

# final report

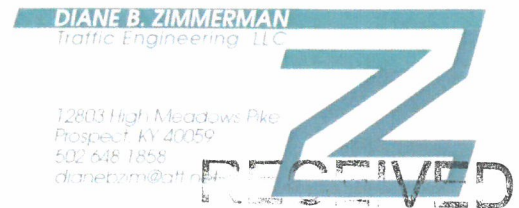
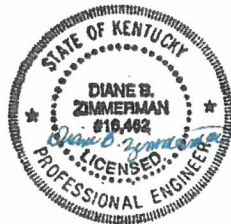
May 18, 2022

## Traffic Impact Study

Apartments  
Mt. Washington Road (KY 2053)  
Louisville, KY

Prepared for

Louisville Metro Planning Commission  
Kentucky Transportation Cabinet



MAY 27 2022

PLANNING & DESIGN  
SERVICES

21-20NE-0130

## Table of Contents

INTRODUCTION .....	2
Figure 1. Site Map.....	2
EXISTING CONDITIONS .....	2
Figure 2. Existing Peak Hour Volumes .....	3
FUTURE CONDITIONS .....	3
Figure 3. 2026 No Build Peak Hour Volumes.....	3
TRIP GENERATION .....	3
Table 1. Peak Hour Trips Generated by Site .....	4
Figure 4. Trip Distribution Percentages .....	4
Figure 5. Peak Hour Trips Generated by Site.....	4
Figure 6. 2026 Build Peak Hour Volumes .....	5
ANALYSIS .....	5
Table 2. Peak Hour Level of Service.....	5
Figure 7. 2036 No Build Peak Hour Volumes.....	6
Figure 8. 2036 Build Peak Hour Volumes .....	6
Table 3. Peak Hour Level of Service (2036) .....	7
CONCLUSIONS .....	7
APPENDIX .....	8



## INTRODUCTION

The development plan for apartments on Mt. Washington Road Apartments shows 666 apartment units. **Figure 1** displays a map of the site. Access to the development will from an entrance on Mt. Washington Road (KY 2053). There will also be connections to an existing stub road of Garden Trace Drive and a stub provided toward Lark Grove Drive. The purpose of this study is to examine the traffic impacts of the development upon the adjacent highway system. For this study the impact area was defined to be the intersections of Mt. Washington Road with Preston Highway, Standiford Plaza Drive and Ray Nan Drive and the proposed entrance.



Figure 1. Site Map

## EXISTING CONDITIONS

Mt. Washington Road, KY 2053, is a state-maintained road with an estimated 2021 ADT of 4,500 vehicles per day between Campion Court and KY 864, as estimated from the 2019 count by the Kentucky Transportation Cabinet at station 278. The road is a two-lane highway with ten-foot lanes with three-foot stabilized shoulders (provided by the Kentucky Transportation Cabinet). The speed limit is 35 mph. There are no sidewalks.

Peak hour traffic count for the intersection was obtained on Tuesday, August 24, 2021. The a.m. peak hour occurred between 7:15 and 8:15 and the p.m. occurred between 4:45 and 5:45. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes. The Appendix contains the full count data.

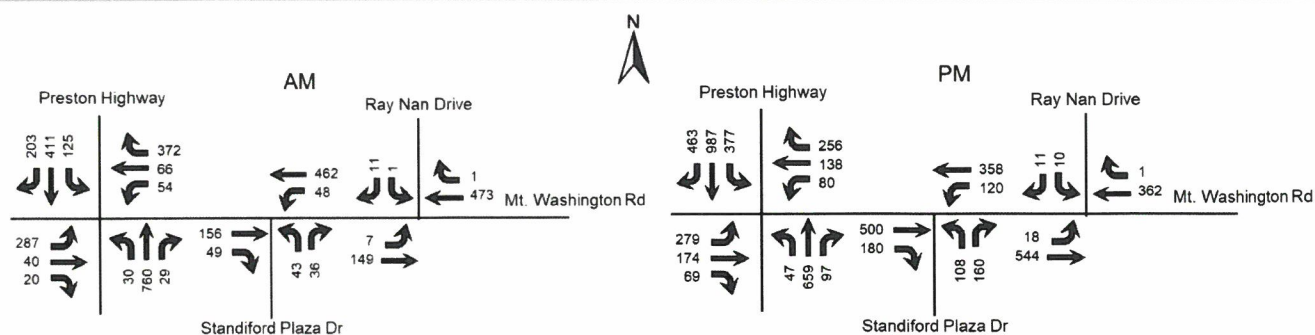


Figure 2. Existing Peak Hour Volumes

## FUTURE CONDITIONS

The project completion date is 2026. An annual growth rate of 0.5 percent was applied to the 2021 volumes on Preston Highway, 6.0 percent was applied to the volumes on Mt. Washington Road. **Figure 3** displays the 2026 No Build peak hour volumes.

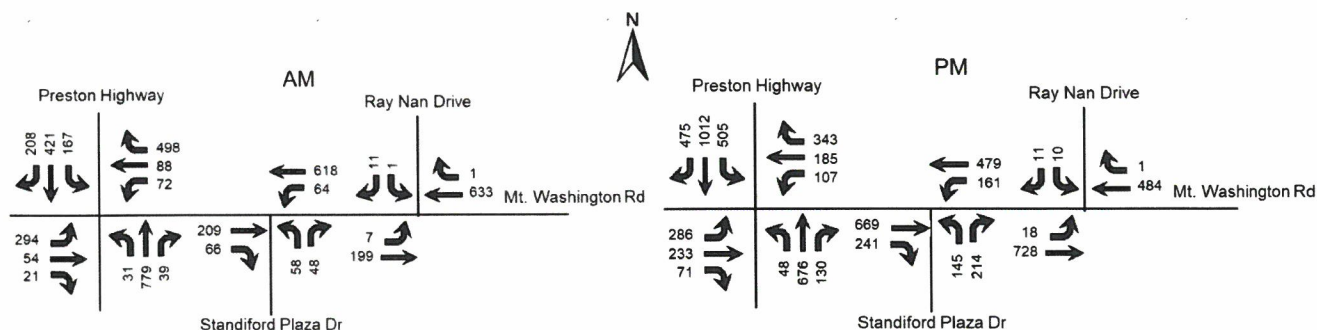


Figure 3. 2026 No Build Peak Hour Volumes

## TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 11<sup>th</sup> Edition contains trip generation rates for a wide range of developments. The land use of "Multi-family (Low-Rise) (220)" was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. All traffic is assigned to Mt. Washington Road, though two (2) percent will likely use Garden Trace Trail. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

Table 1. Peak Hour Trips Generated by Site

Land Use	A.M. Peak Hour			P.M. Peak Hour		
	Trips	In	Out	Trips	In	Out
Multi-family (Low-Rise) 666 units	229	55	174	307	193	114

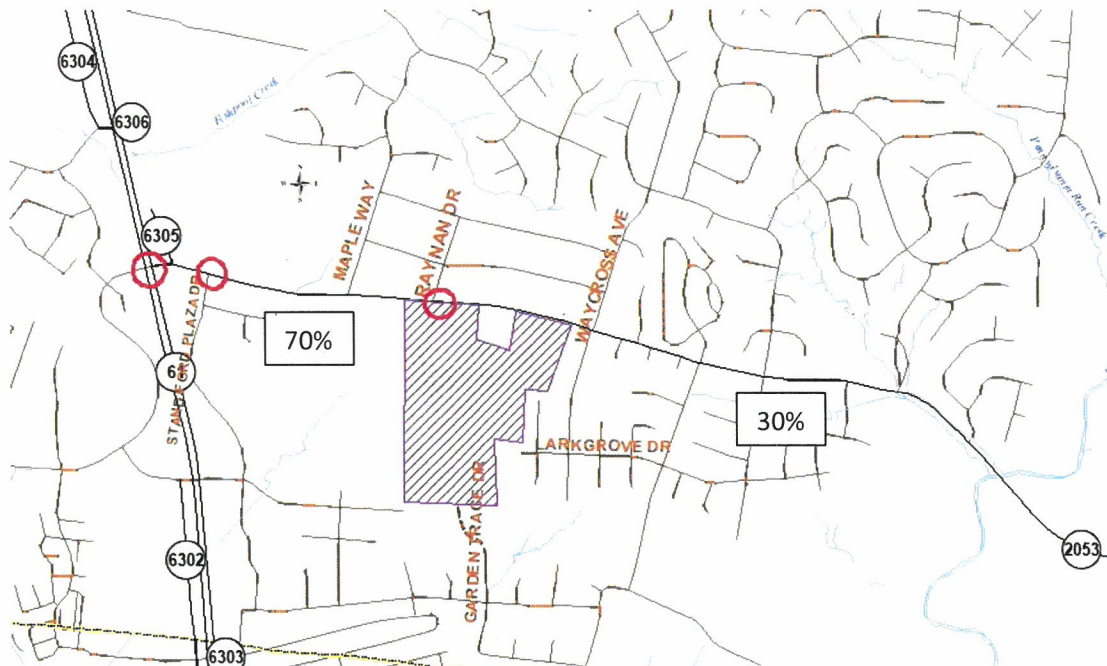


Figure 4. Trip Distribution Percentages

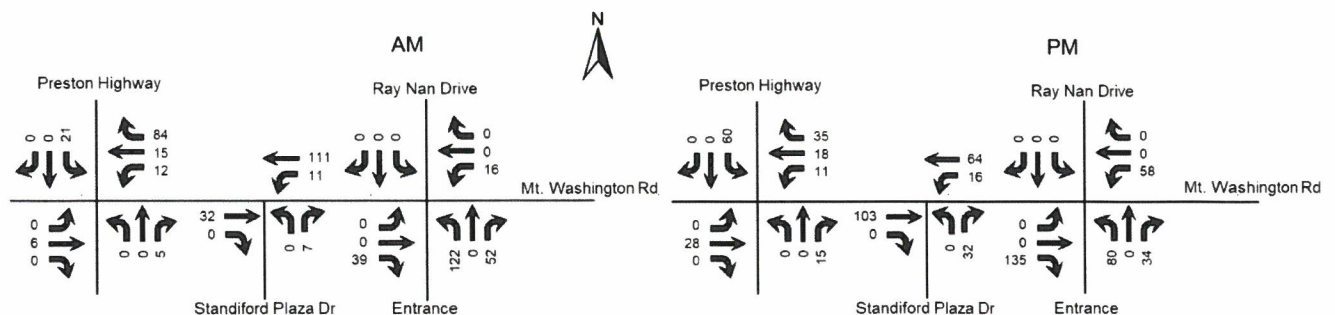


Figure 5. Peak Hour Trips Generated by Site



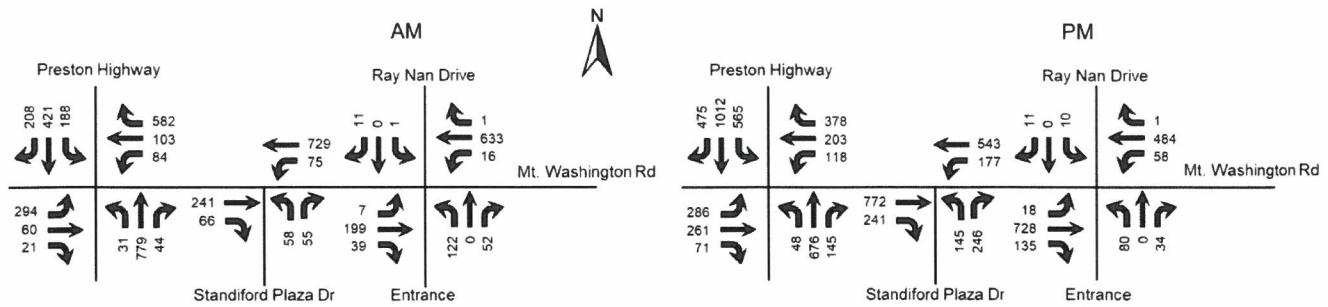


Figure 6. 2026 Build Peak Hour Volumes

## ANALYSIS

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a “Level of Service”. Level of Service is a ranking scale from A through F, “A” is the best operating condition and “F” is the worst. Level of Service results depend upon the facility that is analyzed. In this case, the Level of Service is based upon the total delay experienced for lanes at stop-controlled intersections.

