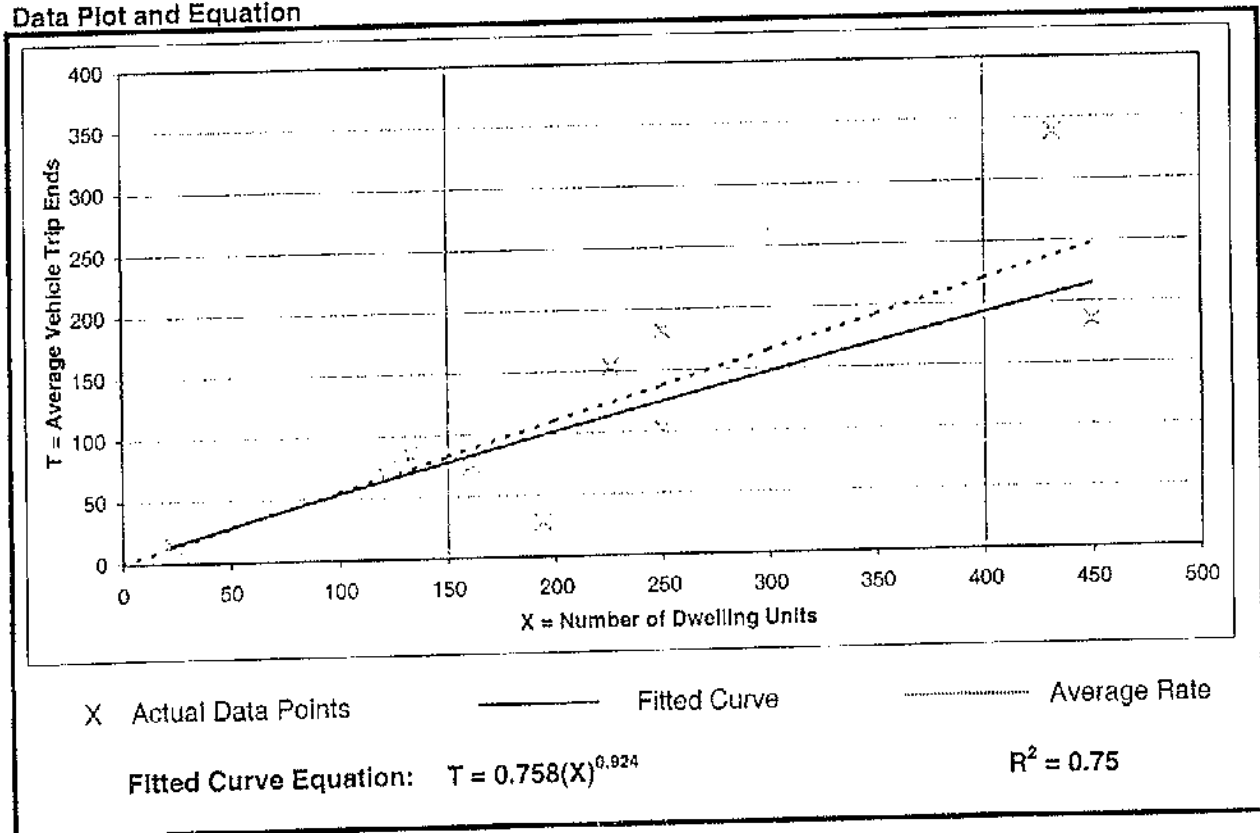
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.

Number of Studies: 13
 Average Number of Dwelling Units: 193
 Directional Distribution: 22% entering, 78% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
0.55	0.14 - 0.78	0.18

Data Plot and Equation



Local Apartment Trip Generation Study

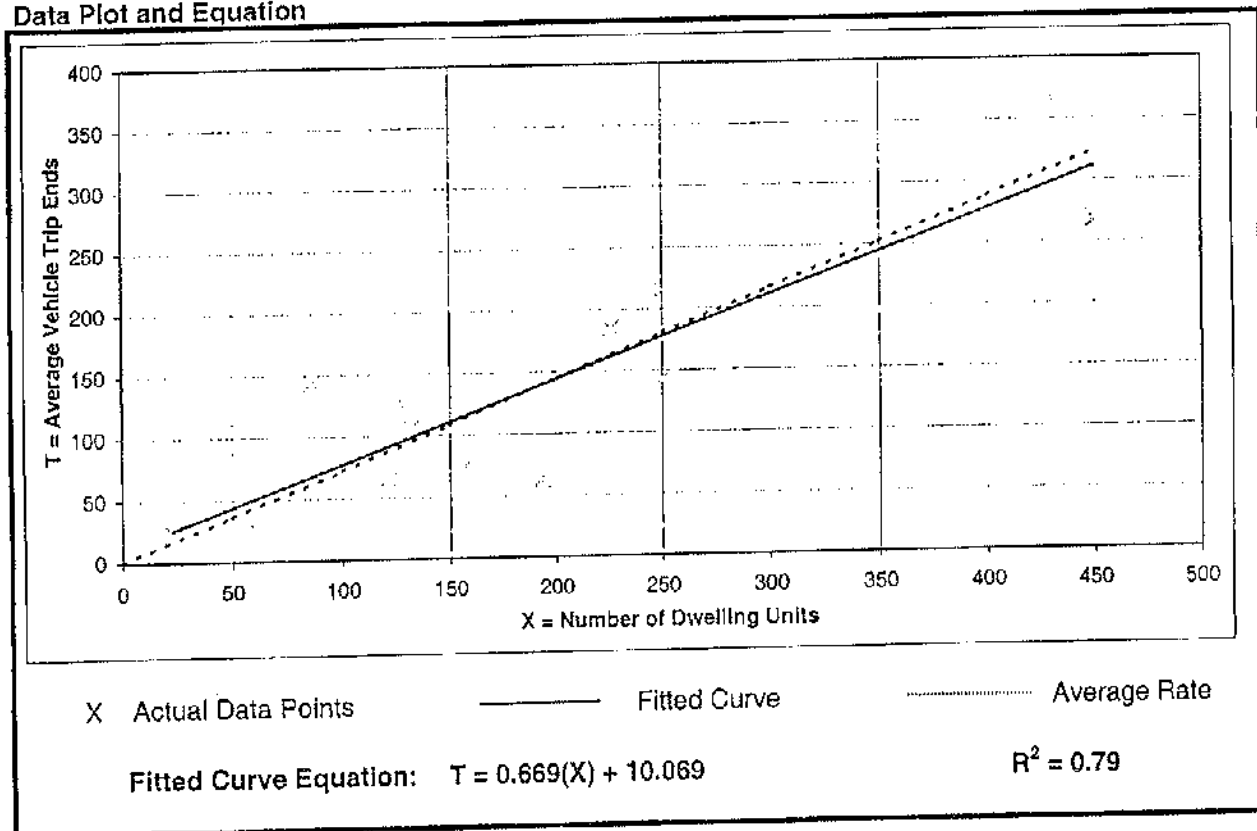
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.

Number of Studies: 13
 Average Number of Dwelling Units: 193
 Directional Distribution: 55% entering, 45% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
0.72	0.32 - 1.66	0.25

Data Plot and Equation



Land Use: 411

Public Park

Description

A public park is owned and operated by a municipal, county, state, or federal agency. The parks surveyed vary widely as to location, type, and number of facilities, including boating or swimming facilities, beaches, hiking trails, ball fields, soccer fields, campsites, and picnic facilities. Seasonal use of the individual sites differs widely as a result of the varying facilities and local conditions, such as weather. For example, some of the sites are used primarily for boating or swimming; others are used for softball games. Soccer complex (Land Use 488) is a related use.

Additional Data

The percentage of the park area that is used most intensively varies considerably within the studies contained in this land use. Therefore, caution should be used when using acres as an independent variable.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, New Jersey, New York, North Carolina, and Oregon.

Source Numbers

186, 392, 407, 709, 729, 852, 905

Public Park (411)

Vehicle Trip Ends vs: **Acres**
On a: **Weekday**

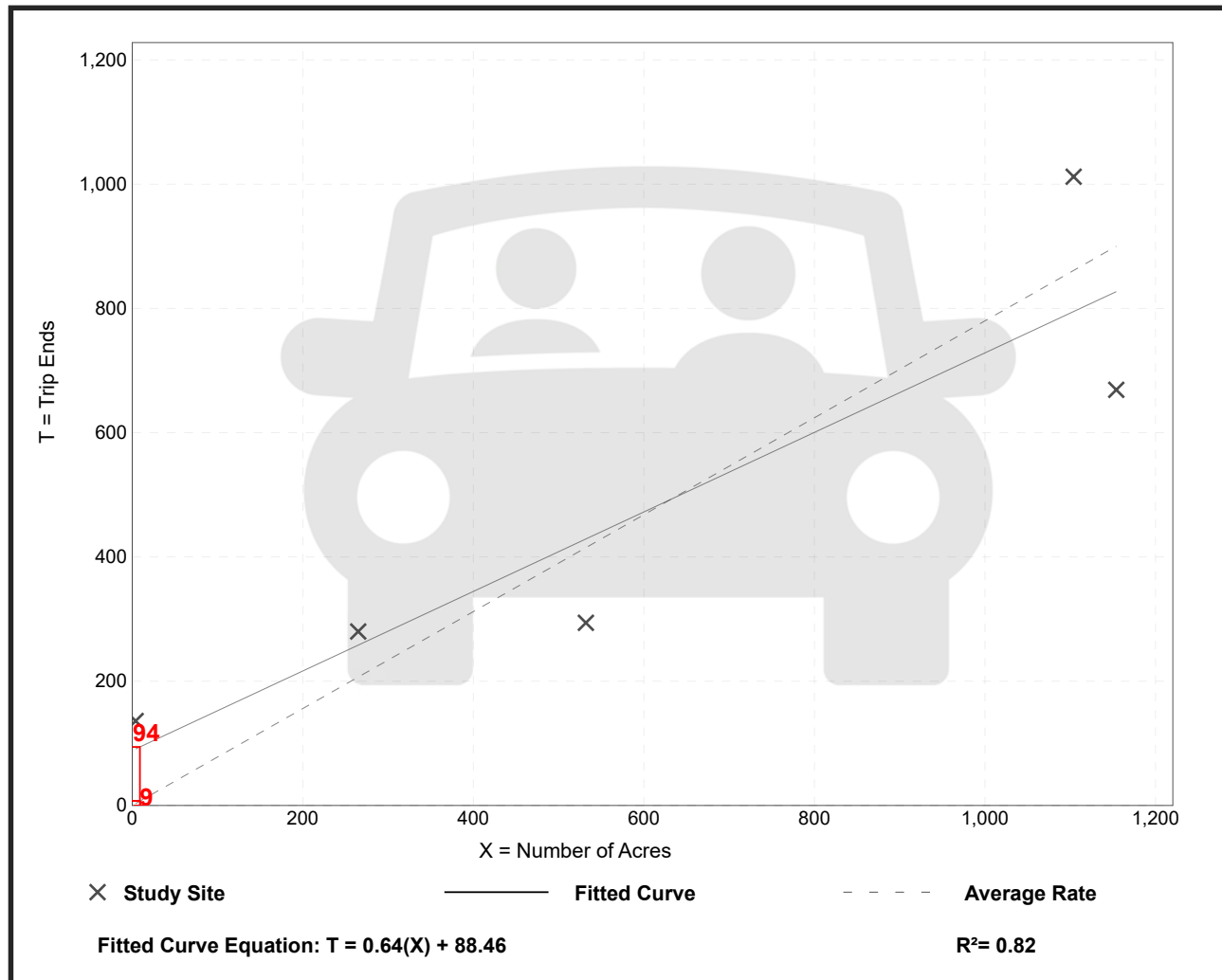
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. Num. of Acres: 612
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Acre

Average Rate	Range of Rates	Standard Deviation
0.78	0.55 - 34.00	1.36

Data Plot and Equation

Caution – Small Sample Size



Public Park (411)

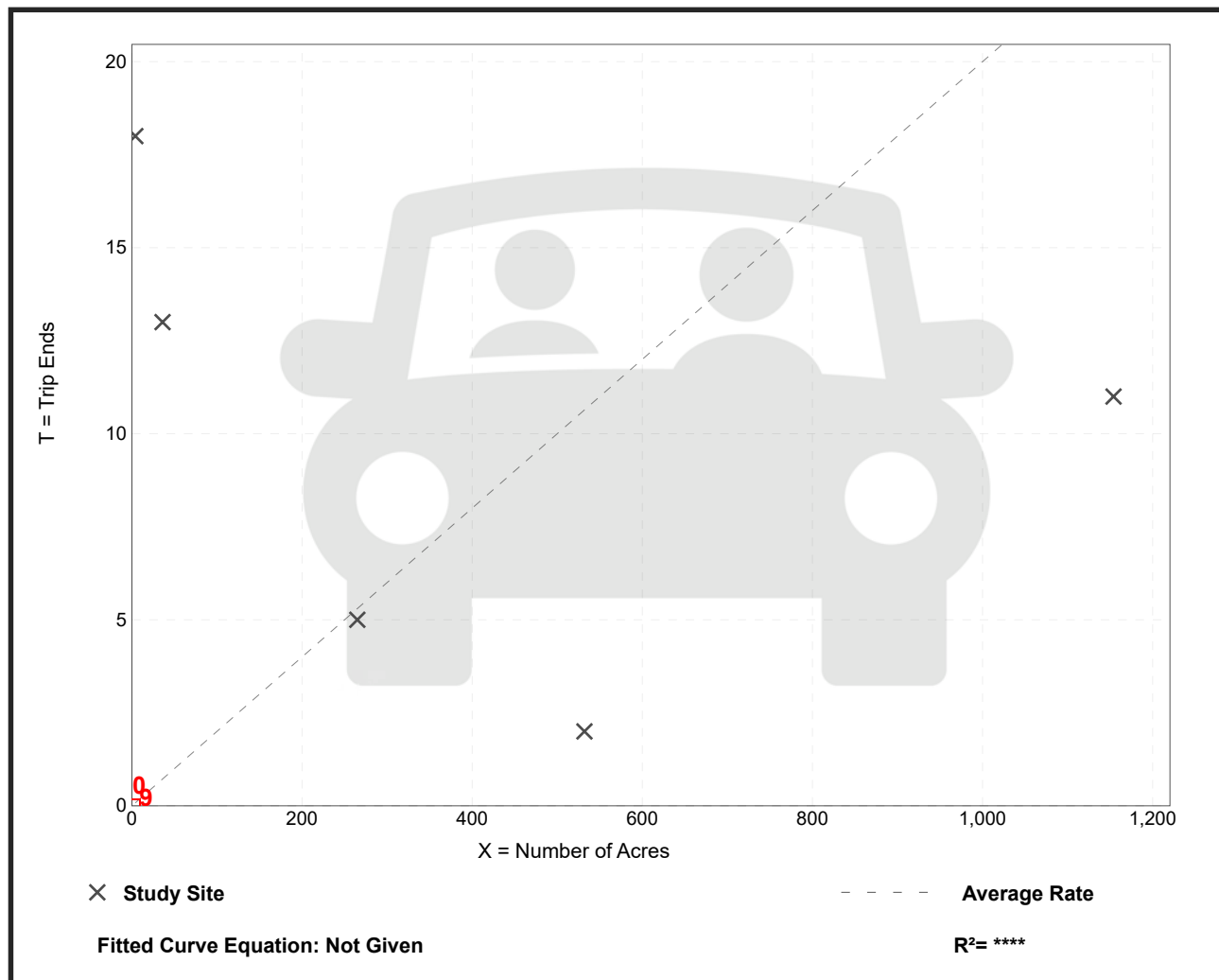
Vehicle Trip Ends vs: Acres
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 5
 Avg. Num. of Acres: 398
 Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Acre

Average Rate	Range of Rates	Standard Deviation
0.02	0.00 - 4.50	0.23

Data Plot and Equation

Caution – Small Sample Size



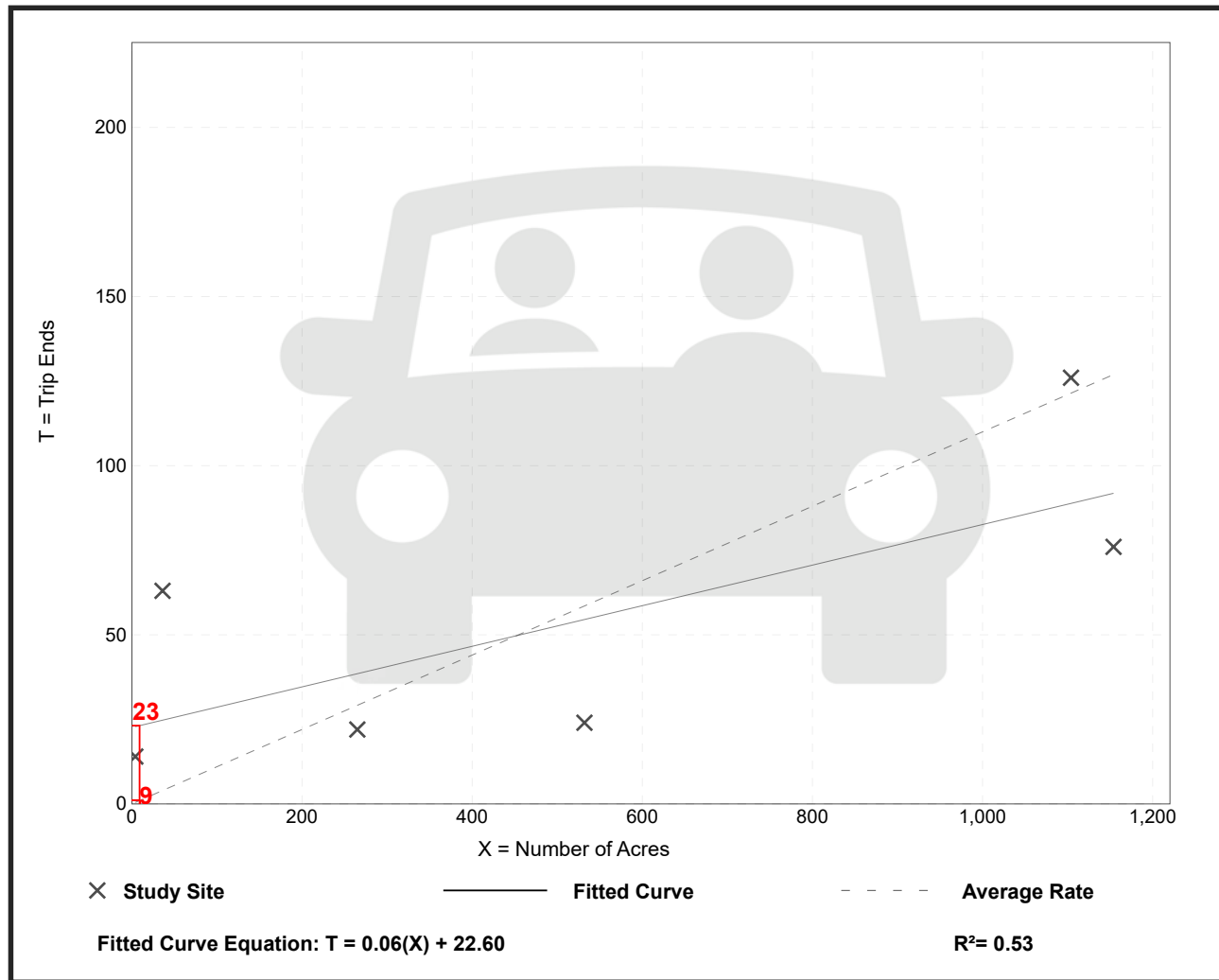
Public Park (411)

Vehicle Trip Ends vs: Acres
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 6
 Avg. Num. of Acres: 516
 Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per Acre

Average Rate	Range of Rates	Standard Deviation
0.11	0.05 - 3.50	0.24

Data Plot and Equation



Land Use: 488

Soccer Complex

Description

A soccer complex is an outdoor facility that is used for non-professional soccer games. It may consist of multiple fields. The size of each field within the land use may vary to accommodate games for different age groups. On-site amenities may include stadium seating, a fitness trail, an activities shelter, aquatic center, picnic grounds, basketball and tennis courts, and a playground. Public park (Land Use 411) is a related use.