To evaluate the impact of the proposed development, the vehicle delays at the intersections were determined using procedures detailed in the Highway Capacity Manual, 7<sup>th</sup> edition. Future delays and Level of Service were determined for the intersections using the HCS Streets (version 2022) software. The delays and Level of Service are summarized in **Table 2**. The initial analysis resulted in Level of Service F for the Preston Highway intersection with Mt. Washington Road. Therefore, the Build analysis includes dual southbound left turn lanes on Preston Highway and a dedicated westbound thru lane on Mt. Washington Road.

Table 2. Peak Hour Level of Service

Approach	A.M.			P.M.		
	2021 Existing	2026 No Build	2026 Build	2021 Existing	2026 No Build	2026 Build
<b>Preston Highway at Mt. Washington Rd</b>	<b>D</b> <b>41.3</b>	<b>D</b> <b>47.0</b>	<b>D</b> <b>52.1</b>	<b>D</b> <b>49.1</b>	<b>E</b> <b>72.4</b>	<b>D</b> <b>54.5</b>
Mud Lane Eastbound	E 59.5	E 60.6	E 61.0	F 83.2	F 102.9	F 106.7
Mt. Washington Road Westbound	D 52.7	D 49.5	E 75.9	E 77.1	F 99.0	E 64.0
Preston Highway Northbound	D 35.2	D 45.5	D 39.7	D 52.7	D 53.7	D 52.0
Preston Highway Southbound	C 33.6	D 39.7	D 40.6	C 31.8	E 63.4	C 34.3
<b>Mt. Washington Rd at Standiford Plaza Dr</b>						
Mt. Washington Road Westbound (left)	A 7.8	A 8.0	A 8.1	A 9.6	B 11.3	B 12.3
Standiford Plaza Dr Northbound	B 12.1	B 14.4	C 15.9	C 17.1	D 31.4	E 45.6



Mt. Washington Road  
Traffic Impact Study

Approach	A.M.			P.M.		
	2021 Existing	2026 No Build	2026 Build	2021 Existing	2026 No Build	2026 Build
<b>Mt. Washington Rd at Ray Nan Dr</b>						
Mt. Washington Rd Eastbound (left)	A 8.4	A 8.9	A 8.9	A 8.1	A 8.4	A 8.4
Mt. Washington Rd Westbound (left)			A 7.7			A 10.2
Entrance W Northbound			C 18.5			D 25.9
Ray Nan Dr Southbound	B 11.8	B 13.6	B 13.5	B 14.8	C 19.6	C 18.4

Key: Level of Service, Delay in seconds per vehicle

The entrances were evaluated for turn lanes using the Kentucky Transportation Cabinet Highway Design Guidance Manual dated July, 2020. The traffic impact policy requires using volumes for ten years beyond opening date, or 2036. The 2036 volumes were determined applying a 0.5 percent annual growth rate from 2026. Figure 7 illustrates the 2036 No Build volumes. Figure 8 illustrates the 2036 Build Volumes. Using the volumes in Figure 8, left turn lanes will be required at both entrances. Table 3 summarizes the delay and Level of Service for 2036.

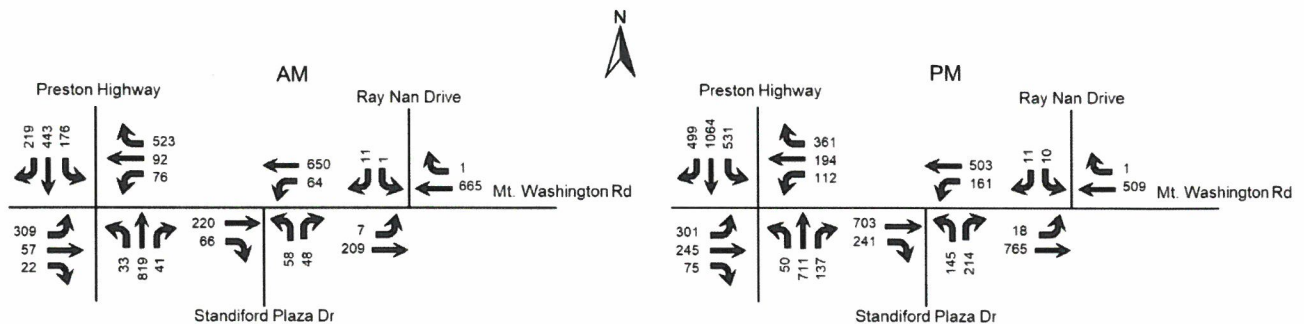


Figure 7. 2036 No Build Peak Hour Volumes

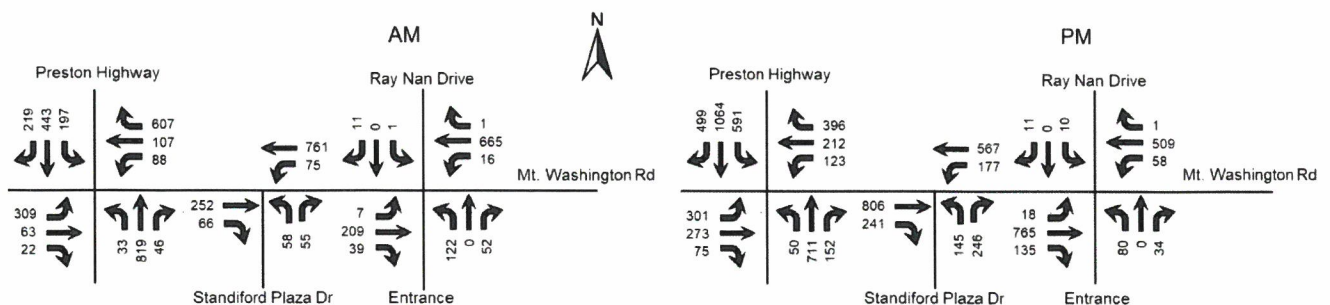


Figure 8. 2036 Build Peak Hour Volumes

**Table 3. Peak Hour Level of Service (2036)**

	A.M.			P.M.		
Approach	2021 Existing	2036 No Build	2036 Build	2021 Existing	2036 No Build	2036 Build
<b>Preston Highway at Mt. Washington Rd</b>	<b>D</b> <b>41.3</b>	<b>D</b> <b>48.1</b>	<b>D</b> <b>55.6</b>	<b>D</b> <b>49.1</b>	<b>E</b> <b>75.4</b>	<b>D</b> <b>57.5</b>
Mud Lane Eastbound	E 59.5	E 61.6	E 62.1	F 83.2	F 112.1	F 118.4
Mt. Washington Road Westbound	D 52.7	D 52.0	F 87.5	E 77.1	F 107.5	E 63.4
Preston Highway Northbound	D 35.2	D 46.5	D 40.5	D 52.7	D 54.5	D 52.6
Preston Highway Southbound	C 33.6	D 39.7	D 40.5	C 31.8	E 63.1	D 35.6
<b>Mt. Washington Rd at Standiford Plaza Dr</b>						
Mt. Washington Road Westbound (left)	A 7.8	A 8.0	A 8.2	A 9.6	B 11.5	B 12.6
Standiford Plaza Dr Northbound	B 12.1	B 14.8	C 16.4	C 17.1	D 34.2	F 51.1
<b>Mt. Washington Rd at Ray Nan Dr</b>						
Mt. Washington Rd Eastbound (left)	A 8.4	A 9.0	A 9.0	A 8.1	A 8.5	A 8.5
Mt. Washington Rd Westbound (left)			A 7.8			B 10.4
Entrance W Northbound			C 19.5			D 27.7
Ray Nan Dr Southbound	B 11.8	B 14.0	B 14.0	B 14.8	C 20.8	C 19.2

Key: Level of Service, Delay in seconds per vehicle

## CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2026 and 2036, there will be an impact to the existing highway network. The proposed improvements of left and right turn lanes at the entrance and improvements at the intersection of Preston Highway with Mt. Washington Road will mitigate the impacts. On Preston Highway a southbound left turn lane will be added to create dual left turn lanes. On Mt Washington Road westbound a thru lane will be added.

## **APPENDIX**



Mt. Washington Road  
Traffic Impact Study

Traffic Counts

Classified Turn Movement Count || All vehicles

Jefferson County, KY



**Marr Traffic**  
DATA COLLECTION

www.marrtraffic.com

Site 1 of 3

KY-61 N Preston Hwy  
KY-61 Preston Hwy  
Mud Ln  
Mt. Washington Rd

Date

Tuesday, August 24, 2021

Lat/Long

38.092822°, -85.669154°

Weather

Fair  
87°F

0700 - 0900 (Weekday 2h Session) (08-24-2021)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					Int
	KY-61 N Preston Hwy					KY-61 Preston Hwy					Mud Ln					Mt. Washington Rd					
TIME	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Total
0700 - 0715	6	182	10	0	198	21	59	46	0	126	60	8	4	0	72	8	17	106	0	131	527
0715 - 0730	13	213	6	0	232	31	86	45	0	162	76	8	6	0	90	8	15	96	0	119	603
0730 - 0745	8	183	6	0	197	34	103	46	0	183	71	9	4	0	84	12	16	96	0	124	588
0745 - 0800	8	190	9	0	207	39	108	57	0	204	62	9	5	0	76	23	17	84	0	124	611
Hourly Total	35	768	31	0	834	125	356	194	0	675	269	34	19	0	322	51	65	382	0	498	2329
0800 - 0815	1	174	8	0	183	21	114	55	0	190	78	14	5	0	97	11	18	96	0	125	595
0815 - 0830	6	155	16	0	177	26	106	37	0	169	71	13	6	0	90	20	19	100	0	139	575
0830 - 0845	16	155	10	0	181	28	107	43	0	178	60	11	6	0	77	9	18	86	0	113	549
0845 - 0900	8	152	7	0	167	28	120	53	0	201	65	15	3	0	83	17	14	65	0	96	547
Hourly Total	31	636	41	0	708	103	447	188	0	738	274	53	20	0	347	57	69	347	0	473	2266
Grand Total	66	1404	72	0	1542	228	803	382	0	1413	543	87	39	0	669	108	134	729	0	971	4595
Approach %	4.28	91.05	4.67	0.00	-	16.14	56.83	27.03	0.00	-	81.17	13.00	5.83	0.00	-	11.12	13.80	75.08	0.00	-	
Intersection %	1.44	30.55	1.57	0.00	33.56	4.96	17.48	8.31	0.00	30.75	11.82	1.89	0.85	0.00	14.56	2.35	2.92	15.87	0.00	21.13	
PHF	0.58	0.89	0.81	0.00	0.88	0.80	0.90	0.89	0.00	0.91	0.92	0.71	0.83	0.00	0.89	0.59	0.92	0.97	0.00	0.98	0.98

1600 - 1800 (Weekday 2h Session) (08-24-2021)

All vehicles

TIME	Northbound					Southbound					Eastbound					Westbound					Int
	KY-61 N Preston Hwy					KY-61 Preston Hwy					Mud Ln					Mt. Washington Rd					
	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	
1600 - 1615	15	156	14	1	186	104	220	107	0	431	65	49	16	0	130	20	27	74	0	121	868
1615 - 1630	14	187	25	1	227	101	250	108	0	459	68	46	23	0	137	20	29	79	0	128	951
1630 - 1645	12	159	23	0	194	89	227	114	0	430	66	38	17	0	121	23	38	72	0	133	878
1645 - 1700	9	146	21	0	176	104	264	127	0	495	63	42	15	0	120	17	40	52	0	109	900
Hourly Total	50	648	83	2	783	398	961	456	0	1815	262	175	71	0	508	80	134	277	0	491	3597
1700 - 1715	11	167	28	0	206	83	246	114	0	443	82	48	14	0	144	20	31	53	0	104	897
1715 - 1730	18	130	25	0	173	103	259	109	0	471	74	43	11	0	128	15	49	61	0	125	897
1730 - 1745	10	125	16	0	151	104	249	165	0	518	56	54	15	0	125	23	42	60	0	125	919
1745 - 1800	10	143	19	0	172	106	194	127	0	427	50	45	10	0	105	25	34	65	0	124	828
Hourly Total	49	565	88	0	702	396	948	515	0	1859	262	190	50	0	502	83	156	239	0	478	3541
Grand Total	99	1213	171	2	1485	794	1909	971	0	3674	524	365	121	0	1010	163	290	516	0	969	7138
Approach %	6.67	81.68	11.52	0.13	-	21.61	51.96	26.43	0.00	-	51.88	36.14	11.98	0.00	-	16.82	29.93	53.25	0.00	-	
Intersection %	1.39	16.99	2.40	0.03	20.80	11.12	26.74	13.60	0.00	51.47	7.34	5.11	1.70	0.00	14.15	2.28	4.06	7.23	0.00	13.58	
PHF	0.82	0.88	0.87	0.25	0.88	0.91	0.93	0.91	0.00	0.92	0.85	0.91	0.75	0.00	0.91	0.87	0.86	0.81	0.00	0.89	0.95



# Mt. Washington Road Traffic Impact Study

## Classified Turn Movement Count || Passenger Vehicles (1-3)

Jefferson County, KY



**Marr Traffic**  
DATA COLLECTION

www.marrtraffic.com

### Site 2 of 3

Standiford Plaza Dr

Mt. Washington Rd (West)

Mt. Washington Rd (East)

### Date

Tuesday, August 24, 2021

### Weather

Fair  
87°F

### Lat/Long

38.092558°, -85.667313°

### 0700 - 0900 (Weekday 2h Session) (08-24-2021)

Passenger Vehicles (1-3)

Northbound				
Standiford Plaza Dr				
TIME	Left 2.1	Right 2.2	U-Turn 2.3	App Total
0700 - 0715	5	9	0	14
0715 - 0730	6	8	0	14
0730 - 0745	7	7	0	14
0745 - 0800	5	7	0	12
Hourly Total	23	31	0	54
0800 - 0815	10	4	0	14
0815 - 0830	19	14	0	33
0830 - 0845	7	14	0	21
0845 - 0900	8	12	0	20
Hourly Total	44	44	0	88
Grand Total	67	75	0	142
Approach %	47.18	52.82	0.00	-
Intersection %	4.50	5.04	0.00	9.54

Eastbound					Westbound				
Mt. Washington Rd (West)					Mt. Washington Rd (East)				
Thru 2.4	Right 2.5	U-Turn 2.6	App Total	Left 2.7	Thru 2.8	U-Turn 2.9	App Total	Int Total	
30	8	0	38	11	124	0	135	187	
34	13	0	47	14	109	0	123	184	
41	7	0	48	6	120	0	126	188	
36	16	0	52	14	112	0	126	190	
141	44	0	185	45	465	0	510	749	
30	12	0	42	12	115	0	127	183	
39	11	0	50	16	108	0	124	207	
31	12	0	43	11	96	0	107	171	
38	13	0	51	20	88	0	108	179	
138	48	0	186	59	407	0	466	740	
279	92	0	371	104	872	0	976	1489	
75.20	24.80	0.00	-	10.66	89.34	0.00	-		
18.74	6.18	0.00	24.92	6.98	58.56	0.00	65.55		

### 1600 - 1800 (Weekday 2h Session) (08-24-2021)

Passenger Vehicles (1-3)

Northbound				
Standiford Plaza Dr				
TIME	Left 2.1	Right 2.2	U-Turn 2.3	App Total
1600 - 1615	23	31	0	54
1615 - 1630	23	46	0	69
1630 - 1645	32	38	0	70
1645 - 1700	23	35	0	58
Hourly Total	101	150	0	251
1700 - 1715	24	48	0	72
1715 - 1730	25	28	0	53
1730 - 1745	31	41	0	72
1745 - 1800	26	42	0	68
Hourly Total	106	159	0	265
Grand Total	207	309	0	516
Approach %	40.12	59.88	0.00	-
Intersection %	7.48	11.17	0.00	18.65

Eastbound					Westbound				
Mt. Washington Rd (West)					Mt. Washington Rd (East)				
Thru	Right	U-Turn	App	Left	Thru	U-Turn	App	Int	
2.4	2.5	2.6	Total	2.7	2.8	2.9	Total	Total	
115	47	0	162	25	90	0	115	331	
110	58	0	168	21	98	0	119	356	
107	39	0	146	26	96	0	122	338	
121	40	0	161	31	83	0	114	333	
453	184	0	637	103	367	0	470	1358	
134	34	0	168	39	77	0	116	356	
117	53	0	170	26	90	0	116	339	
124	45	0	169	20	88	0	108	349	
121	48	0	169	35	93	0	128	365	
496	180	0	676	120	348	0	468	1409	
949	364	0	1313	223	715	0	938	2767	
72.28	27.72	0.00	-	23.77	76.23	0.00	-		
34.30	13.16	0.00	47.45	8.06	25.84	0.00	33.90		

# Mt. Washington Road Traffic Impact Study

## Classified Turn Movement Count || All vehicles

Jefferson County, KY



**Marr Traffic**  
DATA COLLECTION

www.marrtraffic.com

Site 3 of 3

Ray Nan Way  
Mt. Washington Rd (West)  
Mt. Washington Rd (East)

Date

Tuesday, August 24, 2021

Lat/Long

38.091970°, -85.660163°

Weather

Fair  
87°F

0700 - 0900 (Weekday 2h Session) (08-24-2021)

All vehicles

TIME
0700 - 0715
0715 - 0730
0730 - 0745
0745 - 0800
Hourly Total
0800 - 0815
0815 - 0830
0830 - 0845
0845 - 0900
Hourly Total

Grand Total
Approach %
Intersection %

PHF
-----

Southbound				Eastbound				Westbound				
Ray Nan Way				Mt. Washington Rd (West)				Mt. Washington Rd (East)				
Left	Right	U-Turn	App	Left	Thru	U-Turn	App	Thru	Right	U-Turn	App	Int
3.1	3.2	3.3	Total	3.4	3.5	3.6	Total	3.7	3.8	3.9	Total	Total
0	4	0	4	2	22	0	24	125	0	0	125	153
0	4	0	4	0	37	0	37	114	0	0	114	155
0	2	0	2	2	47	0	49	110	1	0	111	162
0	3	0	3	2	35	0	37	115	0	0	115	155
0	13	0	13	6	141	0	147	464	1	0	465	625
1	2	0	3	0	26	0	26	128	0	0	128	157
0	4	0	4	3	41	0	44	120	1	0	121	169
1	2	0	3	2	40	0	42	102	0	0	102	147
1	5	0	6	0	44	0	44	102	0	0	102	152
3	13	0	16	5	151	0	156	452	1	0	453	625
3	26	0	29	11	292	0	303	916	2	0	918	1250
10.34	89.66	0.00	-	3.63	96.37	0.00	-	99.78	0.22	0.00	-	
0.24	2.08	0.00	2.32	0.88	23.36	0.00	24.24	73.28	0.16	0.00	73.44	
0.25	0.69	0.00	0.75	0.58	0.79	0.00	0.80	0.92	0.50	0.00	0.93	0.95

1600 - 1800 (Weekday 2h Session) (08-24-2021)

All vehicles

TIME
1600 - 1615
1615 - 1630
1630 - 1645
1645 - 1700
Hourly Total
1700 - 1715
1715 - 1730
1730 - 1745
1745 - 1800
Hourly Total

Grand Total
Approach %
Intersection %

PHF
-----

Southbound				Eastbound				Westbound				Int Total
Ray Nan Way				Mt. Washington Rd (West)				Mt. Washington Rd (East)				
Left	Right	U-Turn	App Total	Left	Thru	U-Turn	App Total	Thru	Right	U-Turn	App Total	
3.1	3.2	3.3		3.4	3.5			3.7	3.8	3.9		
3	3	0	6	4	121	0	125	91	0	0	91	
4	3	0	7	3	132	0	135	97	1	0	98	
2	3	0	5	8	129	0	137	92	0	0	92	
1	3	0	4	4	127	0	131	87	0	0	87	
10	12	0	22	19	509	0	528	367	1	0	368	
3	2	0	5	3	156	0	159	86	0	0	86	
1	3	0	4	3	118	0	121	96	1	0	97	
1	4	0	5	4	138	0	142	85	0	0	85	
1	2	0	3	4	136	0	140	89	0	0	89	
6	11	0	17	14	548	0	562	356	1	0	357	
16	23	0	39	33	1057	0	1090	723	2	0	725	
41.03	58.97	0.00	-	3.03	96.97	0.00	-	99.72	0.28	0.00	-	
0.86	1.24	0.00	2.10	1.78	57.01	0.00	58.79	39.00	0.11	0.00	39.10	
0.63	0.92	0.00	0.75	0.56	0.87	0.00	0.88	0.93	0.25	0.00	0.93	

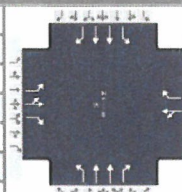
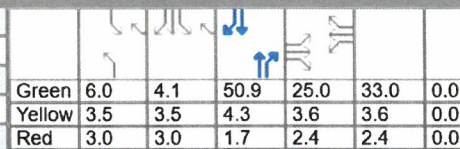
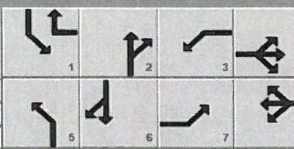