Additional Data

Caution should be used when applying these data. Peaking at soccer complexes typically occurred in time periods shorter than 1 hour. These peaking periods may have durations of 10 to 15 minutes. To assist in the future analysis of this land use, it is important to collect driveway counts in 10-minute intervals.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1990s and the 2010s in California, Colorado, Hawaii, Indiana, New Jersey, and Washington.

Source Numbers

377, 519, 565, 722, 856, 908, 952, 956, 1004

Soccer Complex (488)

Vehicle Trip Ends vs: Fields
On a: Weekday

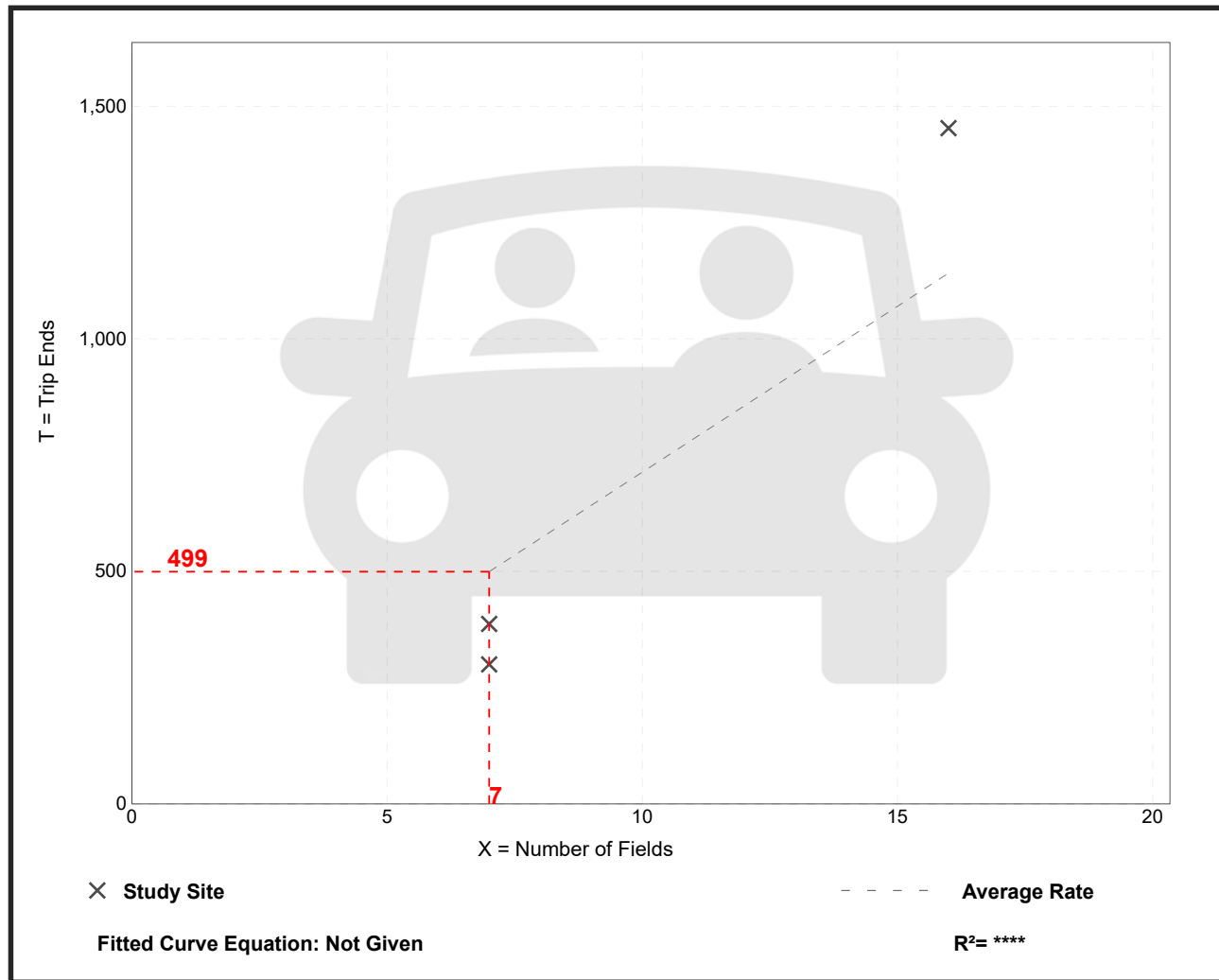
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Fields: 10
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
71.33	42.86 - 90.81	26.03

Data Plot and Equation

Caution – Small Sample Size



Soccer Complex (488)

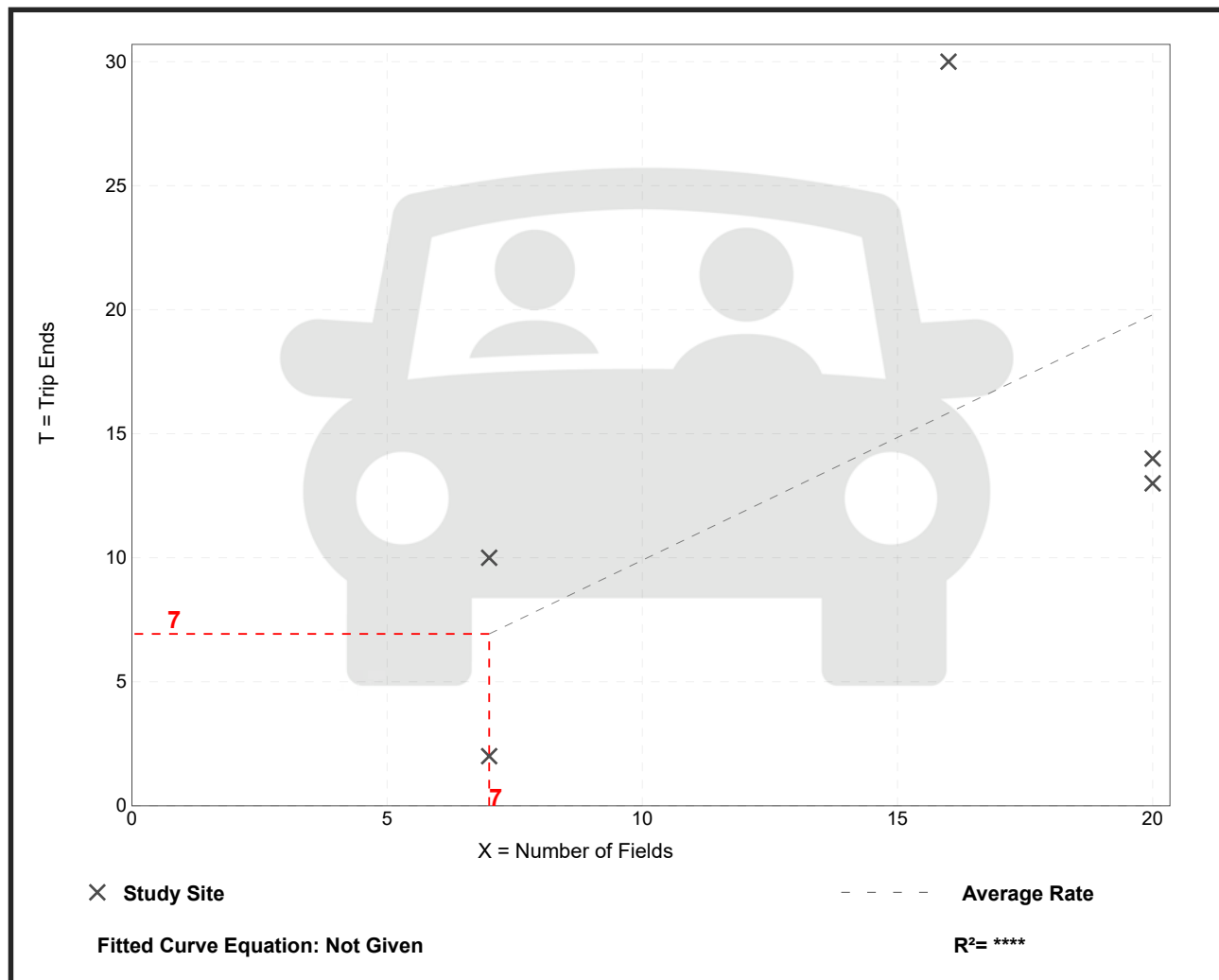
Vehicle Trip Ends vs: Fields
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 5
 Avg. Num. of Fields: 14
 Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
0.99	0.29 - 1.88	0.62

Data Plot and Equation

Caution – Small Sample Size



Soccer Complex (488)

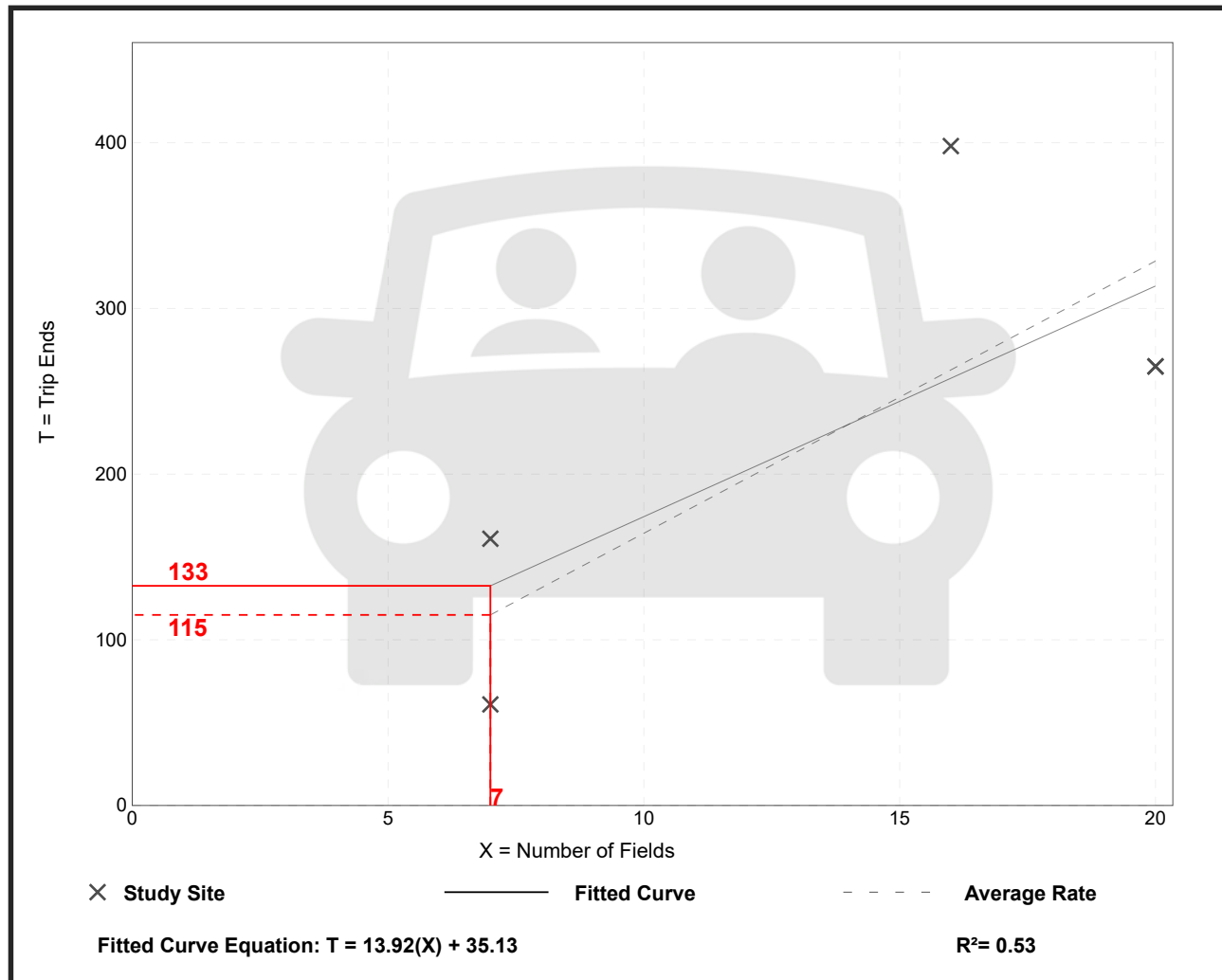
Vehicle Trip Ends vs: Fields
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 5
 Avg. Num. of Fields: 14
 Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
16.43	8.71 - 24.88	6.36

Data Plot and Equation

Caution – Small Sample Size



Land Use: 821

Shopping Plaza (40-150k)

Description

A shopping plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has between 40,000 and 150,000 square feet of gross leasable area (GLA). The term “plaza” in the land use name rather than “center” is simply a means of distinction between the different shopping center size ranges. Various other names are commonly used to categorize a shopping plaza within this size range, depending on its specific size and tenants, such as neighborhood center, community center, and fashion center.

Its major tenant is often a supermarket but many sites are anchored by home improvement, discount, or other stores. A shopping plaza typically contains more than retail merchandising facilities. Office space, a movie theater, restaurants, a post office, banks, a health club, and recreational facilities are common tenants. A shopping plaza is almost always open-air and the GLA is the same as the gross floor area of the building.

The 150,000 square feet GLA threshold value between shopping plaza and shopping center (Land Use 820) is based on an examination of trip generation data. For a shopping plaza that is smaller than the threshold value, the presence or absence of a supermarket within the plaza has a measurable effect on site trip generation. For a shopping center that is larger than the threshold value, the trips generated by its other major tenants mask any effects of the presence or absence of an on-site supermarket.

The 40,000 square feet GFA threshold between shopping plaza and strip retail plaza (Land Use 822) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land Use 820), strip retail plaza (<40k) (Land Use 822), and factory outlet center (Land Use 823) are related uses.

Land Use Subcategory

The presence or absence of a supermarket in a shopping plaza has been determined to have a measurable effect on site trip generation. Therefore, data are presented for two subcategories for this land use: sites with a supermarket anchor and sites without a supermarket.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New York, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Texas, Vermont, Virginia, Washington, and Wisconsin.

Source Numbers

105, 110, 156, 159, 186, 198, 204, 211, 213, 239, 259, 260, 295, 301, 304, 305, 307, 317, 319, 358, 376, 390, 400, 404, 437, 444, 446, 507, 580, 598, 658, 728, 908, 926, 944, 946, 960, 973, 974, 1004, 1009, 1025, 1069

Shopping Plaza (40-150k) - Supermarket - No (821)

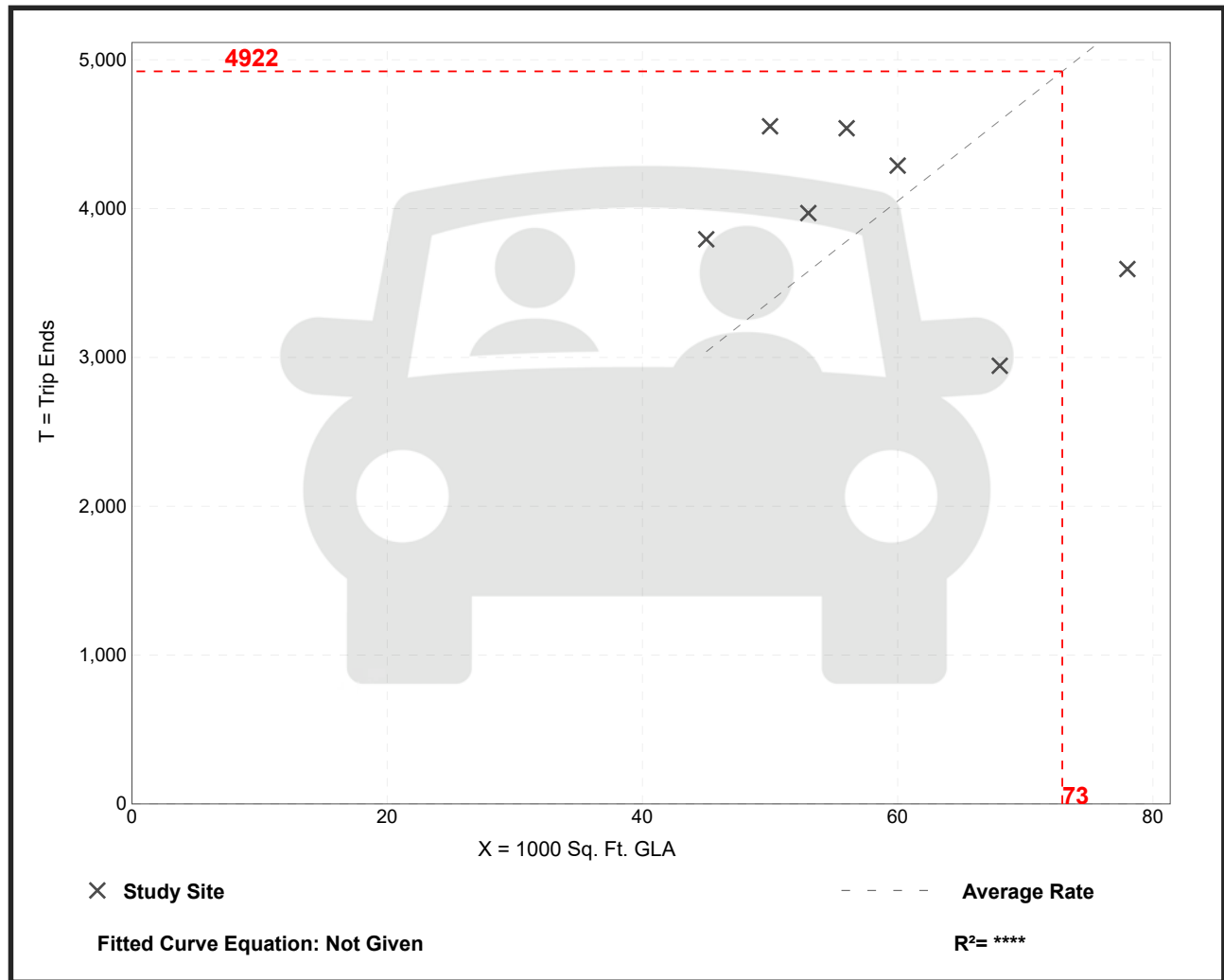
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. 1000 Sq. Ft. GLA: 59
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
67.52	43.29 - 91.06	19.25