HCS Reports

HCS Signalized Intersection Results Summary															
General Information							Intersection Information								
Agency		Diane B. Zimmerman Traffic Engineering					Duration, h		0.250						
Analyst		DBZ		Analysis Date		May 18, 2022		Area Type		Other					
Jurisdiction				Time Period		AM Peak		PHF		0.98					
Urban Street		Preston Highway		Analysis Year		2021		Analysis Period		1> 7:15					
Intersection		Mt Washington Rd		File Name		AM 21 Preston.xus									
Project Description		Mt Wash Rd Apt													
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				287	40	20	54	66	372	30	760	29	125	411	203
Signal Information															
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	On												
Green				6.0	1.3	62.5	25.0	24.3	0.0						
Yellow				3.5	3.5	4.3	3.6	3.6	0.0						
Red				3.0	3.0	1.7	2.4	2.4	0.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					9.0		11.0	2.0	3.0	2.0	3.0				
Phase Duration, s					31.0		30.3	12.5	68.5	20.3	76.2				
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0				
Max Allow Headway ( MAH ), s					5.1		3.3	4.0	0.0	3.0	0.0				
Queue Clearance Time ( g s ), s							23.7	4.5		13.6					
Green Extension Time ( g e ), s					0.0		0.6	0.0	0.0	0.2	0.0				
Phase Call Probability							1.00	1.00		1.00					
Max Out Probability							0.02	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate ( v ), veh/h				161	173	20		122	257	31	776	30	136	447	139
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1767	1788	1610		1829	1585	1767	1781	1522	1725	1752	1547
Queue Service Time ( g s ), s				12.5	13.4	1.6		9.0	21.7	2.5	24.4	1.7	11.6	12.0	8.0
Cycle Queue Clearance Time ( g c ), s				12.5	13.4	1.6		9.0	21.7	2.5	24.4	1.7	11.6	12.0	8.0
Green Ratio ( g/C )				0.17	0.17	0.17		0.16	0.25	0.04	0.42	0.42	0.09	0.47	0.47
Capacity ( c ), veh/h				295	298	268		296	402	71	1483	634	158	1641	724
Volume-to-Capacity Ratio ( X )				0.547	0.579	0.076		0.414	0.640	0.433	0.523	0.047	0.860	0.273	0.192
Back of Queue ( Q ), ft/ln ( 95 th percentile)															
Back of Queue ( Q ), veh/ln ( 95 th percentile)				9.7	10.3	1.2		7.6	13.5	2.2	15.8	1.2	8.7	8.6	5.3
Queue Storage Ratio ( RQ ) ( 95 th percentile)				1.00	0.88	0.15		0.96	0.00	0.26	0.00	0.22	0.31	0.00	0.79
Uniform Delay ( d 1 ), s/veh				57.3	57.6	52.8		56.5	49.9	70.3	32.7	26.0	64.5	25.2	23.5
Incremental Delay ( d 2 ), s/veh				2.2	2.5	0.2		0.3	0.9	4.1	1.3	0.1	5.0	0.4	0.6
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh				59.6	60.2	52.9		56.8	50.8	74.5	34.0	26.2	69.5	25.6	24.1
Level of Service ( LOS )				E	E	D		E	D	E	C	C	E	C	C
Approach Delay, s/veh / LOS				59.5		E	52.7		D	35.2		D	33.6		C
Intersection Delay, s/veh / LOS				41.3						D					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.47		B	2.59		C	2.10		B	2.11		B
Bicycle LOS Score / LOS				1.07		A	1.11		A	1.18		A	1.05		A

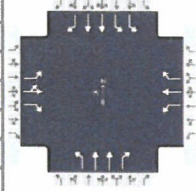

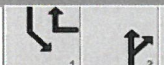


### HCS Signalized Intersection Results Summary

General Information					Intersection Information										
Agency	Diane B. Zimmerman Traffic Engineering					Duration, h	0.250								
Analyst	DBZ	Analysis Date	May 18, 2022		Area Type	Other									
Jurisdiction		Time Period	AM Peak		PHF	0.98									
Urban Street	Preston Highway	Analysis Year	2026 No Build		Analysis Period	1> 7:15									
Intersection	Mt Washington Rd	File Name	AM 26 NB Preston.xus												
Project Description	Mt Wash Rd Apt														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				294	54	21	72	88	498	31	779	39	167	421	208
Signal Information															
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	6.0	4.1	50.9	25.0	33.0	0.0	1	2	3	4	
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.5	3.5	4.3	3.6	3.6	0.0	5	6	7	8	
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	1.7	2.4	2.4	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					9.0		11.0	2.0	3.0	2.0	3.0				
Phase Duration, s					31.0		39.0	12.5	56.9	23.1	67.5				
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0				
Max Allow Headway ( MAH ), s					5.1		3.3	4.0	0.0	3.0	0.0				
Queue Clearance Time ( g s ), s							34.3	4.6		16.3					
Green Extension Time ( g e ), s					0.0		0.0	0.0	0.0	0.2	0.0				
Phase Call Probability							1.00	1.00		1.00					
Max Out Probability							1.00	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate ( v ), veh/h				165	190	21		163	386	32	795	40	167	422	133
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1767	1793	1610		1829	1585	1767	1781	1522	1725	1752	1547
Queue Service Time ( g s ), s				12.9	14.8	1.7		11.5	32.3	2.6	28.5	2.7	14.3	12.3	8.4
Cycle Queue Clearance Time ( g c ), s				12.9	14.8	1.7		11.5	32.3	2.6	28.5	2.7	14.3	12.3	8.4
Green Ratio ( g/C )				0.17	0.17	0.17		0.22	0.33	0.04	0.34	0.34	0.11	0.41	0.41
Capacity ( c ), veh/h				295	299	268		402	524	71	1209	517	191	1437	634
Volume-to-Capacity Ratio ( X )				0.560	0.636	0.080		0.406	0.736	0.447	0.657	0.077	0.879	0.294	0.210
Back of Queue ( Q ), ft/ln ( 95 th percentile)															
Back of Queue ( Q ), veh/ln ( 95 th percentile)				9.9	11.4	1.3		9.1	19.3	2.3	18.4	1.8	10.5	8.9	5.7
Queue Storage Ratio ( RQ ) ( 95 th percentile)				1.02	0.97	0.16		1.15	0.00	0.27	0.00	0.34	0.38	0.00	0.85
Uniform Delay ( d 1 ), s/veh				57.4	58.3	52.8		50.1	44.4	70.4	42.1	33.6	65.5	30.3	28.6
Incremental Delay ( d 2 ), s/veh				2.4	3.9	0.2		0.2	4.8	4.4	2.8	0.3	4.9	0.5	0.7
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh				59.8	62.1	53.0		50.3	49.2	74.8	44.9	33.9	70.3	30.8	29.3
Level of Service (LOS)				E	E	D		D	D	E	D	C	E	C	C
Approach Delay, s/veh / LOS				60.6		E	49.5		D	45.5		D	39.7		D
Intersection Delay, s/veh / LOS				47.0						D					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.46		B	2.59		C	2.11		B	2.12		B
Bicycle LOS Score / LOS				1.11		A	1.39		A	1.20		A	1.09		A



### HCS Signalized Intersection Results Summary

General Information					Intersection Information									
Agency	Diane B. Zimmerman Traffic Engineering				Duration, h	0.250								
Analyst	DBZ	Analysis Date	May 18, 2022		Area Type	Other								
Jurisdiction		Time Period	AM Peak		PHF	0.98								
Urban Street	Preston Highway	Analysis Year	2026 Build		Analysis Period	1> 7:15								
Intersection	Mt Washington Rd	File Name	AM 26 B Preston.xus											
Project Description	Mt Wash Rd Apt													
Demand Information			EB			WB			NB			SB		
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h			294	60	21	84	103	580	31	779	44	187	421	208
Signal Information														
Cycle, s	150.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	Off											
Force Mode	Fixed	Simult. Gap N/S	On											
Green	6.0	4.4	57.1	25.0	33.0	0.0								
Yellow	3.5	0.0	4.3	3.6	3.6	0.0								
Red	3.0	0.0	1.7	2.4	2.4	0.0								
Timer Results			EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				4		8	5	2	1	6				
Case Number				9.0		9.0	2.0	3.0	2.0	3.0				
Phase Duration, s				31.0		39.0	12.5	63.1	16.9	67.5				
Change Period, ( Y+R c ), s				6.0		6.0	6.5	6.0	6.5	6.0				
Max Allow Headway ( MAH ), s				5.1		3.3	4.0	0.0	3.0	0.0				
Queue Clearance Time ( g s ), s				17.3		36.0	4.6		10.0					
Green Extension Time ( g e ), s				1.6		0.0	0.0	0.0	0.4	0.0				
Phase Call Probability				1.00		1.00	1.00		1.00					
Max Out Probability				0.11		1.00	0.00		0.00					
Movement Group Results			EB			WB			NB			SB		
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement			7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate ( v ), veh/h			165	196	21	86	105	469	32	795	45	182	411	130
Adjusted Saturation Flow Rate ( s ), veh/h/ln			1767	1795	1610	1810	1870	1585	1767	1781	1522	1675	1752	1547
Queue Service Time ( g s ), s			12.9	15.3	1.7	5.8	7.0	34.0	2.6	26.7	2.8	8.0	11.9	8.1
Cycle Queue Clearance Time ( g c ), s			12.9	15.3	1.7	5.8	7.0	34.0	2.6	26.7	2.8	8.0	11.9	8.1
Green Ratio ( g/C )			0.17	0.17	0.17	0.22	0.22	0.30	0.04	0.38	0.38	0.07	0.41	0.41
Capacity ( c ), veh/h			295	299	268	398	411	480	71	1356	579	232	1437	634
Volume-to-Capacity Ratio ( X )			0.560	0.656	0.080	0.215	0.255	0.978	0.447	0.586	0.077	0.785	0.286	0.205
Back of Queue ( Q ), ft/ln ( 95 th percentile)														
Back of Queue ( Q ), veh/ln ( 95 th percentile)			9.9	11.8	1.3	4.8	5.9	29.7	2.3	17.2	1.9	6.2	8.7	0.2
Queue Storage Ratio ( RQ ) ( 95 th percentile)			1.02	1.00	0.16	0.80	0.75	1.88	0.27	0.00	0.36	0.22	0.00	0.03
Uniform Delay ( d 1 ), s/veh			57.4	58.5	52.8	47.9	48.3	51.8	70.4	37.0	29.6	68.8	30.2	28.5
Incremental Delay ( d 2 ), s/veh			2.4	4.4	0.2	0.1	0.1	35.3	4.4	1.9	0.3	2.1	0.5	0.7
Initial Queue Delay ( d 3 ), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh			59.8	62.9	53.0	48.0	48.5	87.1	74.8	38.9	29.9	70.9	30.7	29.2
Level of Service ( LOS )			E	E	D	D	D	F	E	D	C	E	C	C
Approach Delay, s/veh / LOS			61.0		E	75.9		E	39.7		D	40.6		D
Intersection Delay, s/veh / LOS			52.1						D					
Multimodal Results			EB			WB			NB			SB		
Pedestrian LOS Score / LOS			2.46		B	2.73		C	2.46		B	2.12		B
Bicycle LOS Score / LOS			1.12		A	1.58		B	1.21		A	1.11		A

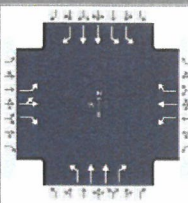
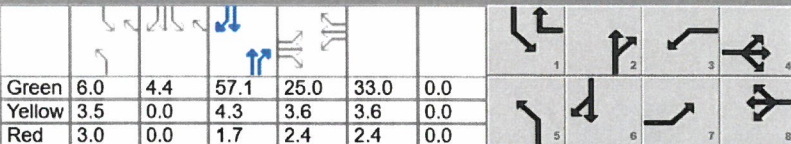


HCS Signalized Intersection Results Summary															
General Information							Intersection Information								
Agency		Diane B. Zimmerman Traffic Engineering					Duration, h		0.250						
Analyst		DBZ		Analysis Date		May 18, 2022		Area Type		Other					
Jurisdiction				Time Period		AM Peak		PHF		0.98					
Urban Street		Preston Highway		Analysis Year		2036 No Build		Analysis Period		1> 7:15					
Intersection		Mt Washington Rd		File Name		AM 36 NB Preston.xus									
Project Description		Mt Wash Rd Apt													
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				309	57	22	76	92	523	33	819	41	176	443	219
Signal Information															
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	On												
				Green	6.0	4.0	51.0	25.0	33.0	0.0					
				Yellow	3.5	3.5	4.3	3.6	3.6	0.0					
				Red	3.0	3.0	1.7	2.4	2.4	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					9.0		11.0	2.0	3.0	2.0	3.0				
Phase Duration, s					31.0		39.0	12.5	57.0	23.0	67.5				
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0				
Max Allow Headway ( MAH ), s					5.1		3.3	4.0	0.0	3.0	0.0				
Queue Clearance Time ( g s ), s							35.0	4.8		16.3					
Green Extension Time ( g e ), s					0.0		0.0	0.0	0.0	0.2	0.0				
Phase Call Probability							1.00	1.00		1.00					
Max Out Probability							1.00	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate ( v ), veh/h				173	200	22		171	411	34	836	42	167	420	136
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1767	1793	1610		1829	1585	1767	1781	1522	1725	1752	1547
Queue Service Time ( g s ), s				13.6	15.7	1.8		12.1	33.0	2.8	30.4	2.8	14.3	12.2	8.6
Cycle Queue Clearance Time ( g c ), s				13.6	15.7	1.8		12.1	33.0	2.8	30.4	2.8	14.3	12.2	8.6
Green Ratio ( g/C )				0.17	0.17	0.17		0.22	0.33	0.04	0.34	0.34	0.11	0.41	0.41
Capacity ( c ), veh/h				295	299	268		402	523	71	1211	518	190	1437	634
Volume-to-Capacity Ratio ( X )				0.589	0.669	0.084		0.426	0.786	0.476	0.690	0.081	0.878	0.292	0.215
Back of Queue ( Q ), ft/ln ( 95 th percentile)															
Back of Queue ( Q ), veh/ln ( 95 th percentile)				10.4	12.0	1.3		9.5	21.1	2.4	19.5	1.9	10.4	8.8	5.8
Queue Storage Ratio ( RQ ) ( 95 th percentile)				1.07	1.03	0.16		1.20	0.00	0.29	0.00	0.36	0.38	0.00	0.87
Uniform Delay ( d 1 ), s/veh				57.8	58.6	52.8		50.4	45.5	70.5	42.7	33.6	65.5	30.3	28.7
Incremental Delay ( d 2 ), s/veh				2.7	4.9	0.2		0.3	7.1	4.9	3.2	0.3	4.9	0.5	0.7
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh				60.5	63.5	53.0		50.6	52.6	75.4	45.9	33.9	70.3	30.8	29.4
Level of Service (LOS)				E	E	D		D	D	E	D	C	E	C	C
Approach Delay, s/veh / LOS				61.6	E		52.0	D		46.5	D		39.7		D
Intersection Delay, s/veh / LOS				48.1						D					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.46	B		2.59	C		2.11	B		2.12	B	
Bicycle LOS Score / LOS				1.14	A		1.45	A		1.24	A		1.13	A	



Mt. Washington Road  
Traffic Impact Study

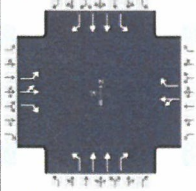
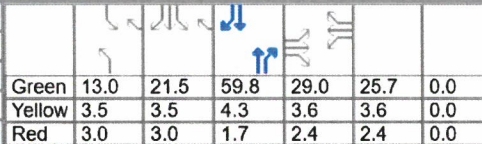
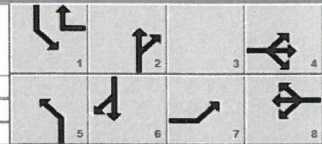
### HCS Signalized Intersection Results Summary

General Information						Intersection Information										
Agency	Diane B. Zimmerman Traffic Engineering					Duration, h	0.250									
Analyst	DBZ		Analysis Date	May 18, 2022		Area Type	Other									
Jurisdiction			Time Period	AM Peak		PHF	0.98									
Urban Street	Preston Highway		Analysis Year	2036 Build		Analysis Period	1> 7:15									
Intersection	Mt Washington Rd		File Name	AM 36 B Preston.xus												
Project Description	Mt Wash Rd Apt															
Demand Information				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Demand ( v ), veh/h				309	63	22	88	107	607	33	819	46	197	443	219	
Signal Information																
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	Off													
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	1.7	2.4	2.4	0.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					4		8	5	2	1	6					
Case Number					9.0		9.0	2.0	3.0	2.0	3.0					
Phase Duration, s					31.0		39.0	12.5	63.1	16.9	67.5					
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0					
Max Allow Headway ( MAH ), s					5.1		3.3	4.0	0.0	3.0	0.0					
Queue Clearance Time ( g s ), s					18.2		36.0	4.8		10.0						
Green Extension Time ( g e ), s					1.6		0.0	0.0	0.0	0.4	0.0					
Phase Call Probability					1.00		1.00	1.00		1.00						
Max Out Probability					0.15		1.00	0.00		0.00						
Movement Group Results				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate ( v ), veh/h				173	206	22	90	109	497	34	836	47	182	408	133	
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1767	1795	1610	1810	1870	1585	1767	1781	1522	1675	1752	1547	
Queue Service Time ( g s ), s				13.6	16.2	1.8	6.1	7.3	34.0	2.8	28.5	3.0	8.0	11.9	8.3	
Cycle Queue Clearance Time ( g c ), s				13.6	16.2	1.8	6.1	7.3	34.0	2.8	28.5	3.0	8.0	11.9	8.3	
Green Ratio ( g/C )				0.17	0.17	0.17	0.22	0.22	0.30	0.04	0.38	0.38	0.07	0.41	0.41	
Capacity ( c ), veh/h				295	299	268	398	411	479	71	1356	580	231	1437	634	
Volume-to-Capacity Ratio ( X )				0.589	0.689	0.084	0.226	0.265	1.037	0.476	0.616	0.081	0.785	0.284	0.209	
Back of Queue ( Q ), ft/ln ( 95 th percentile)																
Back of Queue ( Q ), veh/ln ( 95 th percentile)				10.4	12.4	1.3	5.0	6.2	33.5	2.4	18.2	2.0	6.2	8.6	5.7	
Queue Storage Ratio ( RQ ) ( 95 th percentile)				1.07	1.06	0.16	0.84	0.78	2.13	0.29	0.00	0.38	0.22	0.00	0.84	
Uniform Delay ( d 1 ), s/veh				57.8	58.8	52.8	48.0	48.5	52.3	70.5	37.6	29.7	68.8	30.2	28.6	
Incremental Delay ( d 2 ), s/veh				2.7	5.6	0.2	0.1	0.1	50.9	4.9	2.1	0.3	2.1	0.5	0.7	
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay ( d ), s/veh				60.5	64.5	53.0	48.1	48.6	103.2	75.4	39.7	29.9	70.9	30.7	29.3	
Level of Service ( LOS )				E	E	D	D	D	F	E	D	C	E	C	C	
Approach Delay, s/veh / LOS				62.1	E		87.5	F		40.5	D		40.5	D		
Intersection Delay, s/veh / LOS				55.6						E						
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS				2.46	B		2.73	C		2.46	B		2.12	B		
Bicycle LOS Score / LOS				1.15	A		1.64	B		1.24	A		1.15	A		



Mt. Washington Road  
Traffic Impact Study

### HCS Signalized Intersection Results Summary

General Information						Intersection Information												
Agency		Diane B. Zimmerman Traffic Engineering				Duration, h		0.250										
Analyst		DBZ		Analysis Date		May 18, 2022		Area Type		Other								
Jurisdiction				Time Period		PM Peak		PHF		0.95								
Urban Street		Preston Highway		Analysis Year		2021		Analysis Period		1> 4:15								
Intersection		Mt Washington Rd		File Name		PM 21 Preston.xus												
Project Description		Mt. Wash Apt																
Demand Information				EB			WB			NB			SB					
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R			
Demand ( v ), veh/h				279	174	69	80	138	256	47	659	97	377	987	463			
Signal Information																		
Cycle, s	180.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	Off															
Force Mode	Fixed	Simult. Gap N/S	On															
Green	13.0	21.5	59.8	29.0	25.7	0.0												
Yellow	3.5	3.5	4.3	3.6	3.6	0.0												
Red	3.0	3.0	1.7	2.4	2.4	0.0												
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT							
Assigned Phase					4		8	5	2	1	6							
Case Number					9.0		11.0	2.0	3.0	2.0	3.0							
Phase Duration, s					35.0		31.7	19.5	65.8	47.5	93.8							
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0							
Max Allow Headway ( MAH ), s					5.1		4.2	4.0	0.0	4.0	0.0							
Queue Clearance Time ( g s ), s					24.8		25.2	6.9		40.8								
Green Extension Time ( g e ), s					1.2		0.5	0.1	0.0	0.2	0.0							
Phase Call Probability					1.00		1.00	1.00		1.00								
Max Out Probability					1.00		1.00	0.00		1.00								
Movement Group Results				EB			WB			NB			SB					
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16			
Adjusted Flow Rate ( v ), veh/h				235	242	73		229	143	49	694	102	400	1047	411			
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1781	1849	1610		1749	1572	1725	1781	1572	1795	1781	1585			
Queue Service Time ( g s ), s				22.8	22.6	7.1		23.2	11.4	4.9	29.1	8.3	38.8	28.9	22.4			
Cycle Queue Clearance Time ( g c ), s				22.8	22.6	7.1		23.2	11.4	4.9	29.1	8.3	38.8	28.9	22.4			
Green Ratio ( g/C )				0.17	0.17	0.17		0.15	0.38	0.07	0.33	0.33	0.23	0.49	0.49			
Capacity ( c ), veh/h				297	308	259		259	582	125	1184	523	419	1738	773			
Volume-to-Capacity Ratio ( X )				0.791	0.785	0.280		0.885	0.246	0.397	0.586	0.195	0.955	0.602	0.532			
Back of Queue ( Q ), ft/ln ( 95 th percentile)																		
Back of Queue ( Q ), veh/ln ( 95 th percentile)				17.2	17.5	5.4		18.0	8.0	4.0	19.0	6.0	22.9	13.9	8.8			
Queue Storage Ratio ( RQ ) ( 95 th percentile)				1.75	1.48	0.68		1.92	0.00	0.49	0.00	1.10	0.79	0.00	1.28			
Uniform Delay ( d 1 ), s/veh				72.0	71.9	66.3		75.2	39.3	79.8	49.8	42.9	51.6	19.6	17.3			
Incremental Delay ( d 2 ), s/veh				14.2	13.2	0.8		25.4	0.2	2.0	2.1	0.8	22.9	0.9	1.6			
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay ( d ), s/veh				86.2	85.1	67.2		100.6	39.5	81.8	51.9	43.7	74.5	20.6	18.9			
Level of Service ( LOS )				F	F	E		F	D	F	D	D	E	C	B			
Approach Delay, s/veh / LOS				83.2		F		77.1		E		52.7		D		C		
Intersection Delay, s/veh / LOS				49.1						D								
Multimodal Results				EB			WB			NB			SB					
Pedestrian LOS Score / LOS				2.48		B		2.60		C		2.12		B		2.12		B
Bicycle LOS Score / LOS				1.39		A		1.10		A		1.18		A		2.01		B