Data Plot and Equation



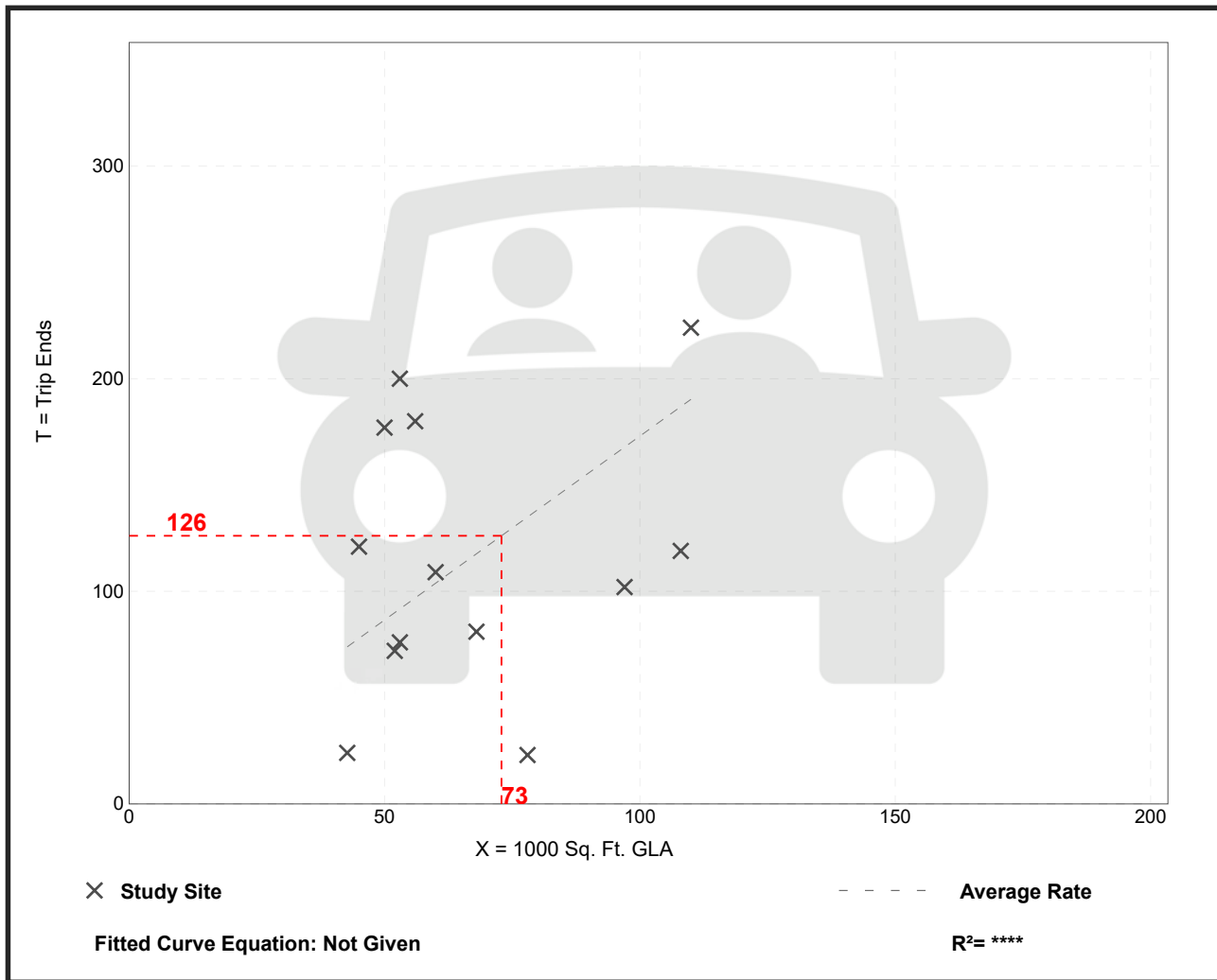
Shopping Plaza (40-150k) - Supermarket - No (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 13
 Avg. 1000 Sq. Ft. GLA: 67
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
1.73	0.29 - 3.77	1.06

Data Plot and Equation



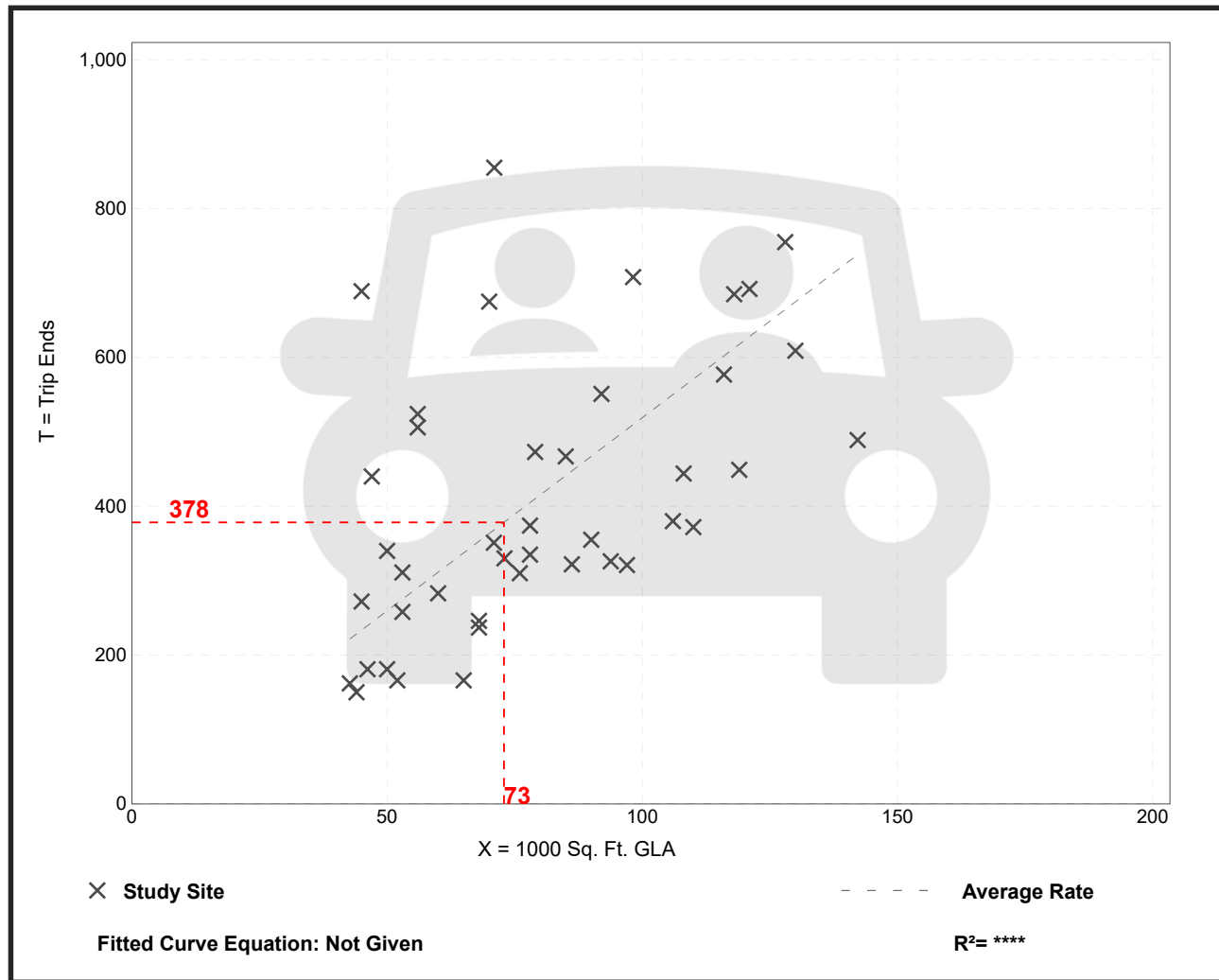
Shopping Plaza (40-150k) - Supermarket - No (821)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 42
 Avg. 1000 Sq. Ft. GLA: 79
 Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
5.19	2.55 - 15.31	2.28

Data Plot and Equation



APPENDIX C – CAPACITY ANALYSES

CAPACITY AND LEVEL-OF-SERVICE CONCEPTS

In a general sense, a roadway is similar to a pipeline or other material carrying conduit in that it has a certain capacity for the amount of material (vehicles) that it can efficiently carry. As the number of vehicles in a given time period gradually increases, the quality of traffic flow gradually decreases. On roadway sections this results in increasing turbulence in the traffic stream, and at intersections it results in increasing stops and delay. As the volumes begin to approach the capacity of the facility, these problems rapidly magnify, with resulting serious levels of congestion, stops, delay, excess fuel consumption, pollutant emissions, etc.

The Transportation Research Board has published the Year 2010 Highway Capacity Manual (HCM2010), which establishes theoretical techniques to quantify the capacity conditions on all types of roadways, intersections, ramps, pedestrian facilities, etc. A basic concept that is applicable to most of these techniques is the idea of level of service (LOS). This concept establishes a rating system that quantifies the quality of traffic flow, as perceived by motorists and/or passengers. The general system is similar to a school grade scale, and is outlined as follows:

Level of Service (LOS)	General Quality of Traffic Flow	Description of Corresponding Conditions
A	Excellent	Roadways – Free flow, high maneuverability Intersections – Very few stops, very low delay
B	Very Good	Roadways – Free flow, slightly lower maneuverability Intersections – Minor stops, low delay
C	Good	Roadways – Stable flow, restricted maneuverability Intersections – Significant stops, significant delay
D	Fair	Roadways – Marginally stable flow, congestion seriously restricts maneuverability Intersections – High stops, long but tolerable delay
E	Poor	Roadways – Unstable flow*, lower operating speeds, congestion severely restricts maneuverability Intersections – All vehicles stop, very long queues and very long intolerable delay
F	Very Poor	Roadways – Forced flow, stoppages may be lengthy, congestion severely restricts maneuverability Intersections – All vehicles stop, extensive queues and extremely long intolerable delay

*Unstable flow is such that minor fluctuations or disruptions can result in rapid degradation to LOS F.

LOS CRITERIA: SIGNALIZED & UNSIGNALIZED INTERSECTIONS























LOS	CONTROL DELAY (S/VEH)		
	SIGNALIZED	UNSIGNALIZED	ROUNDBABOUT
A	≤10	≤10	≤10
B	>10-20	>10-15	>10-15
C	>20-35	>15-25	>15-25
D	>35-55	>25-35	>25-35
E	>55-80	>35-50	>35-50
F	>80	>50	>50

Another measure of intersection capacity that is often used in the evaluation of intersection operations is the volume to capacity (V/C) ratio. This ratio is defined as “the ratio of flow rate to capacity”, and is a good measure of how much of an intersection’s available capacity has been used up by the analysis volumes. Conversely, it also provides an indication of the reserve capacity available for future growth in traffic volumes.

The Intersection Capacity Utilization (ICU) is another measure that expresses a value similar to the V/C ratio. Specifically, the ICU method “sums the amount of the time required to serve all movements at saturation for a given cycle length and divides by that reference cycle length.” The ICU is considered a more accurate measure of volume to capacity conditions for a signalized intersection, primarily because it accounts for the effects of the signal timing on intersection capacity.

Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd
02/22/2023

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	57	33	346	27	76	5	405	543	41	16	860	82	
Future Volume (vph)	57	33	346	27	76	5	405	543	41	16	860	82	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		190	0		0	310		125	160		185	
Storage Lanes	0		1	0		0	1		1	1		1	
Taper Length (ft)	25			25			100			75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frt			0.850		0.994				0.850			0.850	
Flt Protected		0.969			0.988		0.950			0.950			
Satd. Flow (prot)	0	1805	1583	0	1829	0	1770	3539	1583	1770	3539	1583	
Flt Permitted		0.592			0.810		0.950			0.418			
Satd. Flow (perm)	0	1103	1583	0	1500	0	1770	3539	1583	779	3539	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			402		2				47			75	
Link Speed (mph)		40			30			50			50		
Link Distance (ft)		1686			440			784			845		
Travel Time (s)		28.7			10.0			10.7			11.5		
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91	
Adj. Flow (vph)	66	38	402	32	90	6	460	617	47	18	945	90	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	104	402	0	128	0	460	617	47	18	945	90	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)		0			0			12			12		
Link Offset(ft)		0			0			0			0		
Crosswalk Width(ft)		16			16			16			16		
Two way Left Turn Lane													
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel													
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94		
Detector 2 Size(ft)		6			6			6			6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel													
Detector 2 Extend (s)		0.0			0.0			0.0			0.0		
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA	Perm	Perm	NA	Perm	
Protected Phases		8			4		5	2			6		
Permitted Phases	8		8	4					2	6		6	

Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd

02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	52.5	52.5	52.5	52.5	52.5		39.5	92.5	92.5	53.0	53.0	53.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	36.2%		27.2%	63.8%	63.8%	36.6%	36.6%	36.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		16.7	16.7		16.7		51.7	115.3	115.3	57.1	57.1	57.1
Actuated g/C Ratio		0.12	0.12		0.12		0.36	0.80	0.80	0.39	0.39	0.39
v/c Ratio		0.82	0.75		0.74		0.73	0.22	0.04	0.06	0.68	0.13
Control Delay		104.6	14.3		83.9		67.9	1.6	0.2	29.2	39.7	9.0
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		104.6	14.3		83.9		67.9	1.6	0.2	29.2	39.7	9.0
LOS		F	B		F		E	A	A	C	D	A
Approach Delay		32.8			83.9			28.7			36.9	
Approach LOS		C			F			C			D	
Queue Length 50th (ft)		98	0		117		390	23	0	10	369	8
Queue Length 95th (ft)		152	74		168		538	34	m2	31	496	49
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		349	776		477		630	2813	1268	306	1393	669
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.52		0.27		0.73	0.22	0.04	0.06	0.68	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 35.0 Intersection LOS: D
 Intersection Capacity Utilization 74.9% ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd
02/22/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	74	431	19	68	23	390	865	90	28	1107	75
Future Volume (vph)	90	74	431	19	68	23	390	865	90	28	1107	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	310		125	160		185
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			100			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.972				0.850			0.850
Flt Protected		0.973			0.991		0.950			0.950		
Satd. Flow (prot)	0	1812	1583	0	1794	0	1770	3539	1583	1770	3539	1583
Flt Permitted		0.679			0.840		0.950			0.291		
Satd. Flow (perm)	0	1265	1583	0	1521	0	1770	3539	1583	542	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			456		9				72			75
Link Speed (mph)		40			30			50			50	
Link Distance (ft)		1686			440			784			845	
Travel Time (s)		28.7			10.0			10.7			11.5	
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	105	86	501	23	81	27	443	983	102	31	1216	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	191	501	0	131	0	443	983	102	31	1216	82
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4					2	6		6

Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd

02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	52.5	52.5	52.5	52.5	52.5		39.5	92.5	92.5	53.0	53.0	53.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	36.2%		27.2%	63.8%	63.8%	36.6%	36.6%	36.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		26.8	26.8		26.8		47.6	105.2	105.2	51.1	51.1	51.1
Actuated g/C Ratio		0.18	0.18		0.18		0.33	0.73	0.73	0.35	0.35	0.35
v/c Ratio		0.82	0.76		0.46		0.76	0.38	0.09	0.16	0.98	0.14
Control Delay		82.0	14.4		52.3		66.0	1.8	0.2	37.3	66.2	9.1
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		82.0	14.4		52.3		66.0	1.8	0.2	37.3	66.2	9.1
LOS		F	B		D		E	A	A	D	E	A
Approach Delay		33.0			52.3			20.3			62.0	
Approach LOS		C			D			C			E	
Queue Length 50th (ft)		176	36		104		337	33	1	20	587	4
Queue Length 95th (ft)		233	119		145		#545	47	m0	51	#808	44
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		401	813		488		581	2568	1168	190	1247	606
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.48	0.62		0.27		0.76	0.38	0.09	0.16	0.98	0.14

Intersection Summary



























Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 38.9 Intersection LOS: D
 Intersection Capacity Utilization 84.0% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Traffic Volume (vph)	16	51	108	434	56	174	74	762	259	151	1050	2
Future Volume (vph)	16	51	108	434	56	174	74	762	259	151	1050	2
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.886				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1650	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.156			0.209		
Satd. Flow (perm)	1770	1863	1583	3433	1650	0	291	3539	1583	389	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			129		104				146			56
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	19	61	129	536	69	215	90	929	316	172	1193	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	61	129	536	284	0	90	929	316	172	1193	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Over	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases							2			6		6

Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023

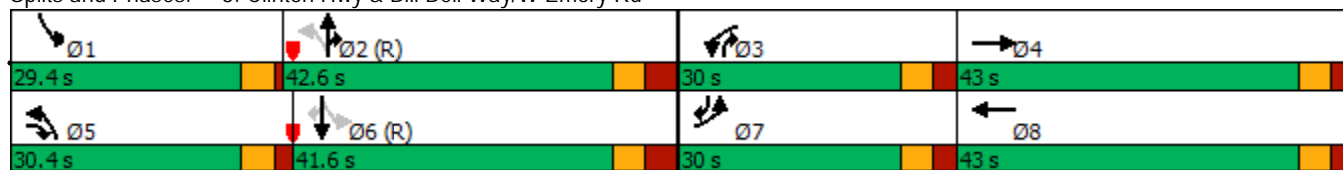


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	10.5	11.0	24.0		10.5	25.0		9.5	25.0	11.0
Total Split (s)	30.0	43.0	30.4	30.0	43.0		30.4	42.6		29.4	41.6	30.0
Total Split (%)	20.7%	29.7%	21.0%	20.7%	29.7%		21.0%	29.4%		20.3%	28.7%	20.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.0	2.5	2.5		2.0	3.5		1.0	3.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		4.5	7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	7.1	10.8	8.7	24.0	29.9		85.0	74.8	104.8	95.1	79.5	93.6
Actuated g/C Ratio	0.05	0.07	0.06	0.17	0.21		0.59	0.52	0.72	0.66	0.55	0.65
v/c Ratio	0.22	0.44	0.60	0.95	0.67		0.35	0.51	0.27	0.44	0.61	0.00
Control Delay	71.5	72.8	21.9	85.8	41.6		15.0	26.5	5.4	21.6	18.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	72.8	21.9	85.8	41.6		15.0	26.5	5.4	21.6	18.1	0.0
LOS	E	E	C	F	D		B	C	A	C	B	A
Approach Delay		41.3			70.5			20.7			18.5	
Approach LOS		D			E			C			B	
Queue Length 50th (ft)	18	56	0	261	164		30	304	48	44	176	0
Queue Length 95th (ft)	43	94	52	#306	217		55	389	98	142	333	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	292	475	378	568	501		444	1825	1184	495	1940	1219
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13	0.34	0.94	0.57		0.20	0.51	0.27	0.35	0.61	0.00

Intersection Summary
























Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 32.0 Intersection LOS: C
 Intersection Capacity Utilization 67.7% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd



Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	42	93	290	36	125	74	1216	333	184	1332	4
Future Volume (vph)	21	42	93	290	36	125	74	1216	333	184	1332	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.883				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1645	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.092			0.061		
Satd. Flow (perm)	1770	1863	1583	3433	1645	0	171	3539	1583	114	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120		117				118			56
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	25	50	111	358	44	154	90	1483	406	209	1514	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	50	111	358	198	0	90	1483	406	209	1514	5
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Over	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases							2			6		6

Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at W Emory Rd / Bill Bell Way

02/22/2023

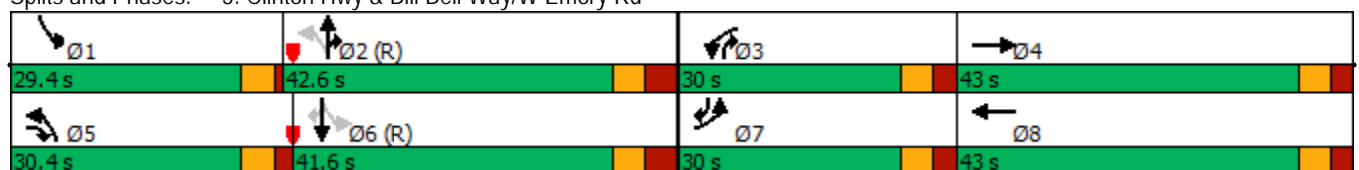


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	23	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	10.5	11.0	24.0		10.5	25.0		9.5	25.0	11.0
Total Split (s)	30.0	43.0	30.4	30.0	43.0		30.4	42.6		29.4	41.6	30.0
Total Split (%)	20.7%	29.7%	21.0%	20.7%	29.7%		21.0%	29.4%		20.3%	28.7%	20.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.0	2.5	2.5		2.0	3.5		1.0	3.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		4.5	7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	7.6	9.3	8.2	20.4	24.5		86.5	76.8	103.2	100.9	84.9	99.5
Actuated g/C Ratio	0.05	0.06	0.06	0.14	0.17		0.60	0.53	0.71	0.70	0.59	0.69
v/c Ratio	0.27	0.42	0.55	0.74	0.53		0.47	0.79	0.35	0.75	0.73	0.00
Control Delay	72.6	75.0	19.2	69.3	27.4		21.9	34.1	7.7	52.1	28.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	75.0	19.2	69.3	27.4		21.9	34.1	7.7	52.1	28.3	0.0
LOS	E	E	B	E	C		C	C	A	D	C	A
Approach Delay		41.4			54.4			28.1			31.1	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	23	46	0	168	69		28	610	96	162	355	0
Queue Length 95th (ft)	51	84	41	194	120		53	#740	162	m204	m525	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	292	475	371	568	506		391	1874	1197	363	2073	1277
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.11	0.30	0.63	0.39		0.23	0.79	0.34	0.58	0.73	0.00

Intersection Summary
























Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 33.1
 Intersection LOS: C
 Intersection Capacity Utilization 75.8%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd



Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at Powell Dr
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	55	45	179	30	420	14	762	68	297	1327	0
Future Volume (vph)	13	55	45	179	30	420	14	762	68	297	1327	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.990		0.950	0.965		0.950			0.950		
Satd. Flow (prot)	0	1844	1583	1681	1708	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.904		0.950	0.965		0.950			0.950		
Satd. Flow (perm)	0	1684	1583	1681	1708	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			438			84			
Link Speed (mph)		15			40			50			50	
Link Distance (ft)		243			1167			1995			1947	
Travel Time (s)		11.0			19.9			27.2			26.6	
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	15	63	51	186	31	438	17	941	84	334	1491	0
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	0	78	51	108	109	438	17	941	84	334	1491	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases		4		3	3	5	1	6	3	5	2	
Permitted Phases	4		4			3			6			

Lanes, Volumes, Timings
2023 Existing

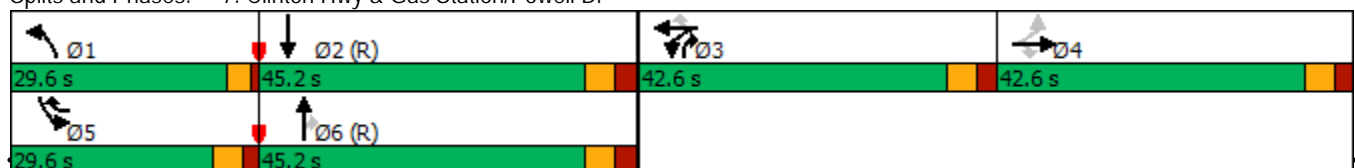


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	10.5	9.5	24.5	24.0	10.5	24.5	
Total Split (s)	42.6	42.6	42.6	42.6	42.6	29.6	29.6	45.2	42.6	29.6	45.2	
Total Split (%)	26.6%	26.6%	26.6%	26.6%	26.6%	18.5%	18.5%	28.3%	26.6%	18.5%	28.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.0	1.0	3.0	2.5	2.0	3.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	4.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		11.4	11.4	14.7	14.7	35.1	7.1	90.0	111.2	19.9	108.2	
Actuated g/C Ratio		0.07	0.07	0.09	0.09	0.22	0.04	0.56	0.70	0.12	0.68	
v/c Ratio		0.65	0.25	0.70	0.70	0.64	0.22	0.47	0.07	0.78	0.62	
Control Delay		96.0	2.8	93.0	92.4	6.9	79.6	23.6	2.1	81.0	18.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		96.0	2.8	93.0	92.4	6.9	79.6	23.6	2.1	81.0	18.2	
LOS		F	A	F	F	A	E	C	A	F	B	
Approach Delay		59.1			35.3			22.7			29.7	
Approach LOS		E			D			C			C	
Queue Length 50th (ft)		81	0	117	118	0	18	300	0	177	467	
Queue Length 95th (ft)		134	0	184	185	61	41	382	16	224	665	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		385	440	384	390	720	283	1990	1330	520	2392	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.20	0.12	0.28	0.28	0.61	0.06	0.47	0.06	0.64	0.62	

Intersection Summary
























Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 29.8
 Intersection LOS: C
 Intersection Capacity Utilization 67.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



Lanes, Volumes, Timings
2023 Existing

Clinton Hwy at Powell Dr
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	59	43	143	38	284	36	1205	167	422	1252	3
Future Volume (vph)	19	59	43	143	38	284	36	1205	167	422	1252	3
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.988		0.950	0.972		0.950			0.950		
Satd. Flow (prot)	0	1840	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.884		0.950	0.972		0.950			0.950		
Satd. Flow (perm)	0	1647	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			296			133			
Link Speed (mph)		15			40			50			50	
Link Distance (ft)		243			1167			1995			1947	
Travel Time (s)		11.0			19.9			27.2			26.6	
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	22	67	49	149	40	296	44	1488	206	474	1407	3
Shared Lane Traffic (%)				37%								
Lane Group Flow (vph)	0	89	49	94	95	296	44	1488	206	474	1410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases		4		3	3	5	1	6	3	5	2	
Permitted Phases	4		4			3			6			

Lanes, Volumes, Timings
2023 Existing

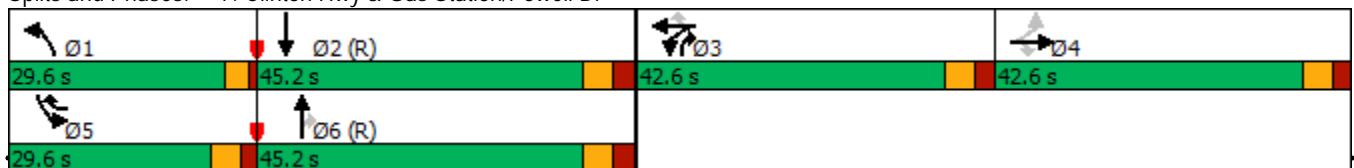


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	10.5	9.5	24.5	24.0	10.5	24.5	
Total Split (s)	42.6	42.6	42.6	42.6	42.6	29.6	29.6	45.2	42.6	29.6	45.2	
Total Split (%)	26.6%	26.6%	26.6%	26.6%	26.6%	18.5%	18.5%	28.3%	26.6%	18.5%	28.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.0	1.0	3.0	2.5	2.0	3.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	4.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		12.6	12.6	13.4	13.4	41.2	9.4	82.7	102.6	27.3	104.1	
Actuated g/C Ratio		0.08	0.08	0.08	0.08	0.26	0.06	0.52	0.64	0.17	0.65	
v/c Ratio		0.69	0.22	0.67	0.66	0.47	0.43	0.81	0.19	0.81	0.61	
Control Delay		96.9	2.4	93.1	91.7	5.1	84.4	38.1	5.3	75.2	19.9	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		96.9	2.4	93.1	91.7	5.1	84.4	38.1	5.3	75.2	19.9	
LOS		F	A	F	F	A	F	D	A	E	B	
Approach Delay		63.3			39.1			35.4			33.8	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)		92	0	102	103	0	45	673	28	248	444	
Queue Length 95th (ft)		148	0	166	167	49	80	778	58	300	642	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		376	440	384	393	630	283	1829	1273	595	2302	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.24	0.11	0.24	0.24	0.47	0.16	0.81	0.16	0.80	0.61	

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	135
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	36.0
Intersection LOS:	D
Intersection Capacity Utilization:	72.0%
ICU Level of Service:	C
Analysis Period (min):	15

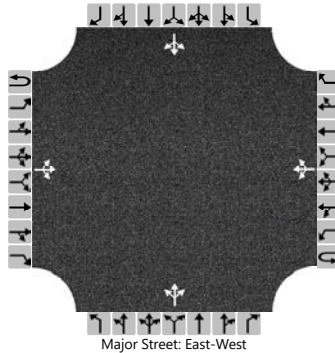
Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Harrell Rd / Carpenter Rd		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2023			North/South Street	Harrell Rd / Carpenter Rd		
Time Analyzed	AM Peak			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2023 Existing						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		6	305	107		129	655	1		36	14	90		7	25	37
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

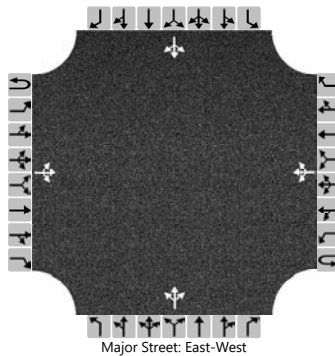
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				140					152				75	
Capacity, c (veh/h)		882				1107					169				162	
v/c Ratio		0.01				0.13					0.90				0.46	
95% Queue Length, Q ₉₅ (veh)		0.0				0.4					6.6				2.2	
Control Delay (s/veh)		9.1	0.1	0.1		8.7	1.8	1.8			99.8				44.9	
Level of Service (LOS)		A	A	A		A	A	A			F				E	
Approach Delay (s/veh)		0.2				3.0				99.8				44.9		
Approach LOS		A				A				F				E		

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Harrell Rd / Carpenter Rd		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2023			North/South Street	Harrell Rd / Carpenter Rd		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2023 Existing						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		19	547	58		86	368	10		64	22	132		7	10	15
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

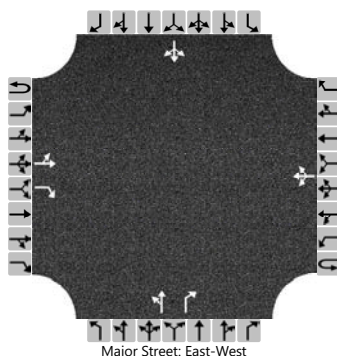
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		19				88					222					33	
Capacity, c (veh/h)		1167				958					247					199	
v/c Ratio		0.02				0.09					0.90					0.16	
95% Queue Length, Q ₉₅ (veh)		0.1				0.3					7.7					0.6	
Control Delay (s/veh)		8.1	0.2	0.2		9.1	1.1	1.1			77.6					26.6	
Level of Service (LOS)		A	A	A		A	A	A			F					D	
Approach Delay (s/veh)		0.4				2.6				77.6					26.6		
Approach LOS		A				A				F					D		

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR	Intersection	W Emory Road at Bill Bell Way				
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	Knox County				
Date Performed	2/22/2023	East/West Street	W Emory Road				
Analysis Year	2023	North/South Street	Bill Bell Way				
Time Analyzed	AM Peak	Peak Hour Factor	0.88				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description	2023 Existing						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	417	94		12	539	0		62	0	18		0	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

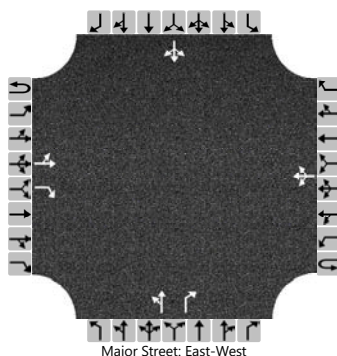
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				14				70		20			0	
Capacity, c (veh/h)		962				988				166		549			0	
v/c Ratio		0.00				0.01				0.42		0.04				
95% Queue Length, Q ₉₅ (veh)		0.0				0.0				1.9		0.1				
Control Delay (s/veh)		8.7	0.0			8.7	0.2	0.2		41.7		11.8				
Level of Service (LOS)		A	A			A	A	A		E		B				
Approach Delay (s/veh)	0.0				0.4				35.0							
Approach LOS	A				A				D							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Bill Bell Way		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2023			North/South Street	Bill Bell Way		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2023 Existing						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	566	84		22	525	3		60	2	20		1	1	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Undivided															






















Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				22				63		20			2	
Capacity, c (veh/h)		1025				921				155		486			162	
v/c Ratio		0.00				0.02				0.41		0.04			0.01	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				1.8		0.1			0.0	
Control Delay (s/veh)		8.5	0.0			9.0	0.3	0.3		43.4		12.7			27.5	
Level of Service (LOS)		A	A			A	A	A		E		B			D	
Approach Delay (s/veh)	0.0				0.7				35.9				27.5			
Approach LOS	A				A				E				D			

Lanes, Volumes, Timings
2030 Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	40	422	32	90	6	486	645	49	19	1022	98
Future Volume (vph)	71	40	422	32	90	6	486	645	49	19	1022	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	310		125	160		185
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			100			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.994				0.850			0.850
Flt Protected		0.969			0.988		0.950			0.950		
Satd. Flow (prot)	0	1805	1583	0	1829	0	1770	3539	1583	1770	3539	1583
Flt Permitted		0.577			0.753		0.950			0.373		
Satd. Flow (perm)	0	1075	1583	0	1394	0	1770	3539	1583	695	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			458		2				53			75
Link Speed (mph)		40			30			50			50	
Link Distance (ft)		1686			440			784			845	
Travel Time (s)		28.7			10.0			10.7			11.5	
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	83	47	491	38	107	7	552	733	56	21	1123	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	130	491	0	152	0	552	733	56	21	1123	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4					2	6		6

Lanes, Volumes, Timings
2030 Background

Clinton Hwy at W Emory Rd

02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	52.5	52.5	52.5	52.5	52.5		39.5	92.5	92.5	53.0	53.0	53.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	36.2%		27.2%	63.8%	63.8%	36.6%	36.6%	36.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		20.8	20.8		20.8		58.2	111.2	111.2	46.5	46.5	46.5
Actuated g/C Ratio		0.14	0.14		0.14		0.40	0.77	0.77	0.32	0.32	0.32
v/c Ratio		0.85	0.79		0.76		0.78	0.27	0.05	0.09	0.99	0.19
Control Delay		100.3	16.7		80.7		59.0	2.1	0.2	36.2	73.2	13.7
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		100.3	16.7		80.7		59.0	2.1	0.2	36.2	73.2	13.7
LOS		F	B		F		E	A	A	D	E	B
Approach Delay		34.2			80.7			25.5			67.4	
Approach LOS		C			F			C			E	
Queue Length 50th (ft)		121	28		138		384	37	0	14	555	22
Queue Length 95th (ft)		177	115		189		#715	49	m0	37	#712	68
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		341	814		443		710	2715	1226	222	1134	558
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.38	0.60		0.34		0.78	0.27	0.05	0.09	0.99	0.19






















Intersection Summary

Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 45.2 Intersection LOS: D
 Intersection Capacity Utilization 85.0% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2030 Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	89	519	23	82	27	481	1028	107	33	1316	92
Future Volume (vph)	109	89	519	23	82	27	481	1028	107	33	1316	92
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	310		125	160		185
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			100			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.972				0.850			0.850
Flt Protected		0.973			0.991		0.950			0.950		
Satd. Flow (prot)	0	1812	1583	0	1794	0	1770	3539	1583	1770	3539	1583
Flt Permitted		0.664			0.828		0.950			0.242		
Satd. Flow (perm)	0	1237	1583	0	1499	0	1770	3539	1583	451	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			454		9				73			75
Link Speed (mph)		40			30			50			50	
Link Distance (ft)		1686			440			784			845	
Travel Time (s)		28.7			10.0			10.7			11.5	
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	127	103	603	27	98	32	547	1168	122	36	1446	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	230	603	0	157	0	547	1168	122	36	1446	101
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4					2	6		6

Lanes, Volumes, Timings
2030 Background

Clinton Hwy at W Emory Rd

02/22/2023

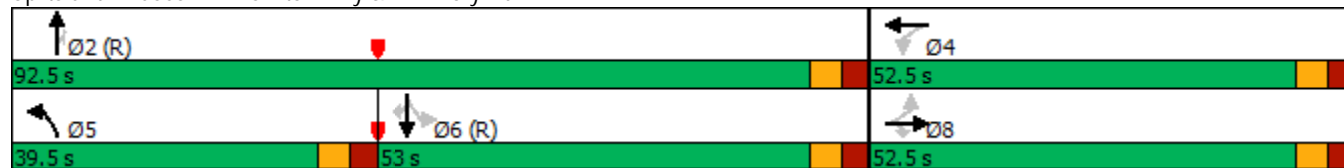


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	52.5	52.5	52.5	52.5	52.5		39.5	92.5	92.5	53.0	53.0	53.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	36.2%		27.2%	63.8%	63.8%	36.6%	36.6%	36.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		33.1	33.1		33.1		45.9	98.9	98.9	46.5	46.5	46.5
Actuated g/C Ratio		0.23	0.23		0.23		0.32	0.68	0.68	0.32	0.32	0.32
v/c Ratio		0.82	0.85		0.45		0.98	0.48	0.11	0.25	1.28	0.18
Control Delay		74.2	24.1		47.6		79.7	2.5	0.2	42.2	171.2	12.4
Queue Delay		0.0	0.0		0.0		0.0	0.1	0.0	0.0	0.0	0.0
Total Delay		74.2	24.1		47.6		79.7	2.6	0.2	42.2	171.2	12.4
LOS		E	C		D		E	A	A	D	F	B
Approach Delay		37.9			47.6			25.4			158.1	
Approach LOS		D			D			C			F	
Queue Length 50th (ft)		209	148		122		441	50	1	25	~905	17
Queue Length 95th (ft)		260	239		158		m#675	m58	m0	60	#1046	61
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		392	812		481		560	2414	1103	144	1134	558
Starvation Cap Reductn		0	0		0		0	383	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.59	0.74		0.33		0.98	0.58	0.11	0.25	1.28	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 76.2 Intersection LOS: E
 Intersection Capacity Utilization 96.7% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
























Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2030 Background

Clinton Hwy at W Emory Rd / Bill Bell Way

02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	70	128	516	67	212	88	908	313	179	1249	2
Future Volume (vph)	20	70	128	516	67	212	88	908	313	179	1249	2
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.886				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1650	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.073			0.122		
Satd. Flow (perm)	1770	1863	1583	3433	1650	0	136	3539	1583	227	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			152		105				149			56
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	24	83	152	637	83	262	107	1107	382	203	1419	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	83	152	637	345	0	107	1107	382	203	1419	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Over	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases							2			6		6

Lanes, Volumes, Timings
2030 Background

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023











Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	10.5	11.0	24.0		10.5	25.0		9.5	25.0	11.0
Total Split (s)	30.0	43.0	30.4	30.0	43.0		30.4	42.6		29.4	41.6	30.0
Total Split (%)	20.7%	29.7%	21.0%	20.7%	29.7%		21.0%	29.4%		20.3%	28.7%	20.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.0	2.5	2.5		2.0	3.5		1.0	3.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		4.5	7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	7.5	14.0	9.4	24.0	35.3		77.5	66.6	96.6	90.0	73.1	87.6
Actuated g/C Ratio	0.05	0.10	0.06	0.17	0.24		0.53	0.46	0.67	0.62	0.50	0.60
v/c Ratio	0.26	0.46	0.62	1.12	0.72		0.60	0.68	0.35	0.63	0.80	0.00
Control Delay	72.5	68.4	20.7	129.4	44.1		37.5	35.4	8.4	44.1	37.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	68.4	20.7	129.4	44.1		37.5	35.4	8.4	44.1	37.0	0.0
LOS	E	E	C	F	D		D	D	A	D	D	A
Approach Delay		40.8			99.4			29.1			37.9	
Approach LOS		D			F			C			D	
Queue Length 50th (ft)	22	77	0	~356	228		37	413	78	139	414	0
Queue Length 95th (ft)	50	114	55	#403	270		98	546	162	m173	m#485	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	292	475	397	568	509		363	1626	1104	406	1784	1152
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.17	0.38	1.12	0.68		0.29	0.68	0.35	0.50	0.80	0.00

Intersection Summary
























Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	145
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.12
Intersection Signal Delay:	48.4
Intersection LOS:	D
Intersection Capacity Utilization:	76.2%
ICU Level of Service:	D
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd

 Ø1 29.4 s	 Ø2 (R) 42.6 s	 Ø3 30 s	 Ø4 43 s
 Ø5 30.4 s	 Ø6 (R) 41.6 s	 Ø7 30 s	 Ø8 43 s

Lanes, Volumes, Timings
2030 Background

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	56	111	345	44	165	88	1446	400	219	1585	6
Future Volume (vph)	26	56	111	345	44	165	88	1446	400	219	1585	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.881				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1641	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.059			0.055		
Satd. Flow (perm)	1770	1863	1583	3433	1641	0	110	3539	1583	102	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132		126				119			56
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	31	67	132	426	54	204	107	1763	488	249	1801	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	67	132	426	258	0	107	1763	488	249	1801	7
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Over	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases							2			6		6