Mt. Washington Road  
Traffic Impact Study

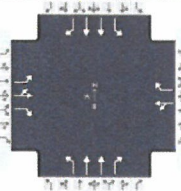
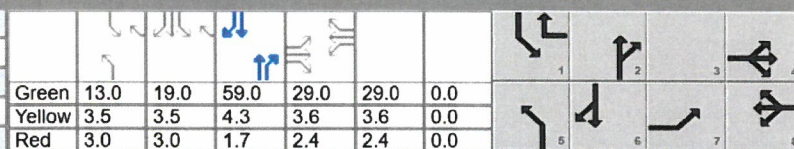
HCS Signalized Intersection Results Summary																		
General Information							Intersection Information											
Agency		Diane B. Zimmerman Traffic Engineering					Duration, h		0.250									
Analyst		DBZ		Analysis Date		May 18, 2022		Area Type		Other								
Jurisdiction				Time Period		PM Peak		PHF		0.95								
Urban Street		Preston Highway		Analysis Year		2026 No Build		Analysis Period		1> 4:15								
Intersection		Mt Washington Rd		File Name		PM 26 NB Preston.xus												
Project Description		Mt. Wash Apt																
Demand Information				EB			WB			NB			SB					
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R			
Demand ( v ), veh/h				286	233	71	107	185	343	48	676	130	505	1012	475			
Signal Information																		
Cycle, s	180.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	Off															
Force Mode	Fixed	Simult. Gap N/S	On															
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT							
Assigned Phase					4		8	5	2	1	6							
Case Number					9.0		11.0	2.0	3.0	2.0	3.0							
Phase Duration, s					35.0		35.0	19.5	65.0	45.0	90.5							
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0							
Max Allow Headway ( MAH ), s					5.1		4.2	4.0	0.0	4.0	0.0							
Queue Clearance Time ( g s ), s					31.6		32.0	7.0		41.5								
Green Extension Time ( g e ), s					0.0		0.0	0.0	0.0	0.0	0.0							
Phase Call Probability					1.00		1.00	1.00		1.00								
Max Out Probability					1.00		1.00	0.04		1.00								
Movement Group Results				EB			WB			NB			SB					
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16			
Adjusted Flow Rate ( v ), veh/h				241	305	75		307	235	51	712	137	489	981	388			
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1781	1853	1610		1749	1572	1725	1781	1572	1795	1781	1585			
Queue Service Time ( g s ), s				23.5	29.6	7.3		30.0	19.7	5.0	30.2	11.5	39.5	28.9	23.0			
Cycle Queue Clearance Time ( g c ), s				23.5	29.6	7.3		30.0	19.7	5.0	30.2	11.5	39.5	28.9	23.0			
Green Ratio ( g/C )				0.17	0.17	0.17		0.17	0.38	0.07	0.33	0.33	0.22	0.47	0.47			
Capacity ( c ), veh/h				297	309	259		292	590	125	1167	515	394	1672	744			
Volume-to-Capacity Ratio ( X )				0.811	0.989	0.288		1.054	0.398	0.406	0.610	0.265	1.242	0.587	0.521			
Back of Queue ( Q ), ft/ln ( 95 th percentile)																		
Back of Queue ( Q ), veh/ln ( 95 th percentile)				17.8	25.2	5.6		26.8	12.4	4.1	19.7	8.2	39.8	14.6	9.6			
Queue Storage Ratio ( RQ ) ( 95 th percentile)				1.81	2.14	0.70		2.86	0.00	0.50	0.00	1.50	1.38	0.00	1.40			
Uniform Delay ( d 1 ), s/veh				72.3	74.8	66.4		75.0	41.3	79.8	50.8	44.5	54.4	22.7	20.4			
Incremental Delay ( d 2 ), s/veh				16.2	48.2	0.9		67.7	0.4	2.1	2.4	1.3	121.6	0.9	1.6			
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay ( d ), s/veh				88.4	123.0	67.3		142.7	41.8	81.9	53.2	45.8	176.0	23.6	21.9			
Level of Service (LOS)				F	F	E		F	D	F	D	D	F	C	C			
Approach Delay, s/veh / LOS				102.9		F		99.0		F		53.7		D		63.4		E
Intersection Delay, s/veh / LOS				72.4						E								
Multimodal Results				EB			WB			NB			SB					
Pedestrian LOS Score / LOS				2.48		B		2.60		C		2.12		B		2.12		B
Bicycle LOS Score / LOS				1.51		B		1.38		A		1.23		A		2.15		B



HCS Signalized Intersection Results Summary															
General Information								Intersection Information							
Agency		Diane B. Zimmerman Traffic Engineering						Duration, h		0.250					
Analyst		DBZ		Analysis Date		May 18, 2022		Area Type		Other					
Jurisdiction				Time Period		PM Peak		PHF		0.95					
Urban Street		Preston Highway		Analysis Year		2026 Build		Analysis Period		1> 4:15					
Intersection		Mt Washington Rd		File Name		PM 26 B Preston SB 2L W.xus									
Project Description		Mt. Wash Apt SB 2 Left WB													
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				286	260	71	118	203	378	48	676	145	565	1012	475
Signal Information															
Cycle, s	180.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	13.0	19.4	60.9	29.0	26.7	0.0									
Yellow	3.5	3.5	4.3	3.6	3.6	0.0									
Red	3.0	3.0	1.7	2.4	2.4	0.0									
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					9.0		9.0	2.0	3.0	2.0	3.0				
Phase Duration, s					35.0		32.7	19.5	66.9	45.4	92.8				
Change Period, ( Y+R c ), s					6.0		6.0	6.5	6.0	6.5	6.0				
Max Allow Headway ( MAH ), s					5.1		4.2	4.0	0.0	4.0	0.0				
Queue Clearance Time ( g s ), s					30.2		25.9	7.0		38.3					
Green Extension Time ( g e ), s					0.0		0.8	0.1	0.0	0.6	0.0				
Phase Call Probability					1.00		1.00	1.00		1.00					
Max Out Probability					1.00		1.00	0.00		1.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate ( v ), veh/h				280	295	75	124	214	272	51	712	153	531	951	376
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1781	1864	1610	1810	1781	1572	1725	1781	1572	1268	1781	1585
Queue Service Time ( g s ), s				28.0	28.2	7.3	11.2	20.8	23.9	5.0	29.7	12.8	36.3	25.5	20.1
Cycle Queue Clearance Time ( g c ), s				28.0	28.2	7.3	11.2	20.8	23.9	5.0	29.7	12.8	36.3	25.5	20.1
Green Ratio ( g/C )				0.17	0.17	0.17	0.15	0.15	0.37	0.07	0.34	0.34	0.22	0.48	0.48
Capacity ( c ), veh/h				297	311	259	278	274	573	125	1205	532	562	1718	765
Volume-to-Capacity Ratio ( X )				0.943	0.949	0.288	0.446	0.780	0.474	0.406	0.591	0.287	0.944	0.554	0.492
Back of Queue ( Q ), ft/ln ( 95 th percentile)															
Back of Queue ( Q ), veh/ln ( 95 th percentile)				22.4	23.5	5.6	9.1	15.7	14.6	4.1	19.4	8.9	15.4	12.7	8.5
Queue Storage Ratio ( RQ ) ( 95 th percentile)				2.28	1.99	0.70	0.00	1.67	0.00	0.50	0.00	1.62	0.54	0.00	1.23
Uniform Delay ( d 1 ), s/veh				74.2	74.2	66.4	69.2	73.2	43.9	79.8	49.2	43.6	52.9	19.9	17.7
Incremental Delay ( d 2 ), s/veh				37.5	37.8	0.9	1.1	11.7	0.6	2.1	2.1	1.4	16.5	0.8	1.4
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh				111.7	112.0	67.3	70.3	84.9	44.5	81.9	51.4	45.0	69.4	20.7	19.1
Level of Service ( LOS )				F	F	E	E	F	D	F	D	D	E	C	B
Approach Delay, s/veh / LOS				106.7	F		64.0	E		52.0	D		34.3	C	
Intersection Delay, s/veh / LOS				54.5						D					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.48	B		2.74	C		2.48	B		2.12	B	
Bicycle LOS Score / LOS				1.56	B		1.49	A		1.24	A		2.20	B	



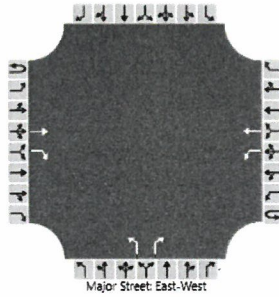
### HCS Signalized Intersection Results Summary

General Information					Intersection Information															
Agency	Diane B. Zimmerman Traffic Engineering					Duration, h	0.250													
Analyst	DBZ		Analysis Date	May 18, 2022		Area Type	Other													
Jurisdiction			Time Period	PM Peak		PHF	0.95													
Urban Street	Preston Highway		Analysis Year	2036 No Build		Analysis Period	1> 4:15													
Intersection	Mt Washington Rd		File Name	PM 36 NB Preston.xus																
Project Description	Mt. Wash Apt																			
Demand Information					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Demand ( v ), veh/h					301	245	75	112	194	361	50	711	137	531	1064	499				
Signal Information																				
Cycle, s	180.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	Off																	
Force Mode	Fixed	Simult. Gap N/S	On																	
					Green	13.0	19.0	59.0	29.0	29.0	0.0									
					Yellow	3.5	3.5	4.3	3.6	3.6	0.0									
					Red	3.0	3.0	1.7	2.4	2.4	0.0									
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase							4				8		5		2		1		6	
Case Number							9.0				11.0		2.0		3.0		2.0		3.0	
Phase Duration, s							35.0				35.0		19.5		65.0		45.0		90.5	
Change Period, ( Y+R c ), s							6.0				6.0		6.5		6.0		6.5		6.0	
Max Allow Headway ( MAH ), s							5.1				4.2		4.0		0.0		4.0		0.0	
Queue Clearance Time ( g s ), s							32.0				32.0		7.3				41.5			
Green Extension Time ( g e ), s							0.0				0.0		0.0		0.0		0.0		0.0	
Phase Call Probability							1.00				1.00		1.00				1.00			
Max Out Probability							1.00				1.00		0.06				1.00			
Movement Group Results					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement					7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate ( v ), veh/h					253	321	79		322	254	53	748	144	489	979	390				
Adjusted Saturation Flow Rate ( s ), veh/h/ln					1781	1853	1610		1749	1572	1725	1781	1572	1795	1781	1585				
Queue Service Time ( g s ), s					24.9	30.0	7.8		30.0	21.6	5.3	32.2	12.2	39.5	28.8	23.2				
Cycle Queue Clearance Time ( g c ), s					24.9	30.0	7.8		30.0	21.6	5.3	32.2	12.2	39.5	28.8	23.2				
Green Ratio ( g/C )					0.17	0.17	0.17		0.17	0.38	0.07	0.33	0.33	0.22	0.47	0.47				
Capacity ( c ), veh/h					297	309	259		292	590	125	1167	515	394	1672	744				
Volume-to-Capacity Ratio ( X )					0.854	1.040	0.304		1.105	0.430	0.422	0.641	0.280	1.240	0.586	0.524				
Back of Queue ( Q ), ft/ln ( 95 th percentile)																				
Back of Queue ( Q ), veh/ln ( 95 th percentile)					19.1	27.4	5.9		29.1	13.4	4.3	20.8	8.6	39.7	14.6	9.7				
Queue Storage Ratio ( RQ ) ( 95 th percentile)					1.94	2.32	0.74		3.09	0.00	0.52	0.00	1.57	1.38	0.00	1.41				
Uniform Delay ( d 1 ), s/veh					72.9	75.0	66.6		75.0	41.9	79.9	51.5	44.8	54.4	22.7	20.4				
Incremental Delay ( d 2 ), s/veh					21.3	62.1	0.9		83.8	0.5	2.3	2.7	1.4	120.7	0.9	1.6				
Initial Queue Delay ( d 3 ), s/veh					0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay ( d ), s/veh					94.2	137.1	67.5		158.8	42.4	82.2	54.2	46.1	175.1	23.6	22.0				
Level of Service ( LOS )					F	F	E		F	D	F	D	D	F	C	C				
Approach Delay, s/veh / LOS					112.1		F		107.5		F		54.5		D		63.1		E	
Intersection Delay, s/veh / LOS					75.4						E									
Multimodal Results					EB			WB			NB			SB						
Pedestrian LOS Score / LOS					2.48		B		2.60		C		2.12		B		2.12		B	
Bicycle LOS Score / LOS					1.57		B		1.44		A		1.27		A		2.24		B	



HCS Signalized Intersection Results Summary																			
General Information								Intersection Information											
Agency		Diane B. Zimmerman Traffic Engineering						Duration, h		0.250									
Analyst		DBZ		Analysis Date		May 18, 2022		Area Type		Other									
Jurisdiction				Time Period		PM Peak		PHF		0.95									
Urban Street		Preston Highway		Analysis Year		2036 Build		Analysis Period		1> 4:15									
Intersection		Mt Washington Rd		File Name		PM 36 B Preston SB 2L W.xus													
Project Description		Mt. Wash Apt SB 2 Left WB																	
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand ( v ), veh/h				301	273	75	123	212	396	50	711	152	591	1064	499				
Signal Information																			
Cycle, s	180.0	Reference Phase	2																
Offset, s	0	Reference Point	End	Green	13.0	17.7	61.1	29.0	28.3	0.0									
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	3.5	3.5	4.3	3.6	3.6	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	1.7	2.4	2.4	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4				8		5		2		1		6	
Case Number						9.0				9.0		2.0		3.0		2.0		3.0	
Phase Duration, s						35.0				34.3		19.5		67.1		43.7		91.2	
Change Period, ( Y+R c ), s						6.0				6.0		6.5		6.0		6.5		6.0	
Max Allow Headway ( MAH ), s						5.1				4.2		4.0		0.0		4.0		0.0	
Queue Clearance Time ( g s ), s						31.9				28.0		7.3				36.5			
Green Extension Time ( g e ), s						0.0				0.3		0.0		0.0		0.6		0.0	
Phase Call Probability						1.00				1.00		1.00				1.00			
Max Out Probability						1.00				1.00		0.02				1.00			
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate ( v ), veh/h				295	310	79	129	223	291	53	748	160	528	951	379				
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1781	1864	1610	1810	1781	1572	1725	1781	1572	1326	1781	1585				
Queue Service Time ( g s ), s				29.7	29.9	7.8	11.6	21.6	26.0	5.3	31.7	13.5	34.5	26.9	21.6				
Cycle Queue Clearance Time ( g c ), s				29.7	29.9	7.8	11.6	21.6	26.0	5.3	31.7	13.5	34.5	26.9	21.6				
Green Ratio ( g/C )				0.17	0.17	0.17	0.16	0.16	0.37	0.07	0.34	0.34	0.21	0.47	0.47				
Capacity ( c ), veh/h				297	311	259	294	290	572	125	1208	533	562	1686	750				
Volume-to-Capacity Ratio ( X )				0.993	0.996	0.304	0.440	0.770	0.508	0.422	0.620	0.300	0.939	0.564	0.505				
Back of Queue ( Q ), ft/ln ( 95 th percentile)																			
Back of Queue ( Q ), veh/ln ( 95 th percentile)				24.7	25.7	5.9	9.3	16.2	15.6	4.3	20.5	9.2	15.4	13.5	9.1				
Queue Storage Ratio ( RQ ) ( 95 th percentile)				2.50	2.18	0.74	0.00	1.72	0.00	0.52	0.00	1.69	0.53	0.00	1.32				
Uniform Delay ( d 1 ), s/veh				74.9	74.9	66.6	68.0	72.1	44.7	79.9	49.8	43.8	54.4	21.6	19.4				
Incremental Delay ( d 2 ), s/veh				50.1	50.0	0.9	1.0	11.4	0.7	2.3	2.4	1.4	15.6	0.8	1.4				
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay ( d ), s/veh				125.0	125.0	67.5	69.0	83.6	45.4	82.2	52.2	45.2	70.0	22.5	20.8				
Level of Service (LOS)				F	F	E	E	F	D	F	D	D	E	C	C				
Approach Delay, s/veh / LOS				118.4	F		63.4	E		52.6	D		35.6	D					
Intersection Delay, s/veh / LOS				57.5						E									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.48	B		2.74	C		2.48	B		2.12	B					
Bicycle LOS Score / LOS				1.61	B		1.55	B		1.28	A		2.29	B					



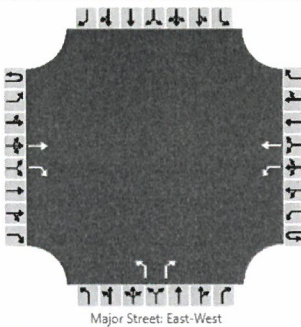
HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/29/2021							East/West Street	Mt Washington Rd							
Analysis Year	2021							North/South Street	Standiford Plaza							
Time Analyzed	AM Peak							Peak Hour Factor	0.92							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
 <p style="text-align: center; font-size: small;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			156	49		48	462			43		36				
Percent Heavy Vehicles (%)						0				5		11				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type   Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)						4.1					7.1		6.2			
Critical Headway (sec)						4.10					6.45		6.31			
Base Follow-Up Headway (sec)						2.2					3.5		3.3			
Follow-Up Headway (sec)						2.20					3.55		3.40			
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						52					47		39			
Capacity, c (veh/h)						1358					434		851			
v/c Ratio						0.04					0.11		0.05			
95% Queue Length, Q <sub>95</sub> (veh)						0.1					0.4		0.1			
Control Delay (s/veh)						7.8					14.3		9.4			
Level of Service (LOS)						A					B		A			
Approach Delay (s/veh)					0.7				12.1							
Approach LOS									B							



HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/29/2021							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Standiford Plaza							
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.92							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p style="text-align: center;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			209	66		64	618			58		48				
Percent Heavy Vehicles (%)						0				5		11				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type   Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.45		6.31				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.55		3.40				
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						70				63		52				
Capacity, c (veh/h)						1274				337		790				
v/c Ratio						0.05				0.19		0.07				
95% Queue Length, Q <sub>95</sub> (veh)						0.2				0.7		0.2				
Control Delay (s/veh)						8.0				18.1		9.9				
Level of Service (LOS)						A				C		A				
Approach Delay (s/veh)					0.7				14.4							
Approach LOS									B							



Mt. Washington Road  
Traffic Impact Study

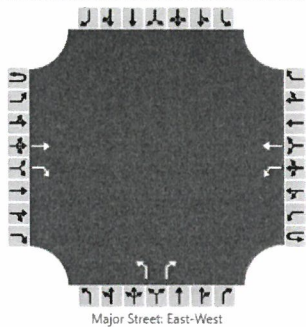
HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Standiford Plaza							
Time Analyzed	AM Peak Build							Peak Hour Factor	0.92							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
 <p style="text-align: center; font-size: small;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			241	66		75	729			58		55				
Percent Heavy Vehicles (%)						0				5		11				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						82				63		60				
Capacity, c (veh/h)						1237				283		755				
v/c Ratio						0.07				0.22		0.08				
95% Queue Length, Q <sub>95</sub> (veh)						0.2				0.8		0.3				
Control Delay (s/veh)						8.1				21.3		10.2				
Level of Service, LOS						A				C		B				
Approach Delay (s/veh)					0.8				15.9							
Approach LOS									C							



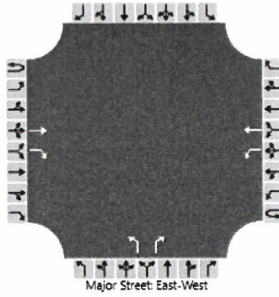
Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2036							North/South Street	Standiford Plaza							
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.92							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p>Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			220	66		64	650			58		48				
Percent Heavy Vehicles (%)						0				5		11				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						70				63		52				
Capacity, c (veh/h)						1261				323		778				
v/c Ratio						0.06				0.20		0.07				
95% Queue Length, Q <sub>95</sub> (veh)						0.2				0.7		0.2				
Control Delay (s/veh)						8.0				18.8		10.0				
Level of Service, LOS						A				C		A				
Approach Delay (s/veh)					0.7				14.8							
Approach LOS									B							



HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2036							North/South Street	Standiford Plaza							
Time Analyzed	AM Peak Build							Peak Hour Factor	0.92							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
 <p style="margin-top: 5px;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			252	66		75	761			58		55				
Percent Heavy Vehicles (%)						0				5		11				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						82				63		60				
Capacity, c (veh/h)						1224				271		744				
v/c Ratio						0.07				0.23		0.08				
95% Queue Length, Q <sub>95</sub> (veh)						0.2				0.9		0.3				
Control Delay (s/veh)						8.2				22.2		10.3				
Level of Service, LOS						A				C		B				
Approach Delay (s/veh)					0.7				16.4							
Approach LOS									C							



HCS7 Two-Way Stop-Control Report																	
General Information										Site Information							
Analyst	DBZ									Intersection	Mt Wash at Stand						
Agency/Co.	Diane B Zimmerman Traffic Engineering									Jurisdiction							
Date Performed	12/29/2021									East/West Street	Mt Washington Rd						
Analysis Year	2021									North/South Street	Standiford Plaza						
Time Analyzed	PM Peak									Peak Hour Factor	0.97						
Intersection Orientation	East-West									Analysis Time Period (hrs)	0.25						
Project Description	Mt Wash Apt																
<b>Lanes</b>																	
 <p style="text-align: center; font-size: small;">Major Street: East-West</p>																	
<b>Vehicle Volumes and Adjustments</b>																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0	
Configuration			T	R		L	T			L		R					
Volume (veh/h)			500	180		120	358			108		160					
Percent Heavy Vehicles (%)						0				2		1					
Proportion Time Blocked																	
Percent Grade (%)									0								
Right Turn Channelized	No								No								
Median Type   Storage					Left Only								1				
<b>Critical and Follow-up Headways</b>																	
Base Critical Headway (sec)						4.1				7.1		6.2					
Critical Headway (sec)						4.10				6.42		6.21					
Base Follow-Up Headway (sec)						2.2				3.5		3.3					
Follow-Up Headway (sec)						2.20				3.52		3.31					
<b>Delay, Queue Length, and Level of Service</b>																	
Flow Rate, v (veh/h)						124				111		165					
Capacity, c (veh/h)						905				325		561					
v/c Ratio						0.14				0.34		0.29					
95% Queue Length, Q <sub>95</sub> (veh)						0.5				1.5		1.2					
Control Delay (s/veh)						9.6				21.7		14.1					
Level of Service (LOS)						A				C		B					
Approach Delay (s/veh)					2.4				17.1								
Approach LOS									C								



Mt. Washington Road  
Traffic Impact Study

HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/29/2021							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Standiford Plaza							
Time Analyzed	PM Peak No Build							Peak Hour Factor	0.97							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			669	241		161	479			145		214				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type   Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)						4.1					7.1		6.2			
Critical Headway (sec)						4.10					6.42		6.21			
Base Follow-Up Headway (sec)						2.2					3.5		3.3			
Follow-Up Headway (sec)						2.20					3.52		3.31			
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						166					149		221			
Capacity, c (veh/h)						739					226		447			
v/c Ratio						0.22					0.66		0.49			
95% Queue Length, Q <sub>95</sub> (veh)						0.9					4.1		2.7			
Control Delay (s/veh)						11.3					47.3		20.6			
Level of Service (LOS)						B					E		C			
Approach Delay (s/veh)					2.8				31.4							
Approach LOS									D							