Lanes, Volumes, Timings
2030 Background

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023











Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	10.5	11.0	24.0		10.5	25.0		9.5	25.0	11.0
Total Split (s)	30.0	43.0	30.4	30.0	43.0		30.4	42.6		29.4	41.6	30.0
Total Split (%)	20.7%	29.7%	21.0%	20.7%	29.7%		21.0%	29.4%		20.3%	28.7%	20.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.0	2.5	2.5		2.0	3.5		1.0	3.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		4.5	7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	8.0	10.6	9.0	22.3	27.2		81.1	70.6	98.9	98.1	81.1	96.1
Actuated g/C Ratio	0.06	0.07	0.06	0.15	0.19		0.56	0.49	0.68	0.68	0.56	0.66
v/c Ratio	0.32	0.49	0.59	0.81	0.63		0.65	1.02	0.44	0.82	0.91	0.01
Control Delay	73.6	76.2	21.2	71.7	34.4		47.7	64.8	10.7	47.5	42.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	76.2	21.2	71.7	34.4		47.7	64.8	10.7	47.5	42.2	0.0
LOS	E	E	C	E	C		D	E	B	D	D	A
Approach Delay		44.3			57.6			52.8			42.7	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	29	62	0	200	116		47	~983	151	211	631	0
Queue Length 95th (ft)	60	104	53	230	175		104	#1095	241	m203	m505	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	292	475	381	568	512		356	1723	1134	363	1979	1236
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.14	0.35	0.75	0.50		0.30	1.02	0.43	0.69	0.91	0.01

Intersection Summary
























Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	145
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.02
Intersection Signal Delay:	49.2
Intersection LOS:	D
Intersection Capacity Utilization:	88.3%
ICU Level of Service:	E
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd

 Ø1 29.4 s	 Ø2 (R) 42.6 s	 Ø3 30 s	 Ø4 43 s
 Ø5 30.4 s	 Ø6 (R) 41.6 s	 Ø7 30 s	 Ø8 43 s

Lanes, Volumes, Timings
2030 Background

Clinton Hwy at Powell Dr
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	65	53	213	36	500	17	910	81	357	1588	0
Future Volume (vph)	15	65	53	213	36	500	17	910	81	357	1588	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.991		0.950	0.966		0.950			0.950		
Satd. Flow (prot)	0	1846	1583	1681	1709	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.902		0.950	0.966		0.950			0.950		
Satd. Flow (perm)	0	1680	1583	1681	1709	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			484			86			
Link Speed (mph)		15			40			50			50	
Link Distance (ft)		243			1167			1995			1947	
Travel Time (s)		11.0			19.9			27.2			26.6	
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	17	74	60	222	38	521	21	1123	100	401	1784	0
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	0	91	60	129	131	521	21	1123	100	401	1784	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases		4		3	3	5	1	6	3	5	2	
Permitted Phases	4		4			3			6			

Lanes, Volumes, Timings
2030 Background

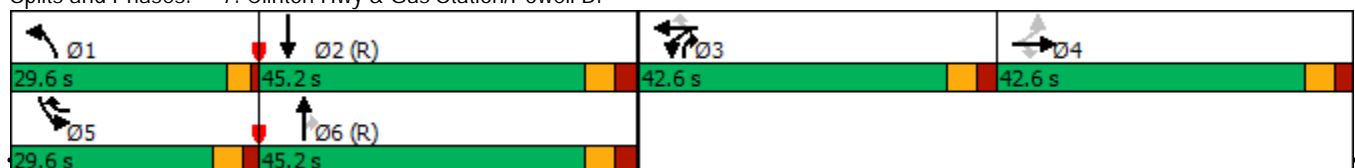


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	10.5	9.5	24.5	24.0	10.5	24.5	
Total Split (s)	42.6	42.6	42.6	42.6	42.6	29.6	29.6	45.2	42.6	29.6	45.2	
Total Split (%)	26.6%	26.6%	26.6%	26.6%	26.6%	18.5%	18.5%	28.3%	26.6%	18.5%	28.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.0	1.0	3.0	2.5	2.0	3.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	4.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		12.8	12.8	16.7	16.7	40.3	7.4	83.4	106.6	23.1	104.5	
Actuated g/C Ratio		0.08	0.08	0.10	0.10	0.25	0.05	0.52	0.67	0.14	0.65	
v/c Ratio		0.68	0.27	0.74	0.74	0.68	0.26	0.61	0.09	0.81	0.77	
Control Delay		95.1	4.1	92.6	92.3	8.2	80.5	30.9	3.3	79.2	25.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		95.1	4.1	92.6	92.3	8.2	80.5	30.9	3.3	79.2	25.1	
LOS		F	A	F	F	A	F	C	A	E	C	
Approach Delay		59.0			36.2			29.5			35.0	
Approach LOS		E			D			C			D	
Queue Length 50th (ft)		94	0	140	142	24	22	423	5	212	701	
Queue Length 95th (ft)		150	4	211	213	86	47	531	25	258	994	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		384	440	384	390	776	283	1844	1269	544	2311	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.24	0.14	0.34	0.34	0.67	0.07	0.61	0.08	0.74	0.77	

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	125
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	34.5
Intersection LOS:	C
Intersection Capacity Utilization:	75.4%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



Lanes, Volumes, Timings
2030 Background

Clinton Hwy at Powell Dr
02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↖
Traffic Volume (vph)	23	70	51	170	45	343	43	1444	199	505	1495	4
Future Volume (vph)	23	70	51	170	45	343	43	1444	199	505	1495	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.988		0.950	0.972		0.950			0.950		
Satd. Flow (prot)	0	1840	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.879		0.950	0.972		0.950			0.950		
Satd. Flow (perm)	0	1637	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			357			133			
Link Speed (mph)		15			40			50				50
Link Distance (ft)		243			1167			1995				1947
Travel Time (s)		11.0			19.9			27.2				26.6
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	26	80	58	177	47	357	53	1783	246	567	1680	4
Shared Lane Traffic (%)				37%								
Lane Group Flow (vph)	0	106	58	112	112	357	53	1783	246	567	1684	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases		4		3	3	5	1	6	3	5	2	
Permitted Phases	4		4			3			6			

Lanes, Volumes, Timings
2030 Background

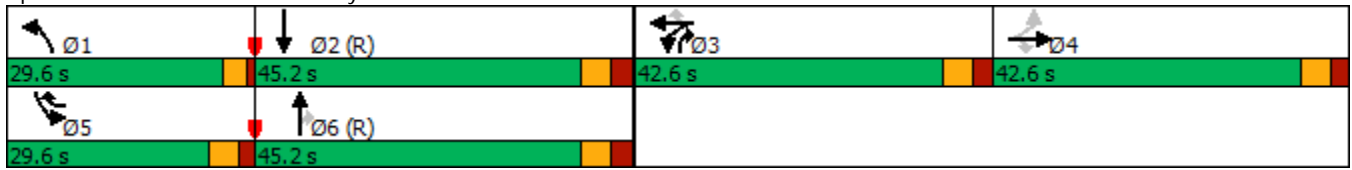


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	10.5	9.5	24.5	24.0	10.5	24.5	
Total Split (s)	42.6	42.6	42.6	42.6	42.6	29.6	29.6	45.2	42.6	29.6	45.2	
Total Split (%)	26.6%	26.6%	26.6%	26.6%	26.6%	18.5%	18.5%	28.3%	26.6%	18.5%	28.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.0	1.0	3.0	2.5	2.0	3.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	4.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		14.5	14.5	15.3	15.3	52.2	10.2	69.8	91.6	36.4	99.6	
Actuated g/C Ratio		0.09	0.09	0.10	0.10	0.33	0.06	0.44	0.57	0.23	0.62	
v/c Ratio		0.72	0.25	0.70	0.68	0.47	0.47	1.16	0.26	0.73	0.76	
Control Delay		95.9	2.9	91.7	89.8	4.0	85.2	117.8	8.6	63.5	27.4	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		95.9	2.9	91.7	89.8	4.0	85.2	117.8	8.6	63.5	27.4	
LOS		F	A	F	F	A	F	F	A	E	C	
Approach Delay		63.0			37.4			104.1			36.5	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)		110	0	122	122	0	55	~1130	51	289	661	
Queue Length 95th (ft)		169	1	189	189	45	91	#1241	91	348	963	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		374	440	384	393	757	283	1543	1156	781	2203	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.28	0.13	0.29	0.28	0.47	0.19	1.16	0.21	0.73	0.76	

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.16
Intersection Signal Delay:	65.2
Intersection LOS:	E
Intersection Capacity Utilization:	81.9%
ICU Level of Service:	D
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



Lanes, Volumes, Timings
2030 Background

W Emory Rd at Harrel Rd / Carpenter Rd

02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	371	127	161	803	1	43	17	110	8	30	44
Future Volume (vph)	7	371	127	161	803	1	43	17	110	8	30	44
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		100	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.965			0.989	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1798	1583	0	1842	1583
Flt Permitted	0.339			0.382				0.759			0.908	
Satd. Flow (perm)	631	1863	1583	712	1863	1583	0	1414	1583	0	1691	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			48			143			143
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		777			1040			574			404	
Travel Time (s)		13.2			17.7			13.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	403	138	175	873	1	47	18	120	9	33	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	403	138	175	873	1	0	65	120	0	42	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Background

W Emory Rd at Harrel Rd / Carpenter Rd

02/22/2023

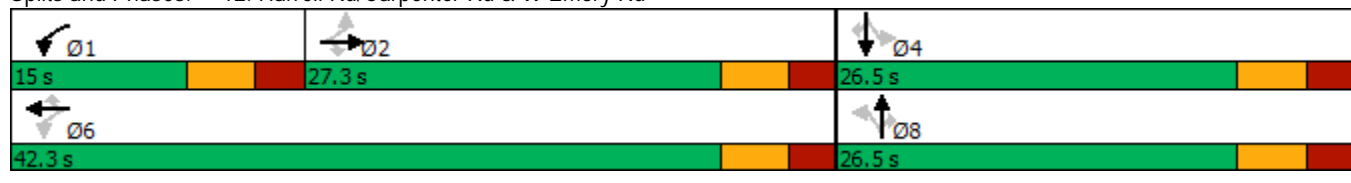


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	11.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	27.3	27.3	27.3	15.0	42.3	42.3	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (%)	39.7%	39.7%	39.7%	21.8%	61.5%	61.5%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	27.8	27.8	27.8	36.9	38.4	38.4		7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.52	0.52	0.52	0.68	0.71	0.71		0.14	0.14		0.14	0.14
v/c Ratio	0.02	0.42	0.16	0.28	0.66	0.00		0.32	0.34		0.17	0.14
Control Delay	12.0	14.7	3.3	5.4	10.0	0.0		26.0	6.6		22.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	12.0	14.7	3.3	5.4	10.0	0.0		26.0	6.6		22.7	0.8
LOS	B	B	A	A	A	A		C	A		C	A
Approach Delay		11.8			9.2			13.4			11.1	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	2	98	0	19	157	0		20	0		13	0
Queue Length 95th (ft)	9	192	28	44	330	0		50	29		36	0
Internal Link Dist (ft)		697			960			494			324	
Turn Bay Length (ft)	100		100	100		100			100			100
Base Capacity (vph)	324	959	884	666	1326	1141		545	699		653	699
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.02	0.42	0.16	0.26	0.66	0.00		0.12	0.17		0.06	0.07

Intersection Summary

Area Type:	Other
Cycle Length:	68.8
Actuated Cycle Length:	53.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	10.5
Intersection LOS:	B
Intersection Capacity Utilization:	71.4%
ICU Level of Service:	C
Analysis Period (min):	15























Splits and Phases: 12: Harrel Rd/Carpenter Rd & W Emory Rd



Lanes, Volumes, Timings
2030 Background

W Emory Rd at Harrel Rd / Carpenter Rd

02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	677	69	107	453	12	76	26	166	8	12	18
Future Volume (vph)	23	677	69	107	453	12	76	26	166	8	12	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		100	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.964			0.980	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1796	1583	0	1825	1583
Flt Permitted	0.484			0.126				0.766			0.846	
Satd. Flow (perm)	902	1863	1583	235	1863	1583	0	1427	1583	0	1576	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			48			180			143
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		777			1040			574			404	
Travel Time (s)		13.2			17.7			13.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	736	75	116	492	13	83	28	180	9	13	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	736	75	116	492	13	0	111	180	0	22	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Background

W Emory Rd at Harrel Rd / Carpenter Rd

02/22/2023

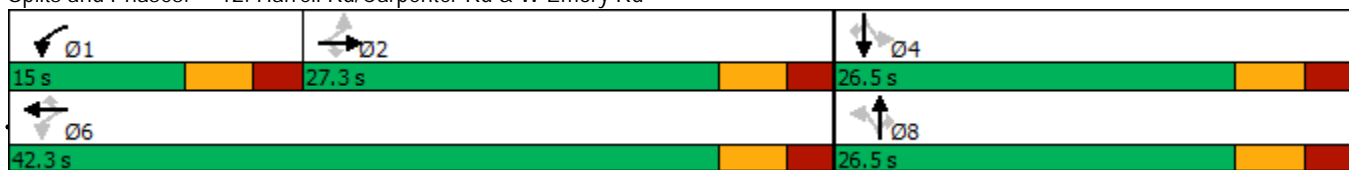


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	11.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	27.3	27.3	27.3	15.0	42.3	42.3	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (%)	39.7%	39.7%	39.7%	21.8%	61.5%	61.5%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	25.8	25.8	25.8	36.4	36.4	36.4		9.8	9.8		9.8	9.8
Actuated g/C Ratio	0.44	0.44	0.44	0.63	0.63	0.63		0.17	0.17		0.17	0.17
v/c Ratio	0.06	0.89	0.10	0.35	0.42	0.01		0.46	0.43		0.08	0.05
Control Delay	13.5	35.9	0.8	8.1	7.6	0.0		28.1	7.5		20.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	13.5	35.9	0.8	8.1	7.6	0.0		28.1	7.5		20.4	0.3
LOS	B	D	A	A	A	A		C	A		C	A
Approach Delay		32.1			7.5			15.3			10.8	
Approach LOS		C			A			B			B	
Queue Length 50th (ft)	5	242	0	14	73	0		35	0		7	0
Queue Length 95th (ft)	21	#537	6	37	159	1		76	42		22	0
Internal Link Dist (ft)		697			960			494			324	
Turn Bay Length (ft)	100		100	100		100			100			100
Base Capacity (vph)	399	825	780	384	1164	1007		503	675		556	651
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.06	0.89	0.10	0.30	0.42	0.01		0.22	0.27		0.04	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 68.8
 Actuated Cycle Length: 58.2
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 20.3 Intersection LOS: C
 Intersection Capacity Utilization 68.8% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

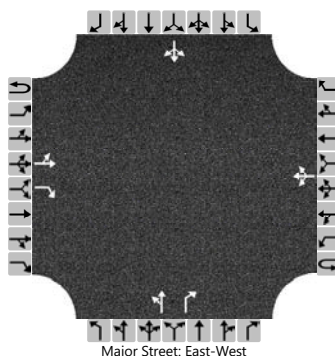
Splits and Phases: 12: Harrell Rd/Carpenter Rd & W Emory Rd



HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR	Intersection	W Emory Road at Bill Bell Way				
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	Knox County				
Date Performed	2/22/2023	East/West Street	W Emory Road				
Analysis Year	2030	North/South Street	Bill Bell Way				
Time Analyzed	AM Peak	Peak Hour Factor	0.88				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description	2030 Background						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	511	119		14	647	0		63	0	21		0	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

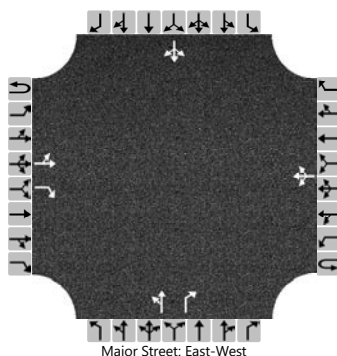
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				16				72		24			0	
Capacity, c (veh/h)		866				880				111		468			0	
v/c Ratio		0.00				0.02				0.65		0.05				
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				3.3		0.2				
Control Delay (s/veh)		9.2	0.0			9.2	0.3	0.3		83.4		13.1				
Level of Service (LOS)		A	A			A	A	A		F		B				
Approach Delay (s/veh)	0.0				0.5				65.8							
Approach LOS	A				A				F							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Bill Bell Way		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	Bill Bell Way		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Background						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	683	105		26	645	4		63	2	24		1	1	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33























Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				27				66		24			2	
Capacity, c (veh/h)		922				816				100		409			106	
v/c Ratio		0.00				0.03				0.66		0.06			0.02	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				3.3		0.2			0.1	
Control Delay (s/veh)		8.9	0.0			9.6	0.5	0.5		93.1		14.4			39.5	
Level of Service (LOS)		A	A			A	A	A		F		B			E	
Approach Delay (s/veh)	0.0				0.8				71.8				39.5			
Approach LOS	A				A				F				E			

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd

02/22/2023

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	97	58	519	32	106	6	539	645	49	19	1022	109	
Future Volume (vph)	97	58	519	32	106	6	539	645	49	19	1022	109	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		190	0		0	310		125	160		185	
Storage Lanes	0		1	0		0	1		1	1		1	
Taper Length (ft)	25			25			100			75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frt			0.850		0.994				0.850			0.850	
Flt Protected		0.970			0.989		0.950			0.950			
Satd. Flow (prot)	0	1807	1583	0	1831	0	1770	3539	1583	1770	3539	1583	
Flt Permitted		0.608			0.796		0.950			0.373			
Satd. Flow (perm)	0	1133	1583	0	1474	0	1770	3539	1583	695	3539	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			458		2				53			75	
Link Speed (mph)		40			30			50			50		
Link Distance (ft)		1686			440			784			845		
Travel Time (s)		28.7			10.0			10.7			11.5		
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91	
Adj. Flow (vph)	113	67	603	38	126	7	613	733	56	21	1123	120	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	180	603	0	171	0	613	733	56	21	1123	120	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)		0			0			12			12		
Link Offset(ft)		0			0			0			0		
Crosswalk Width(ft)		16			16			16			16		
Two way Left Turn Lane													
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel													
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94		
Detector 2 Size(ft)		6			6			6			6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel													
Detector 2 Extend (s)		0.0			0.0			0.0			0.0		
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA	Perm	Perm	NA	Perm	
Protected Phases		8			4		5	2			6		
Permitted Phases	8		8	4					2	6		6	

Lanes, Volumes, Timings
2030 Combined



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	52.5	52.5	52.5	52.5	52.5		39.5	92.5	92.5	53.0	53.0	53.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	36.2%		27.2%	63.8%	63.8%	36.6%	36.6%	36.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		29.9	29.9		29.9		49.1	102.1	102.1	46.5	46.5	46.5
Actuated g/C Ratio		0.21	0.21		0.21		0.34	0.70	0.70	0.32	0.32	0.32
v/c Ratio		0.77	0.87		0.56		1.03	0.29	0.05	0.09	0.99	0.22
Control Delay		73.8	26.7		56.1		96.1	3.6	0.3	36.2	73.2	15.6
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		73.8	26.7		56.1		96.1	3.6	0.3	36.2	73.2	15.6
LOS		E	C		E		F	A	A	D	E	B
Approach Delay		37.6			56.1			43.9			67.1	
Approach LOS		D			E			D			E	
Queue Length 50th (ft)		165	149		147		509	55	0	14	555	30
Queue Length 95th (ft)		206	233		178		#1041	78	m0	37	#712	80
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		359	814		468		598	2490	1129	222	1134	558
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.50	0.74		0.37		1.03	0.29	0.05	0.09	0.99	0.22

Intersection Summary






















Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 51.2 Intersection LOS: D
 Intersection Capacity Utilization 89.5% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	135	623	23	146	27	617	1028	107	33	1316	141
Future Volume (vph)	141	135	623	23	146	27	617	1028	107	33	1316	141
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	310		125	160		185
Storage Lanes	0		1	0		0	1		1	1		1
Taper Length (ft)	25			25			100			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.981				0.850			0.850
Flt Protected		0.975			0.994		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1816	0	1770	3539	1583	1770	3539	1583
Flt Permitted		0.618			0.832		0.950			0.242		
Satd. Flow (perm)	0	1151	1583	0	1520	0	1770	3539	1583	451	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			454		6				73			75
Link Speed (mph)		40			30			50			50	
Link Distance (ft)		1686			440			784			845	
Travel Time (s)		28.7			10.0			10.7			11.5	
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	164	157	724	27	174	32	701	1168	122	36	1446	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	724	0	233	0	701	1168	122	36	1446	155
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4					2	6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd
02/22/2023

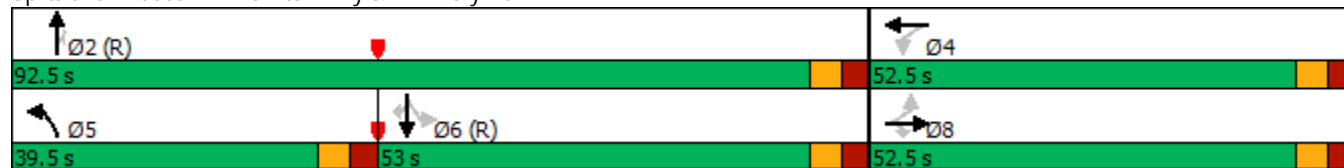


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	52.5	52.5	52.5	52.5	52.5		39.5	92.5	92.5	53.0	53.0	53.0
Total Split (%)	36.2%	36.2%	36.2%	36.2%	36.2%		27.2%	63.8%	63.8%	36.6%	36.6%	36.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		43.3	43.3		43.3		35.7	88.7	88.7	46.5	46.5	46.5
Actuated g/C Ratio		0.30	0.30		0.30		0.25	0.61	0.61	0.32	0.32	0.32
v/c Ratio		0.93	0.92		0.51		1.61	0.54	0.12	0.25	1.28	0.28
Control Delay		83.5	34.8		44.7		319.8	6.5	0.1	42.2	171.2	20.0
Queue Delay		0.0	0.0		0.0		0.0	0.2	0.0	0.0	0.0	0.0
Total Delay		83.5	34.8		44.7		319.8	6.7	0.1	42.2	171.2	20.0
LOS		F	C		D		F	A	A	D	F	B
Approach Delay		49.7			44.7			116.6			154.0	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)		288	286		173		-968	68	1	25	-905	54
Queue Length 95th (ft)		#430	#440		237		m#781	m58	m0	60	#1046	114
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		365	812		486		435	2164	996	144	1134	558
Starvation Cap Reductn		0	0		0		0	330	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.88	0.89		0.48		1.61	0.64	0.12	0.25	1.28	0.28

Intersection Summary

Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	145
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.61
Intersection Signal Delay:	111.4
Intersection LOS:	F
Intersection Capacity Utilization:	117.7%
ICU Level of Service:	H
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.
























Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd / Bill Bell Way

02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	104	159	516	75	220	91	953	313	218	1307	2
Future Volume (vph)	20	104	159	516	75	220	91	953	313	218	1307	2
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.888				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1654	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.069			0.079		
Satd. Flow (perm)	1770	1863	1583	3433	1654	0	129	3539	1583	147	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		97				142			56
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	24	124	189	637	93	272	111	1162	382	248	1485	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	124	189	637	365	0	111	1162	382	248	1485	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Over	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases							2			6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023











Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	10.5	11.0	24.0		10.5	25.0		9.5	25.0	11.0
Total Split (s)	30.0	43.0	30.4	30.0	43.0		30.4	42.6		29.4	41.6	30.0
Total Split (%)	20.7%	29.7%	21.0%	20.7%	29.7%		21.0%	29.4%		20.3%	28.7%	20.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.0	2.5	2.5		2.0	3.5		1.0	3.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		4.5	7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	7.5	16.7	9.9	24.0	37.9		71.8	60.4	90.4	87.8	70.0	84.5
Actuated g/C Ratio	0.05	0.12	0.07	0.17	0.26		0.50	0.42	0.62	0.61	0.48	0.58
v/c Ratio	0.26	0.58	0.67	1.12	0.72		0.63	0.79	0.37	0.78	0.87	0.00
Control Delay	72.5	70.3	20.1	129.4	44.8		44.6	42.7	10.8	56.4	40.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	70.3	20.1	129.4	44.8		44.6	42.7	10.8	56.4	40.8	0.0
LOS	E	E	C	F	D		D	D	B	E	D	A
Approach Delay		42.3			98.6			35.4			43.0	
Approach LOS		D			F			D			D	
Queue Length 50th (ft)	22	114	0	~356	251		46	486	95	199	466	0
Queue Length 95th (ft)	50	156	59	#403	292		111	#688	187	m240	m#866	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	292	475	428	568	521		357	1474	1040	375	1707	1119
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.26	0.44	1.12	0.70		0.31	0.79	0.37	0.66	0.87	0.00

Intersection Summary
























Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	145
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.12
Intersection Signal Delay:	52.1
Intersection LOS:	D
Intersection Capacity Utilization:	78.0%
ICU Level of Service:	D
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd

 Ø1 29.4 s	 Ø2 (R) 42.6 s	 Ø3 30 s	 Ø4 43 s
 Ø5 30.4 s	 Ø6 (R) 41.6 s	 Ø7 30 s	 Ø8 43 s

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	80	130	345	75	200	88	1547	400	241	1667	6
Future Volume (vph)	26	80	130	345	75	200	88	1547	400	241	1667	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.891				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1660	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.068			0.063		
Satd. Flow (perm)	1770	1863	1583	3433	1660	0	127	3539	1583	117	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		89				111			56
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	31	95	155	426	93	247	107	1887	488	274	1894	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	95	155	426	340	0	107	1887	488	274	1894	7
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Over	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases							2			6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd / Bill Bell Way
02/22/2023











Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	10.5	11.0	24.0		10.5	25.0		9.5	25.0	11.0
Total Split (s)	30.0	43.0	30.4	30.0	43.0		30.4	42.6		29.4	41.6	30.0
Total Split (%)	20.7%	29.7%	21.0%	20.7%	29.7%		21.0%	29.4%		20.3%	28.7%	20.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.0	2.5	2.5		2.0	3.5		1.0	3.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		4.5	7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	8.0	15.0	9.6	22.3	34.1		72.5	61.4	89.7	91.2	73.7	88.7
Actuated g/C Ratio	0.06	0.10	0.07	0.15	0.24		0.50	0.42	0.62	0.63	0.51	0.61
v/c Ratio	0.32	0.49	0.62	0.81	0.74		0.63	1.26	0.48	0.82	1.05	0.01
Control Delay	73.6	68.5	20.4	71.7	48.2		44.7	157.5	15.0	51.2	67.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	68.5	20.4	71.7	48.2		44.7	157.5	15.0	51.2	67.4	0.0
LOS	E	E	C	E	D		D	F	B	D	E	A
Approach Delay		42.5			61.3			124.6			65.1	
Approach LOS		D			E			F			E	
Queue Length 50th (ft)	29	88	0	200	237		43	~1169	173	233	~980	0
Queue Length 95th (ft)	60	126	55	230	279		108	#1374	307	m214	m#967	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	292	475	400	568	496		357	1498	1038	373	1797	1158
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.20	0.39	0.75	0.69		0.30	1.26	0.47	0.73	1.05	0.01

Intersection Summary
























Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	145
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.26
Intersection Signal Delay:	89.4
Intersection LOS:	F
Intersection Capacity Utilization:	92.3%
ICU Level of Service:	F
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd

 Ø1 29.4 s	 Ø2 (R) 42.6 s	 Ø3 30 s	 Ø4 43 s
 Ø5 30.4 s	 Ø6 (R) 41.6 s	 Ø7 30 s	 Ø8 43 s

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	65	53	213	36	515	17	943	81	396	1661	0
Future Volume (vph)	15	65	53	213	36	515	17	943	81	396	1661	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.991		0.950	0.966		0.950			0.950		
Satd. Flow (prot)	0	1846	1583	1681	1709	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.902		0.950	0.966		0.950			0.950		
Satd. Flow (perm)	0	1680	1583	1681	1709	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			483			83			
Link Speed (mph)		15			40			50			50	
Link Distance (ft)		243			1167			1995			1947	
Travel Time (s)		11.0			19.9			27.2			26.6	
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	17	74	60	222	38	536	21	1164	100	445	1866	0
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	0	91	60	129	131	536	21	1164	100	445	1866	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases		4		3	3	5	1	6	3	5	2	
Permitted Phases	4		4			3			6			

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr
02/22/2023

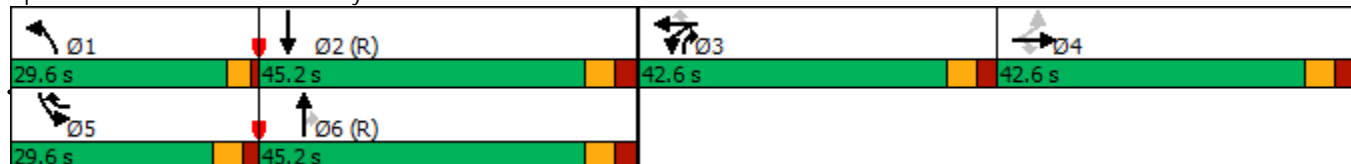


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	10.5	9.5	24.5	24.0	10.5	24.5	
Total Split (s)	42.6	42.6	42.6	42.6	42.6	29.6	29.6	45.2	42.6	29.6	45.2	
Total Split (%)	26.6%	26.6%	26.6%	26.6%	26.6%	18.5%	18.5%	28.3%	26.6%	18.5%	28.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.0	1.0	3.0	2.5	2.0	3.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	4.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		12.8	12.8	16.7	16.7	42.9	7.4	80.8	104.0	25.7	104.5	
Actuated g/C Ratio		0.08	0.08	0.10	0.10	0.27	0.05	0.50	0.65	0.16	0.65	
v/c Ratio		0.68	0.27	0.74	0.74	0.69	0.26	0.65	0.09	0.81	0.81	
Control Delay		95.0	4.1	92.6	92.3	8.5	80.5	33.8	3.8	76.3	26.6	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		95.0	4.1	92.6	92.3	8.5	80.5	33.8	3.8	76.3	26.6	
LOS		F	A	F	F	A	F	C	A	E	C	
Approach Delay		58.9			35.9			32.2			36.2	
Approach LOS		E			D			C			D	
Queue Length 50th (ft)		94	0	140	142	33	22	463	6	235	768	
Queue Length 95th (ft)		150	4	211	213	97	47	572	27	282	#1149	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		384	440	384	390	785	283	1786	1244	574	2311	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.24	0.14	0.34	0.34	0.68	0.07	0.65	0.08	0.78	0.81	

Intersection Summary
























Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 135
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 35.7
 Intersection LOS: D
 Intersection Capacity Utilization 77.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr
02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	70	51	170	45	371	43	1517	199	540	1561	4
Future Volume (vph)	23	70	51	170	45	371	43	1517	199	540	1561	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.988		0.950	0.972		0.950			0.950		
Satd. Flow (prot)	0	1840	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.879		0.950	0.972		0.950			0.950		
Satd. Flow (perm)	0	1637	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			386			126			
Link Speed (mph)		15			40			50				50
Link Distance (ft)		243			1167			1995				1947
Travel Time (s)		11.0			19.9			27.2				26.6
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	26	80	58	177	47	386	53	1873	246	607	1754	4
Shared Lane Traffic (%)				37%								
Lane Group Flow (vph)	0	106	58	112	112	386	53	1873	246	607	1758	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases		4		3	3	5	1	6	3	5	2	
Permitted Phases	4		4			3			6			

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr
02/22/2023









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	10.5	9.5	24.5	24.0	10.5	24.5	
Total Split (s)	42.6	42.6	42.6	42.6	42.6	29.6	29.6	45.2	42.6	29.6	45.2	
Total Split (%)	26.6%	26.6%	26.6%	26.6%	26.6%	18.5%	18.5%	28.3%	26.6%	18.5%	28.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.0	1.0	3.0	2.5	2.0	3.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	4.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		14.5	14.5	15.3	15.3	56.5	10.2	65.5	87.3	40.7	99.6	
Actuated g/C Ratio		0.09	0.09	0.10	0.10	0.35	0.06	0.41	0.55	0.25	0.62	
v/c Ratio		0.72	0.25	0.70	0.68	0.48	0.47	1.29	0.27	0.70	0.80	
Control Delay		95.6	2.9	91.7	89.8	3.7	85.2	175.7	9.9	59.6	28.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		95.6	2.9	91.7	89.8	3.7	85.2	175.7	9.9	59.6	28.8	
LOS		F	A	F	F	A	F	F	A	E	C	
Approach Delay		62.8			35.7			154.7			36.7	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)		110	0	122	122	0	55	~1271	58	306	718	
Queue Length 95th (ft)		169	1	189	189	44	91	#1355	98	370	#1098	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		374	440	384	393	808	283	1449	1115	872	2202	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.28	0.13	0.29	0.28	0.48	0.19	1.29	0.22	0.70	0.80	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.29
 Intersection Signal Delay: 85.7
 Intersection LOS: F
 Intersection Capacity Utilization 84.9%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.























Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr

 Ø1 29.6 s	 Ø2 (R) 45.2 s	 Ø3 42.6 s	 Ø4 42.6 s
 Ø5 29.6 s	 Ø6 (R) 45.2 s		

Lanes, Volumes, Timings
2030 Combined

W Emory Rd at Harrel Rd / Carpenter Rd

02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	467	127	239	1031	1	43	17	153	8	30	44
Future Volume (vph)	7	467	127	239	1031	1	43	17	153	8	30	44
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		100	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.965			0.989	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1798	1583	0	1842	1583
Flt Permitted	0.178			0.262				0.759			0.908	
Satd. Flow (perm)	332	1863	1583	488	1863	1583	0	1414	1583	0	1691	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			48			166			143
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		777			1040			574			404	
Travel Time (s)		13.2			17.7			13.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	508	138	260	1121	1	47	18	166	9	33	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	508	138	260	1121	1	0	65	166	0	42	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Combined

W Emory Rd at Harrel Rd / Carpenter Rd
02/22/2023

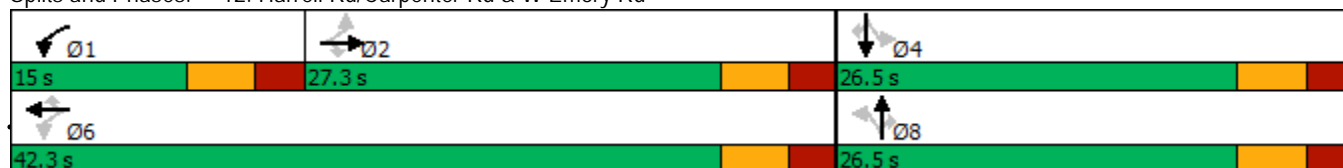


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	11.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	27.3	27.3	27.3	15.0	42.3	42.3	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (%)	39.7%	39.7%	39.7%	21.8%	61.5%	61.5%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	22.4	22.4	22.4	36.8	38.3	38.3		7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.42	0.42	0.42	0.68	0.71	0.71		0.14	0.14		0.14	0.14
v/c Ratio	0.06	0.66	0.19	0.49	0.85	0.00		0.32	0.45		0.17	0.14
Control Delay	13.6	20.4	3.5	7.7	18.5	0.0		25.9	8.7		22.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	13.6	20.4	3.5	7.7	18.5	0.0		25.9	8.7		22.7	0.8
LOS	B	C	A	A	B	A		C	A		C	A
Approach Delay		16.8			16.5			13.6			11.0	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	2	140	0	29	271	0		20	0		13	0
Queue Length 95th (ft)	10	#292	28	64	#629	0		50	43		36	0
Internal Link Dist (ft)		697			960			494			324	
Turn Bay Length (ft)	100		100	100		100			100			100
Base Capacity (vph)	138	775	742	550	1325	1140		545	712		652	698
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.06	0.66	0.19	0.47	0.85	0.00		0.12	0.23		0.06	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 68.8
 Actuated Cycle Length: 53.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 16.1
 Intersection LOS: B
 Intersection Capacity Utilization 83.4%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 12: Harrell Rd/Carpenter Rd & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

W Emory Rd at Harrel Rd / Carpenter Rd
02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	919	69	165	611	12	76	26	269	8	12	18
Future Volume (vph)	23	919	69	165	611	12	76	26	269	8	12	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		100	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.964			0.980	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1796	1583	0	1825	1583
Flt Permitted	0.413			0.139				0.766			0.852	
Satd. Flow (perm)	769	1863	1583	259	1863	1583	0	1427	1583	0	1587	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			48			292			143
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		777			1040			574			404	
Travel Time (s)		13.2			17.7			13.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	999	75	179	664	13	83	28	292	9	13	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	999	75	179	664	13	0	111	292	0	22	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Combined

W Emory Rd at Harrell Rd / Carpenter Rd

02/22/2023

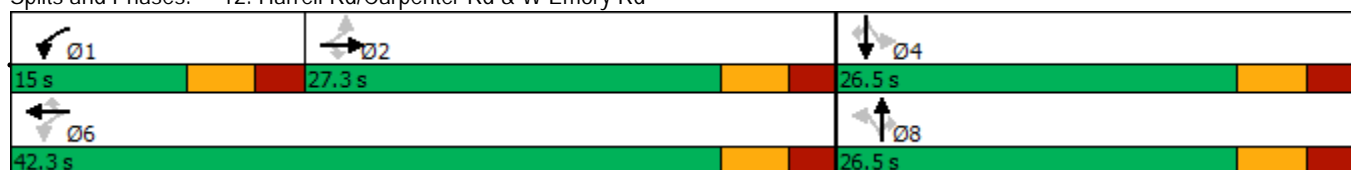


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	11.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	27.3	27.3	27.3	15.0	42.3	42.3	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (%)	39.7%	39.7%	39.7%	21.8%	61.5%	61.5%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	22.7	22.7	22.7	36.4	36.4	36.4		10.3	10.3		10.3	10.3
Actuated g/C Ratio	0.39	0.39	0.39	0.62	0.62	0.62		0.18	0.18		0.18	0.18
v/c Ratio	0.08	1.39	0.11	0.50	0.58	0.01		0.44	0.56		0.08	0.05
Control Delay	14.9	207.1	0.9	11.7	10.0	0.0		27.0	7.7		19.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	14.9	207.1	0.9	11.7	10.0	0.0		27.0	7.7		19.9	0.2
LOS	B	F	A	B	A	A		C	A		B	A
Approach Delay		188.6			10.2			13.0			10.5	
Approach LOS		F			B			B			B	
Queue Length 50th (ft)	5	-481	0	22	113	0		35	0		7	0
Queue Length 95th (ft)	22	#793	5	70	259	1		75	52		22	0
Internal Link Dist (ft)		697			960			494			324	
Turn Bay Length (ft)	100		100	100		100			100			100
Base Capacity (vph)	296	718	697	392	1153	998		499	743		555	646
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.08	1.39	0.11	0.46	0.58	0.01		0.22	0.39		0.04	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 68.8
 Actuated Cycle Length: 58.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.39
 Intersection Signal Delay: 92.4
 Intersection LOS: F
 Intersection Capacity Utilization 84.8%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

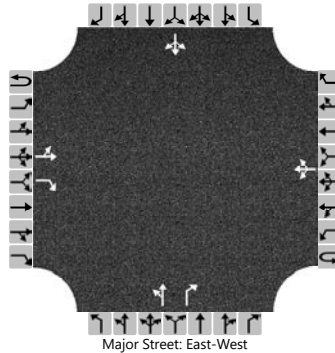
Splits and Phases: 12: Harrell Rd/Carpenter Rd & W Emory Rd



HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Bill Bell Way		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	Bill Bell Way		
Time Analyzed	AM Peak			Peak Hour Factor	0.88		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	652	184		14	727	0		74	0	21		0	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

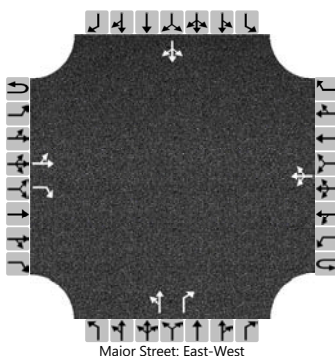
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				16				84		24			0	
Capacity, c (veh/h)		800				719				69		361			0	
v/c Ratio		0.00				0.02				1.22		0.07				
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				6.6		0.2				
Control Delay (s/veh)		9.5	0.0			10.1	0.4	0.4		282.8		15.7				
Level of Service (LOS)		A	A			B	A	A		F		C				
Approach Delay (s/veh)	0.0				0.6				223.7							
Approach LOS	A				A				F							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Bill Bell Way		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	Bill Bell Way		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	865	148		26	894	4		94	2	24		1	1	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

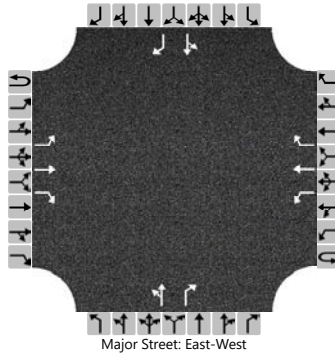
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				27				98		24			2		
Capacity, c (veh/h)		740				668				46		311			50		
v/c Ratio		0.00				0.04				2.15		0.08			0.04		
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				10.2		0.3			0.1		
Control Delay (s/veh)		9.9	0.0			10.6	0.9	0.9		720.6		17.6			79.8		
Level of Service (LOS)		A	A			B	A	A		F		C			F		
Approach Delay (s/veh)		0.0				1.1				580.0				79.8			
Approach LOS		A				A				F				F			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at West Access		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	West Access		
Time Analyzed	AM Peak			Peak Hour Factor	0.88		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	1	1	1	0	1	1	1		0	1	1		0	1	1
Configuration		L	T	R		L	T	R		LT		R		LT		R
Volume (veh/h)		17	590	17		10	916	13		47	0	31		40	0	53
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type Storage	Undivided															

Critical and Follow-up Headways

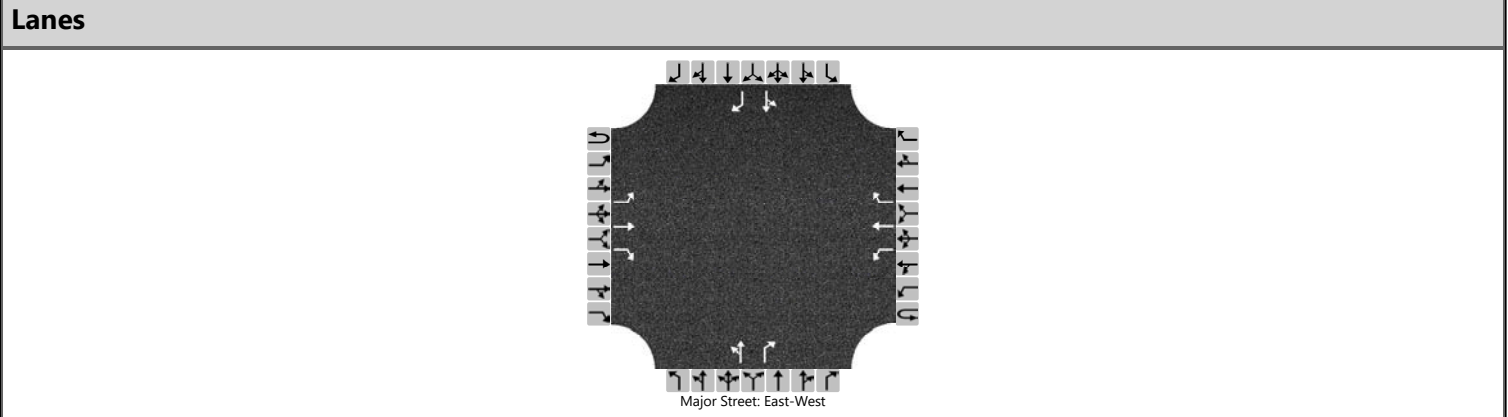
Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		19				11				53		35		45		60
Capacity, c (veh/h)		656				900				48		455		57		278
v/c Ratio		0.03				0.01				1.11		0.08		0.80		0.22
95% Queue Length, Q ₉₅ (veh)		0.1				0.0				4.8		0.3		3.5		0.8
Control Delay (s/veh)		10.7				9.1				298.0		13.6		181.0		21.5
Level of Service (LOS)		B				A				F		B		F		C
Approach Delay (s/veh)	0.3				0.1				185.0				90.1			
Approach LOS	A				A				F				F			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at West Access		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	2/22/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	West Access		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined						



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	1	1	1	0	1	1	1		0	1	1		0	1	1
Configuration		L	T	R		L	T	R		LT		R		LT		R
Volume (veh/h)		56	1073	67		32	863	42		36	0	27		33	0	25
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33























Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		57				33				37		28		34		26	
Capacity, c (veh/h)		736				597				28		259		27		345	
v/c Ratio		0.08				0.05				1.33		0.11		1.26		0.07	
95% Queue Length, Q ₉₅ (veh)		0.3				0.2				4.3		0.4		4.0		0.2	
Control Delay (s/veh)		10.3				11.4				495.7		20.6		480.0		16.3	
Level of Service (LOS)		B				B				F		C		F		C	
Approach Delay (s/veh)		0.5				0.4				292.1				280.1			
Approach LOS		A				A				F				F			

Lanes, Volumes, Timings
2030 Combined

W Emory Rd at East Access

02/22/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	560	66	46	733	22	101	0	69	66	0	105
Future Volume (vph)	35	560	66	46	733	22	101	0	69	66	0	105
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	1583	0	1770	1583
Flt Permitted	0.269			0.381				0.710			0.686	
Satd. Flow (perm)	501	1863	1583	710	1863	1583	0	1323	1583	0	1278	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			27			75			114
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		650			869			706			641	
Travel Time (s)		11.1			14.8			19.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	609	72	50	797	24	110	0	75	72	0	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	609	72	50	797	24	0	110	75	0	72	114
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Combined

W Emory Rd at East Access

02/22/2023

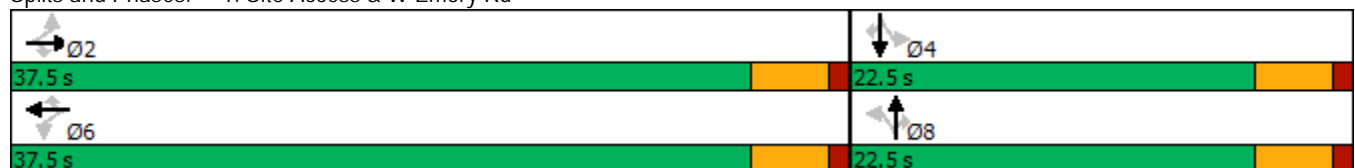


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.5	37.5	37.5	37.5	37.5	37.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0	33.0	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effect Green (s)	36.9	36.9	36.9	36.9	36.9	36.9		9.6	9.6		9.6	9.6
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70	0.70		0.18	0.18		0.18	0.18
v/c Ratio	0.11	0.47	0.06	0.10	0.61	0.02		0.46	0.21		0.31	0.30
Control Delay	5.5	6.8	1.7	5.1	8.9	2.1		24.9	6.9		21.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	5.5	6.8	1.7	5.1	8.9	2.1		24.9	6.9		21.5	6.7
LOS	A	A	A	A	A	A		C	A		C	A
Approach Delay		6.2			8.5			17.6			12.4	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	52.6
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	8.9
Intersection LOS:	A
Intersection Capacity Utilization:	61.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 1: Site Access & W Emory Rd



Lanes, Volumes, Timings

Baseline

02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	911	123	121	782	85	105	0	107	58	0	50
Future Volume (vph)	99	911	123	121	782	85	105	0	107	58	0	50
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1770	1583	0	1770	1583
Flt Permitted	0.259			0.190				0.716			0.684	
Satd. Flow (perm)	482	1863	1583	354	1863	1583	0	1334	1583	0	1274	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			92			116			54
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		650			869			706			641	
Travel Time (s)		11.1			14.8			19.3			17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	990	134	132	850	92	114	0	116	63	0	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	990	134	132	850	92	0	114	116	0	63	54
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings

Baseline

02/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	57.5	57.5	57.5	57.5	57.5	57.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	71.9%	71.9%	71.9%	71.9%	71.9%	71.9%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%
Maximum Green (s)	53.0	53.0	53.0	53.0	53.0	53.0	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effect Green (s)	55.9	55.9	55.9	55.9	55.9	55.9		11.8	11.8		11.8	11.8
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.15	0.15		0.15	0.15
v/c Ratio	0.31	0.73	0.11	0.51	0.63	0.08		0.56	0.34		0.32	0.19
Control Delay	7.4	11.2	1.1	14.7	8.5	1.2		39.6	8.6		31.6	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	7.4	11.2	1.1	14.7	8.5	1.2		39.6	8.6		31.6	9.7
LOS	A	B	A	B	A	A		D	A		C	A
Approach Delay		9.7			8.7			23.9			21.5	
Approach LOS		A			A			C			C	

Intersection Summary






















Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	76.7
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	11.1
Intersection LOS:	B
Intersection Capacity Utilization:	78.4%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 1: Site Access & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd
03/09/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	58	519	32	106	6	539	645	49	19	1022	109
Future Volume (vph)	97	58	519	32	106	6	539	645	49	19	1022	109
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	310		125	160		185
Storage Lanes	0		1	0		0	2		1	1		1
Taper Length (ft)	25			25			100			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.994				0.850			0.850
Flt Protected		0.970			0.989		0.950			0.950		
Satd. Flow (prot)	0	1807	1583	0	1831	0	3433	3539	1583	1770	3539	1583
Flt Permitted		0.599			0.757		0.950			0.349		
Satd. Flow (perm)	0	1116	1583	0	1402	0	3433	3539	1583	650	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			29		2				56			84
Link Speed (mph)		40			30			50			50	
Link Distance (ft)		1686			440			784			845	
Travel Time (s)		28.7			10.0			10.7			11.5	
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	113	67	603	38	126	7	613	733	56	21	1123	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	180	603	0	171	0	613	733	56	21	1123	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA	Perm	Perm	NA	Perm
Protected Phases		8	5		4		5	2			6	
Permitted Phases	8		8	4					2	6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd
03/09/2023

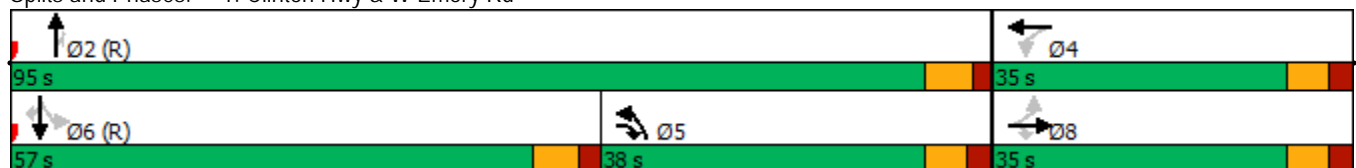


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	5	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	25.5	25.5	25.5	25.5	25.5
Total Split (s)	35.0	35.0	38.0	35.0	35.0		38.0	95.0	95.0	57.0	57.0	57.0
Total Split (%)	26.9%	26.9%	29.2%	26.9%	26.9%		29.2%	73.1%	73.1%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag			Lag				Lag			Lead	Lead	Lead
Lead-Lag Optimize?			Yes				Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		23.9	61.9		23.9		31.5	93.1	93.1	55.1	55.1	55.1
Actuated g/C Ratio		0.18	0.48		0.18		0.24	0.72	0.72	0.42	0.42	0.42
v/c Ratio		0.88	0.78		0.66		0.74	0.29	0.05	0.08	0.75	0.17
Control Delay		88.9	34.8		60.5		29.2	3.8	0.2	25.7	36.4	9.7
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.4	0.0
Total Delay		88.9	34.8		60.5		29.2	3.8	0.2	25.7	36.8	9.7
LOS		F	C		E		C	A	A	C	D	A
Approach Delay		47.2			60.5			14.8			34.0	
Approach LOS		D			E			B			C	
Queue Length 50th (ft)		147	388		132		252	55	0	11	423	18
Queue Length 95th (ft)		#232	481		189		m272	m63	m0	31	534	60
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		244	769		308		831	2533	1149	275	1499	719
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	87	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.74	0.78		0.56		0.74	0.29	0.05	0.08	0.80	0.17

Intersection Summary






















Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 30.7
 Intersection LOS: C
 Intersection Capacity Utilization 84.3%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd
03/09/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	135	623	23	146	27	617	1028	107	33	1316	141
Future Volume (vph)	141	135	623	23	146	27	617	1028	107	33	1316	141
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	310		125	160		185
Storage Lanes	0		1	0		0	2		1	1		1
Taper Length (ft)	25			25			100			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.981				0.850			0.850
Flt Protected		0.975			0.994		0.950			0.950		
Satd. Flow (prot)	0	1816	1583	0	1816	0	3433	3539	1583	1770	3539	1583
Flt Permitted		0.598			0.772		0.950			0.151		
Satd. Flow (perm)	0	1114	1583	0	1411	0	3433	3539	1583	281	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			25		5				79			73
Link Speed (mph)		40			30			50			50	
Link Distance (ft)		1686			440			784			845	
Travel Time (s)		28.7			10.0			10.7			11.5	
Peak Hour Factor	0.86	0.86	0.86	0.84	0.84	0.84	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	164	157	724	27	174	32	701	1168	122	36	1446	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	724	0	233	0	701	1168	122	36	1446	155
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA	Perm	Perm	NA	Perm
Protected Phases		8	5		4		5	2			6	
Permitted Phases	8		8	4					2	6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at W Emory Rd
03/09/2023

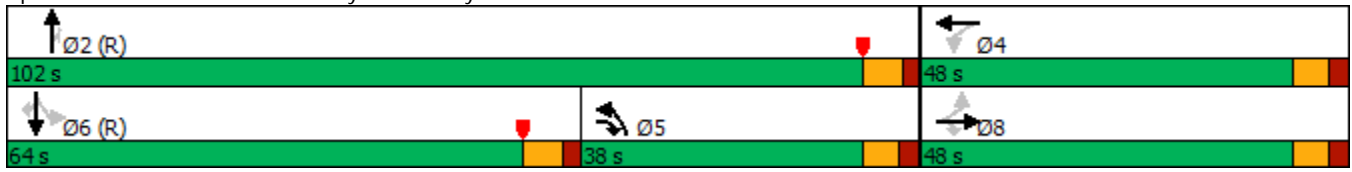


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	5	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	12.0	25.0	25.0		12.0	25.5	25.5	25.5	25.5	25.5
Total Split (s)	48.0	48.0	38.0	48.0	48.0		38.0	102.0	102.0	64.0	64.0	64.0
Total Split (%)	32.0%	32.0%	25.3%	32.0%	32.0%		25.3%	68.0%	68.0%	42.7%	42.7%	42.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag			Lag				Lag			Lead	Lead	Lead
Lead-Lag Optimize?			Yes				Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		41.5	79.5		41.5		31.5	95.5	95.5	57.5	57.5	57.5
Actuated g/C Ratio		0.28	0.53		0.28		0.21	0.64	0.64	0.38	0.38	0.38
v/c Ratio		1.04	0.85		0.59		0.97	0.52	0.12	0.34	1.07	0.24
Control Delay		114.3	40.5		53.1		42.4	4.3	0.1	43.8	88.2	17.2
Queue Delay		0.0	0.0		0.0		0.0	0.3	0.0	0.0	13.9	0.0
Total Delay		114.3	40.5		53.1		42.4	4.6	0.1	43.8	102.1	17.2
LOS		F	D		D		D	A	A	D	F	B
Approach Delay		63.2			53.1			17.6			92.8	
Approach LOS		E			D			B			F	
Queue Length 50th (ft)		~339	575		194		365	71	0	25	~819	52
Queue Length 95th (ft)		#499	717		265		m336	m68	m0	63	#959	107
Internal Link Dist (ft)		1606			360			704			765	
Turn Bay Length (ft)			190				310		125	160		185
Base Capacity (vph)		308	850		393		720	2253	1036	107	1356	651
Starvation Cap Reductn		0	0		0		0	473	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	58	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		1.04	0.85		0.59		0.97	0.66	0.12	0.34	1.11	0.24

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	54 (36%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	54.1
Intersection LOS:	D
Intersection Capacity Utilization:	101.8%
ICU Level of Service:	G
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.



























Splits and Phases: 1: Clinton Hwy & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Bill Bell Way / E Emory Rd

03/03/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Traffic Volume (vph)	20	104	159	516	75	220	91	953	313	218	1307	2
Future Volume (vph)	20	104	159	516	75	220	91	953	313	218	1307	2
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.888				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1654	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.093			0.098		
Satd. Flow (perm)	1770	1863	1583	3433	1654	0	173	3539	1583	183	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176		114				199			134
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	24	124	189	637	93	272	111	1162	382	248	1485	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	124	189	637	365	0	111	1162	382	248	1485	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases			4				2			6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Bill Bell Way / E Emory Rd

03/03/2023

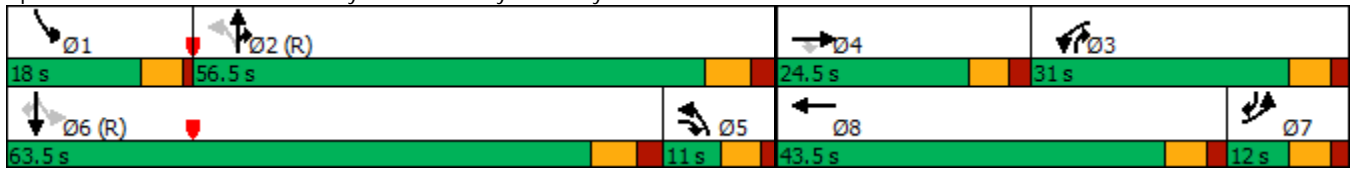


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	23	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.5	24.5	11.0	11.5	24.5		11.0	26.0		10.0	26.0	11.5
Total Split (s)	12.0	24.5	11.0	31.0	43.5		11.0	56.5		18.0	63.5	12.0
Total Split (%)	9.2%	18.8%	8.5%	23.8%	33.5%		8.5%	43.5%		13.8%	48.8%	9.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.5		4.0	4.5	4.0
All-Red Time (s)	2.0	2.0	1.5	2.0	2.0		1.5	2.5		1.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		5.0	7.0	6.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lag		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	9.4	13.8	25.3	27.8	37.0		51.0	49.5	76.3	60.4	58.4	72.4
Actuated g/C Ratio	0.07	0.11	0.19	0.21	0.28		0.39	0.38	0.59	0.46	0.45	0.56
v/c Ratio	0.19	0.63	0.42	0.87	0.66		0.82	0.86	0.38	0.93	0.93	0.00
Control Delay	60.0	69.1	10.4	62.6	35.2		65.3	29.2	2.7	71.6	32.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	69.1	10.4	62.6	35.2		65.3	29.2	2.7	71.6	32.4	0.0
LOS	E	E	B	E	D		E	C	A	E	C	A
Approach Delay		35.5			52.6			25.5			38.0	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	18	102	9	263	212		43	376	7	-149	666	0
Queue Length 95th (ft)	47	150	57	#327	249		m#85	302	66	m#300	#751	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	129	265	449	735	593		135	1347	1011	266	1589	941
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.47	0.42	0.87	0.62		0.82	0.86	0.38	0.93	0.93	0.00

Intersection Summary



























Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	36.5
Intersection LOS:	D
Intersection Capacity Utilization:	78.0%
ICU Level of Service:	D
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Bill Bell Way / E Emory Rd
03/03/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Traffic Volume (vph)	26	80	130	345	75	200	88	1547	400	241	1667	6
Future Volume (vph)	26	80	130	345	75	200	88	1547	400	241	1667	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		85	130		0	105		100	280		80
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	90			40			80			135		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.891				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	1660	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.061			0.062		
Satd. Flow (perm)	1770	1863	1583	3433	1660	0	114	3539	1583	115	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153		80				149			116
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		591			498			1947			784	
Travel Time (s)		13.4			11.3			26.6			10.7	
Peak Hour Factor	0.84	0.84	0.84	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88
Adj. Flow (vph)	31	95	155	426	93	247	107	1887	488	274	1894	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	95	155	426	340	0	107	1887	488	274	1894	7
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA	pt+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	2 3	1	6	7
Permitted Phases			4				2			6		6

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Bill Bell Way / E Emory Rd
03/03/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	5	3	8		5	2	23	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.5	24.5	11.0	11.5	24.5		11.0	26.0		10.0	26.0	11.5
Total Split (s)	11.6	24.5	12.0	24.0	36.9		12.0	80.5		21.0	89.5	11.6
Total Split (%)	7.7%	16.3%	8.0%	16.0%	24.6%		8.0%	53.7%		14.0%	59.7%	7.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.5		4.0	4.5	4.0
All-Red Time (s)	2.0	2.0	1.5	2.0	2.0		1.5	2.5		1.0	2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	6.0	6.0		5.5	7.0		5.0	7.0	6.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lag		Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	None
Act Effct Green (s)	5.8	13.0	25.5	23.1	35.1		75.0	73.5	95.6	84.9	82.9	93.3
Actuated g/C Ratio	0.04	0.09	0.17	0.15	0.23		0.50	0.49	0.64	0.57	0.55	0.62
v/c Ratio	0.45	0.59	0.39	0.81	0.76		0.84	1.09	0.46	1.11	0.97	0.01
Control Delay	91.3	80.2	10.5	73.5	53.0		54.9	63.5	1.7	121.7	25.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	8.2	0.0
Total Delay	91.3	80.2	10.5	73.5	53.0		54.9	63.5	1.7	121.7	33.5	0.0
LOS	F	F	B	E	D		D	E	A	F	C	A
Approach Delay		43.0			64.4			51.0			44.5	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	30	91	2	209	253		48	~1075	16	~263	381	0
Queue Length 95th (ft)	64	139	50	#278	322		m56	#1013	m19	m#298	#853	m0
Internal Link Dist (ft)		511			418			1867			704	
Turn Bay Length (ft)	75		85	130			105		100	280		80
Base Capacity (vph)	69	229	395	529	450		128	1734	1063	246	1955	1029
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	82	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.41	0.39	0.81	0.76		0.84	1.09	0.46	1.11	1.01	0.01

Intersection Summary























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.11
Intersection Signal Delay:	49.9
Intersection LOS:	D
Intersection Capacity Utilization:	92.7%
ICU Level of Service:	F
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Clinton Hwy & Bill Bell Way/W Emory Rd



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr / Gas Station
03/03/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	65	53	213	36	515	17	943	81	396	1661	0
Future Volume (vph)	15	65	53	213	36	515	17	943	81	396	1661	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.991		0.950	0.966		0.950			0.950		
Satd. Flow (prot)	0	1846	1583	1681	1709	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.991		0.950	0.966		0.950			0.950		
Satd. Flow (perm)	0	1846	1583	1681	1709	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			290			100			
Link Speed (mph)		15			40			50			50	
Link Distance (ft)		243			1167			1995			1947	
Travel Time (s)		11.0			19.9			27.2			26.6	
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	17	74	60	222	38	536	21	1164	100	445	1866	0
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	0	91	60	129	131	536	21	1164	100	445	1866	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	5	1	6	3	5	2	
Permitted Phases			4			3			6			

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr / Gas Station
03/03/2023

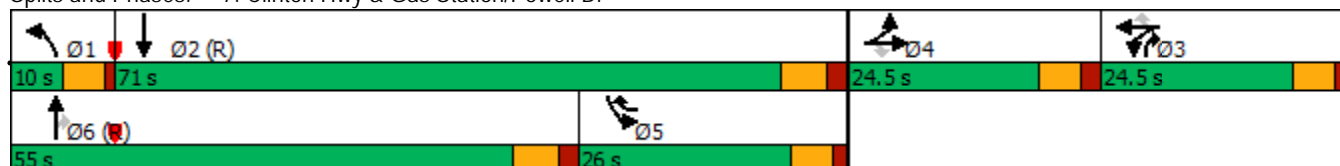


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5	11.0	10.0	25.5	24.5	11.0	25.5	
Total Split (s)	24.5	24.5	24.5	24.5	24.5	26.0	10.0	55.0	24.5	26.0	71.0	
Total Split (%)	18.8%	18.8%	18.8%	18.8%	18.8%	20.0%	7.7%	42.3%	18.8%	20.0%	54.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.5	1.0	2.0	2.0	1.5	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	5.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		10.8	10.8	14.3	14.3	35.3	6.6	60.4	81.2	20.5	79.1	
Actuated g/C Ratio		0.08	0.08	0.11	0.11	0.27	0.05	0.46	0.62	0.16	0.61	
v/c Ratio		0.60	0.21	0.70	0.70	0.84	0.23	0.71	0.10	0.82	0.87	
Control Delay		72.8	1.6	74.9	74.5	25.5	65.4	32.1	2.3	43.0	12.5	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		72.8	1.6	74.9	74.5	25.5	65.4	32.1	2.3	43.0	12.5	
LOS		E	A	E	E	C	E	C	A	D	B	
Approach Delay		44.5			41.5			30.3			18.4	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)		75	0	111	113	154	17	403	0	178	294	
Queue Length 95th (ft)		126	0	176	178	229	41	478	17	m202	#1016	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		262	376	243	247	641	90	1644	1012	541	2153	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.35	0.16	0.53	0.53	0.84	0.23	0.71	0.10	0.82	0.87	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 128 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 26.7 Intersection LOS: C
 Intersection Capacity Utilization 78.2% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
























Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr / Gas Station

03/03/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	70	51	170	45	371	43	1517	199	540	1561	4
Future Volume (vph)	23	70	51	170	45	371	43	1517	199	540	1561	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	240		0
Storage Lanes	0		1	1		1	1		1	2		0
Taper Length (ft)	25			25			25			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.988		0.950	0.972		0.950			0.950		
Satd. Flow (prot)	0	1840	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.988		0.950	0.972		0.950			0.950		
Satd. Flow (perm)	0	1840	1583	1681	1720	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			193			172			
Link Speed (mph)		15			40			50			50	
Link Distance (ft)		243			1167			1995			1947	
Travel Time (s)		11.0			19.9			27.2			26.6	
Peak Hour Factor	0.88	0.88	0.88	0.96	0.96	0.96	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	26	80	58	177	47	386	53	1873	246	607	1754	4
Shared Lane Traffic (%)				37%								
Lane Group Flow (vph)	0	106	58	112	112	386	53	1873	246	607	1758	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	5	1	6	3	5	2	
Permitted Phases			4			3			6			

Lanes, Volumes, Timings
2030 Combined

Clinton Hwy at Powell Dr / Gas Station

03/03/2023

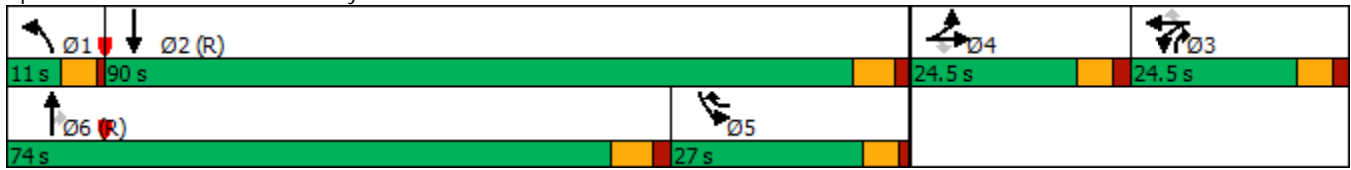


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	3	5	1	6	3	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5	11.0	10.0	25.5	24.5	11.0	25.5	
Total Split (s)	24.5	24.5	24.5	24.5	24.5	27.0	11.0	74.0	24.5	27.0	90.0	
Total Split (%)	16.3%	16.3%	16.3%	16.3%	16.3%	18.0%	7.3%	49.3%	16.3%	18.0%	60.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.5	1.0	2.0	2.0	1.5	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	5.5	5.0	6.5	6.0	5.5	6.5	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	
Act Effct Green (s)		13.0	13.0	14.1	14.1	36.1	8.8	77.4	98.0	21.5	90.7	
Actuated g/C Ratio		0.09	0.09	0.09	0.09	0.24	0.06	0.52	0.65	0.14	0.60	
v/c Ratio		0.67	0.21	0.71	0.70	0.73	0.51	1.03	0.23	1.23	0.82	
Control Delay		85.6	1.7	89.3	87.4	25.3	84.6	63.5	4.0	152.6	13.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		85.6	1.7	89.3	87.4	25.3	84.6	63.5	4.0	152.6	13.3	
LOS		F	A	F	F	C	F	E	A	F	B	
Approach Delay		56.0			48.4			57.2			49.0	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)		102	0	113	113	137	51	~1027	25	-376	296	
Queue Length 95th (ft)		159	0	181	181	208	#113	#1071	50	m#419	m563	
Internal Link Dist (ft)		163			1087			1915			1867	
Turn Bay Length (ft)										240		
Base Capacity (vph)		226	329	208	213	527	103	1827	1082	492	2139	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.47	0.18	0.54	0.53	0.73	0.51	1.03	0.23	1.23	0.82	

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	142 (95%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.23
Intersection Signal Delay:	52.5
Intersection LOS:	D
Intersection Capacity Utilization:	84.9%
ICU Level of Service:	E
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Clinton Hwy & Gas Station/Powell Dr



Lanes, Volumes, Timings
2030 Combined

W Emory Rd Harrell Rd
03/03/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	467	127	239	1031	1	43	17	153	8	30	44
Future Volume (vph)	7	467	127	239	1031	1	43	17	153	8	30	44
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		100	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.965			0.989	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1798	1583	0	1842	1583
Flt Permitted	0.170			0.326				0.759			0.912	
Satd. Flow (perm)	317	1863	1583	607	1863	1583	0	1414	1583	0	1699	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			41			166			123
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		777			1040			574			404	
Travel Time (s)		13.2			17.7			13.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	508	138	260	1121	1	47	18	166	9	33	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	508	138	260	1121	1	0	65	166	0	42	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Combined

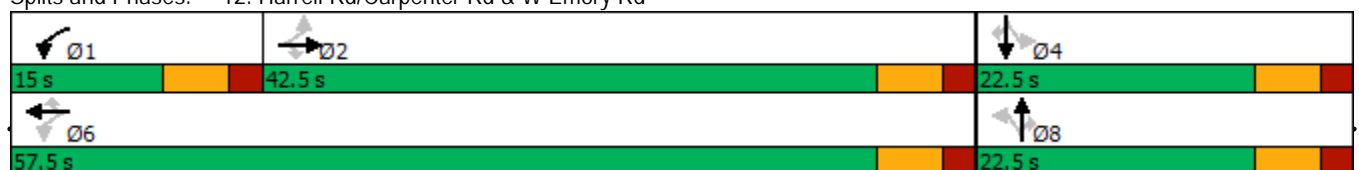


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	11.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.5	42.5	42.5	15.0	57.5	57.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	53.1%	53.1%	53.1%	18.8%	71.9%	71.9%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	37.2	37.2	37.2	51.6	51.6	51.6		8.6	8.6		8.6	8.6
Actuated g/C Ratio	0.52	0.52	0.52	0.71	0.71	0.71		0.12	0.12		0.12	0.12
v/c Ratio	0.05	0.53	0.16	0.46	0.84	0.00		0.38	0.50		0.21	0.16
Control Delay	11.1	14.9	3.3	6.6	16.2	0.0		35.9	10.8		30.8	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	11.1	14.9	3.3	6.6	16.2	0.0		35.9	10.8		30.8	1.2
LOS	B	B	A	A	B	A		D	B		C	A
Approach Delay		12.4			14.4			17.9			15.0	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	2	144	3	31	287	0		27	0		17	0
Queue Length 95th (ft)	9	252	30	65	#715	0		62	50		44	0
Internal Link Dist (ft)		697			960			494			324	
Turn Bay Length (ft)	100		100	100		100			100			100
Base Capacity (vph)	163	961	876	578	1330	1142		323	490		388	457
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.05	0.53	0.16	0.45	0.84	0.00		0.20	0.34		0.11	0.11

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 72.2
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 14.2
 Intersection LOS: B
 Intersection Capacity Utilization 83.4%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 12: Harrell Rd/Carpenter Rd & W Emory Rd



Lanes, Volumes, Timings
2030 Combined

W Emory Rd Harrell Rd
03/03/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	919	69	165	611	12	76	26	269	8	12	18
Future Volume (vph)	23	919	69	165	611	12	76	26	269	8	12	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		100	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.964			0.980	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1796	1583	0	1825	1583
Flt Permitted	0.413			0.072				0.766			0.857	
Satd. Flow (perm)	769	1863	1583	134	1863	1583	0	1427	1583	0	1596	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			36			205			109
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		777			1040			574			404	
Travel Time (s)		13.2			17.7			13.0			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	999	75	179	664	13	83	28	292	9	13	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	999	75	179	664	13	0	111	292	0	22	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4

Lanes, Volumes, Timings
2030 Combined

W Emory Rd Harrell Rd
03/03/2023

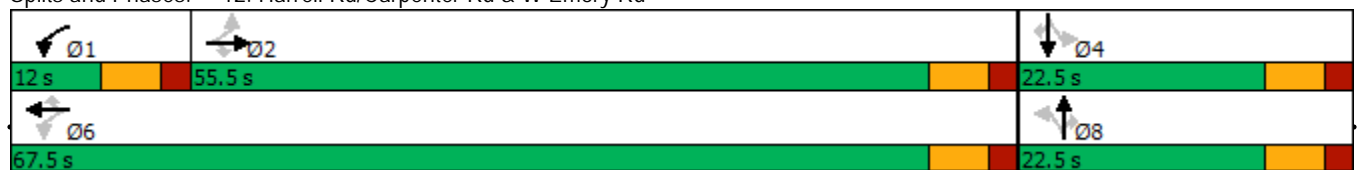


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	11.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	55.5	55.5	55.5	12.0	67.5	67.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	61.7%	61.7%	61.7%	13.3%	75.0%	75.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	49.6	49.6	49.6	61.6	61.6	61.6		11.9	11.9		11.9	11.9
Actuated g/C Ratio	0.58	0.58	0.58	0.72	0.72	0.72		0.14	0.14		0.14	0.14
v/c Ratio	0.06	0.93	0.08	0.85	0.50	0.01		0.56	0.74		0.10	0.06
Control Delay	9.4	33.4	1.1	50.8	7.3	0.3		45.2	23.2		32.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	9.4	33.4	1.1	50.8	7.3	0.3		45.2	23.2		32.2	0.4
LOS	A	C	A	D	A	A		D	C		C	A
Approach Delay		30.6			16.3			29.2			17.1	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	5	448	0	44	128	0		56	43		10	0
Queue Length 95th (ft)	18	#816	10	#173	239	2		108	128		31	0
Internal Link Dist (ft)		697			960			494			324	
Turn Bay Length (ft)	100		100	100		100			100			100
Base Capacity (vph)	445	1079	963	211	1341	1150		275	471		308	393
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.06	0.93	0.08	0.85	0.50	0.01		0.40	0.62		0.07	0.05

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 85.6
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 25.0 Intersection LOS: C
 Intersection Capacity Utilization 84.8% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

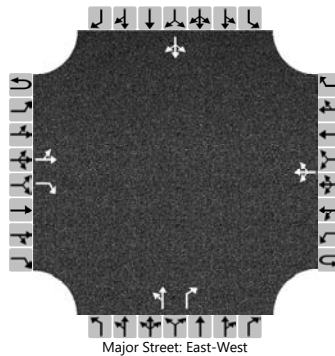
Splits and Phases: 12: Harrell Rd/Carpenter Rd & W Emory Rd



HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Bill Bell Way		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	3/2/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	Bill Bell Way		
Time Analyzed	AM Peak			Peak Hour Factor	0.88		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined w TWLT						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	652	184		14	727	0		74	0	21		0	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Left Only								2							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

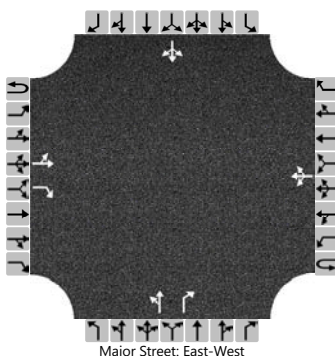
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				16				84		24			0	
Capacity, c (veh/h)		800				719				240		361			0	
v/c Ratio		0.00				0.02				0.35		0.07				
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				1.5		0.2				
Control Delay (s/veh)		9.5	0.0			10.1	0.4	0.4		27.8		15.7				
Level of Service (LOS)		A	A			B	A	A		D		C				
Approach Delay (s/veh)		0.0				0.6				25.1						
Approach LOS		A				A				D						

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at Bill Bell Way		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	3/2/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	Bill Bell Way		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined w TWLT						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	1	0	0	1	0		0	1	1		0	1	0
Configuration		LT		R			LTR			LT		R			LTR	
Volume (veh/h)		0	865	148		26	894	4		94	2	24		1	1	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No								No							
Median Type Storage	Left Only								2							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

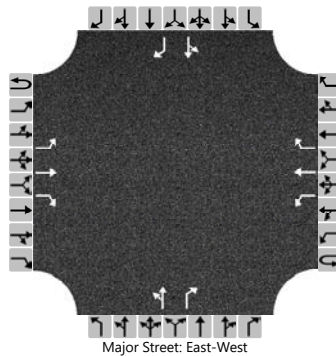
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				27				98		24				2	
Capacity, c (veh/h)		740				668				189		311				85	
v/c Ratio		0.00				0.04				0.52		0.08				0.02	
95% Queue Length, Q ₉₅ (veh)		0.0				0.1				2.6		0.3				0.1	
Control Delay (s/veh)		9.9	0.0			10.6	0.9	0.9		42.9		17.6				48.5	
Level of Service (LOS)		A	A			B	A	A		E		C				E	
Approach Delay (s/veh)		0.0				1.1				37.9				48.5			
Approach LOS		A				A				E				E			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at West Access		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	3/2/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	West Access		
Time Analyzed	AM Peak			Peak Hour Factor	0.88		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined w TWLT						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	1	1	1	0	1	1	1		0	1	1		0	1	1
Configuration		L	T	R		L	T	R		LT		R		LT		R
Volume (veh/h)		17	590	17		10	916	13		47	0	31		40	0	53
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type Storage	Left Only								2							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

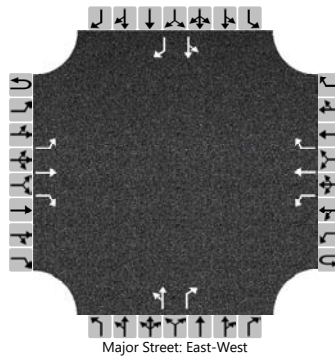
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		19				11				53		35		45		60	
Capacity, c (veh/h)		656				900				166		455		210		278	
v/c Ratio		0.03				0.01				0.32		0.08		0.22		0.22	
95% Queue Length, Q ₉₅ (veh)		0.1				0.0				1.3		0.3		0.8		0.8	
Control Delay (s/veh)		10.7				9.1				36.7		13.6		26.8		21.5	
Level of Service (LOS)		B				A				E		B		D		C	
Approach Delay (s/veh)		0.3				0.1				27.5				23.8			
Approach LOS		A				A				D				C			

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	WDR			Intersection	W Emory Road at West Access		
Agency/Co.	Cannon & Cannon, Inc.			Jurisdiction	Knox County		
Date Performed	3/2/2023			East/West Street	W Emory Road		
Analysis Year	2030			North/South Street	West Access		
Time Analyzed	PM Peak			Peak Hour Factor	0.98		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	2030 Combined w TWLT						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	1	1	1	0	1	1	1		0	1	1		0	1	1
Configuration		L	T	R		L	T	R		LT		R		LT		R
Volume (veh/h)		56	1073	67		32	863	42		36	0	27		33	0	25
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type Storage	Left Only								2							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		57				33				37		28		34		26	
Capacity, c (veh/h)		736				597				142		259		128		345	
v/c Ratio		0.08				0.05				0.26		0.11		0.26		0.07	
95% Queue Length, Q ₉₅ (veh)		0.3				0.2				1.0		0.4		1.0		0.2	
Control Delay (s/veh)		10.3				11.4				39.0		20.6		42.9		16.3	
Level of Service (LOS)		B				B				E		C		E		C	
Approach Delay (s/veh)		0.5				0.4				31.1				31.4			
Approach LOS		A				A				D				D			