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HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Standiford Plaza							
Time Analyzed	PM Peak Build							Peak Hour Factor	0.97							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p>Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			772	241		177	543			145		246				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						182				149		254				
Capacity, c (veh/h)						674				188		389				
v/c Ratio						0.27				0.79		0.65				
95% Queue Length, Q <sub>95</sub> (veh)						1.1				5.4		4.5				
Control Delay (s/veh)						12.3				72.1		30.1				
Level of Service, LOS						B				F		D				
Approach Delay (s/veh)					3.0				45.6							
Approach LOS									E							



Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																	
General Information									Site Information								
Analyst	DBZ								Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering								Jurisdiction								
Date Performed	5/18/2022								East/West Street	Mt Washington Rd							
Analysis Year	2036								North/South Street	Standiford Plaza							
Time Analyzed	PM Peak No Build								Peak Hour Factor	0.97							
Intersection Orientation	East-West								Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt																
Lanes																	
<p style="text-align: center;">Major Street: East-West</p>																	
Vehicle Volumes and Adjustments																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6			7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0			1	0	1		0	0	0
Configuration			T	R		L	T				L		R				
Volume, V (veh/h)			703	241		161	503				145		214				
Percent Heavy Vehicles (%)						0					2		1				
Proportion Time Blocked																	
Percent Grade (%)									0								
Right Turn Channelized	No				No				No				No				
Median Type/Storage					Left Only								1				
Critical and Follow-up Headways																	
Base Critical Headway (sec)																	
Critical Headway (sec)																	
Base Follow-Up Headway (sec)																	
Follow-Up Headway (sec)																	
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)						166					149		221				
Capacity, c (veh/h)						717					216		427				
v/c Ratio						0.23					0.69		0.52				
95% Queue Length, Q <sub>95</sub> (veh)						0.9					4.4		2.9				
Control Delay (s/veh)						11.5					52.1		22.1				
Level of Service, LOS						B					F		C				
Approach Delay (s/veh)					2.8				34.2								
Approach LOS									D								



HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Stand							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2036							North/South Street	Standiford Plaza							
Time Analyzed	PM Peak Build							Peak Hour Factor	0.97							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p style="text-align: center;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			806	241		177	567			145		246				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)						182				149		254				
Capacity, c (veh/h)						654				180		371				
v/c Ratio						0.28				0.83		0.68				
95% Queue Length, Q <sub>95</sub> (veh)						1.1				5.8		4.9				
Control Delay (s/veh)						12.6				81.4		33.3				
Level of Service, LOS						B				F		D				
Approach Delay (s/veh)					3.0				51.1							
Approach LOS									F							



HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/29/2021							East/West Street	Mt Washington Rd							
Analysis Year	2021							North/South Street	Ray Nan Way							
Time Analyzed	AM Peak							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p>Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration	LT				TR								LR			
Volume (veh/h)		7	149				473	1						1		11
Percent Heavy Vehicles (%)		0												0		10
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.30
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.39
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		7													13	
Capacity, c (veh/h)		1076													542	
v/c Ratio		0.01													0.02	
95% Queue Length, Q <sub>95</sub> (veh)		0.0													0.1	
Control Delay (s/veh)		8.4													11.8	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.4												11.8			
Approach LOS													B			



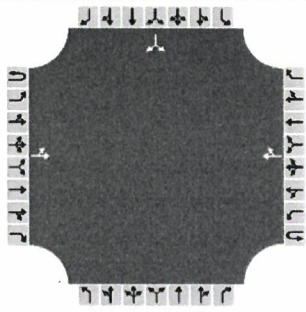
HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/29/2021							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Ray Nan Way							
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		7	199				633	1						1		11
Percent Heavy Vehicles (%)		0												0		10
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.30
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.39
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		7													13	
Capacity, c (veh/h)		932													430	
v/c Ratio		0.01													0.03	
95% Queue Length, Q <sub>95</sub> (veh)		0.0													0.1	
Control Delay (s/veh)		8.9													13.6	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.4												13.6			
Approach LOS													B			



HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Ray Nan Way							
Time Analyzed	AM Peak Build							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p style="text-align: center;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	1	0	1	1	0		1	0	1		0	0	0
Configuration		L	T	R		L		TR		L		R			LR	
Volume, V (veh/h)		7	199	39		16	633	1		122		52		1		11
Percent Heavy Vehicles (%)		0				0				1		0		0		10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		7				17				128		55			13	
Capacity, c (veh/h)		932				1327				333		836			434	
v/c Ratio		0.01				0.01				0.38		0.07			0.03	
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0				1.7		0.2			0.1	
Control Delay (s/veh)		8.9				7.7				22.4		9.6			13.5	
Level of Service, LOS		A				A				C		A			B	
Approach Delay (s/veh)	0.2				0.2				18.5				13.5			
Approach LOS									C				B			

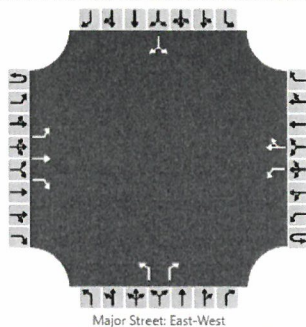


Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2036							North/South Street	Ray Nan Way							
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
 <p style="text-align: center; font-size: small;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		7	209				665	1						1		11
Percent Heavy Vehicles (%)		0												0		10
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		7													13	
Capacity, c (veh/h)		906													412	
v/c Ratio		0.01													0.03	
95% Queue Length, Q <sub>95</sub> (veh)		0.0													0.1	
Control Delay (s/veh)		9.0													14.0	
Level of Service, LOS		A													B	
Approach Delay (s/veh)	0.4												14.0			
Approach LOS													B			



Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	5/18/2022							East/West Street	Mt Washington Rd								
Analysis Year	2036							North/South Street	Ray Nan Way								
Time Analyzed	AM Peak Build							Peak Hour Factor	0.95								
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25								
Project Description	Mt Wash Apt																
<b>Lanes</b>																	
 <p style="font-size: small; margin-top: 5px;">Major Street: East-West</p>																	
<b>Vehicle Volumes and Adjustments</b>																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6			7	8	9		10	11	12
Number of Lanes	0	1	1	1	0	1	1	0			1	0	1		0	0	0
Configuration		L	T	R		L		TR			L		R			LR	
Volume, V (veh/h)		7	209	39		16	665	1			122		52		1		11
Percent Heavy Vehicles (%)		0				0					1		0		0		10
Proportion Time Blocked																	
Percent Grade (%)									0				0				
Right Turn Channelized	No				No				No				No				
Median Type/Storage					Left Only								1				
<b>Critical and Follow-up Headways</b>																	
Base Critical Headway (sec)																	
Critical Headway (sec)																	
Base Follow-Up Headway (sec)																	
Follow-Up Headway (sec)																	
<b>Delay, Queue Length, and Level of Service</b>																	
Flow Rate, v (veh/h)		7				17					128		55			13	
Capacity, c (veh/h)		906				1315					318		825			415	
v/c Ratio		0.01				0.01					0.40		0.07			0.03	
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					1.9		0.2			0.1	
Control Delay (s/veh)		9.0				7.8					23.7		9.7			14.0	
Level of Service, LOS		A				A					C		A			B	
Approach Delay (s/veh)	0.2				0.2				19.5				14.0				
Approach LOS									C				B				



Mt. Washington Road  
Traffic Impact Study

HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection				Mt Wash at Ray Nan Way				
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/29/2021							East/West Street				Mt Washington Rd				
Analysis Year	2021							North/South Street				Ray Nan Way				
Time Analyzed	PM Peak							Peak Hour Factor				0.95				
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25				
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration	LT								TR				LR			
Volume (veh/h)		18	544				362	1						10		11
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.10												6.40		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		19												22		
Capacity, c (veh/h)		1187												391		
v/c Ratio		0.02												0.06		
95% Queue Length, Q <sub>95</sub> (veh)		0.0												0.2		
Control Delay (s/veh)		8.1												14.8		
Level of Service (LOS)		A												B		
Approach Delay (s/veh)	0.4												14.8			
Approach LOS													B			

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Ray Nan PM 21.xtw

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Mt. Washington Road  
Traffic Impact Study

HCS7 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	12/29/2021							East/West Street	Mt Washington Rd								
Analysis Year	2026							North/South Street	Ray Nan Way								
Time Analyzed	PM Peak No Build							Peak Hour Factor	0.95								
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25								
Project Description	Mt Wash Apt																
<b>Lanes</b>																	
<b>Vehicle Volumes and Adjustments</b>																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0	
Configuration		LT						TR							LR		
Volume (veh/h)		18	728				484	1						10		11	
Percent Heavy Vehicles (%)		0												0		0	
Proportion Time Blocked																	
Percent Grade (%)														0			
Right Turn Channelized																	
Median Type   Storage		Undivided															
<b>Critical and Follow-up Headways</b>																	
Base Critical Headway (sec)		4.1												7.1		6.2	
Critical Headway (sec)		4.10												6.40		6.20	
Base Follow-Up Headway (sec)		2.2												3.5		3.3	
Follow-Up Headway (sec)		2.20												3.50		3.30	
<b>Delay, Queue Length, and Level of Service</b>																	
Flow Rate, v (veh/h)		19												22			
Capacity, c (veh/h)		1065												269			
v/c Ratio		0.02												0.08			
95% Queue Length, Q <sub>95</sub> (veh)		0.1												0.3			
Control Delay (s/veh)		8.4												19.6			
Level of Service (LOS)		A												C			
Approach Delay (s/veh)		0.5												19.6			
Approach LOS														C			

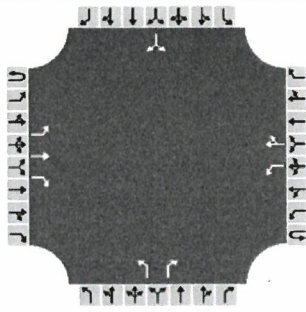
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HCS7 TWSC Version 7.9.5  
Ray Nan PM 26 NB.xtw

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Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2026							North/South Street	Ray Nan Way							
Time Analyzed	PM Peak Build							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
 Major Street: East-West																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	1	0	1	1	0		1	0	1		0	0	0
Configuration		L	T	R		L		TR		L		R			LR	
Volume, V (veh/h)		18	728	135		58	484	1		80		34		10		11
Percent Heavy Vehicles (%)		0				0				0		0		0		0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only								1			
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		19				61				84		36			23	
Capacity, c (veh/h)		1066				758				223		406			293	
v/c Ratio		0.02				0.08				0.38		0.09			0.08	
95% Queue Length, Q <sub>95</sub> (veh)		0.1				0.3				1.7		0.3			0.3	
Control Delay (s/veh)		8.4				10.2				30.6		14.7			18.4	
Level of Service, LOS		A				B				D		B			C	
Approach Delay (s/veh)	0.2				1.1				25.9				18.4			
Approach LOS									D				C			

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HCS 2010 TWSC Version 6.90  
Ray Nan PM 26 B.txtw

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Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2036							North/South Street	Ray Nan Way							
Time Analyzed	PM Peak No Build							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p>Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		18	765				509	1						10		11
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		19													23	
Capacity, c (veh/h)		1041													251	
v/c Ratio		0.02													0.09	
95% Queue Length, Q <sub>95</sub> (veh)		0.1													0.3	
Control Delay (s/veh)		8.5													20.8	
Level of Service, LOS		A													C	
Approach Delay (s/veh)	0.5												20.8			
Approach LOS													C			



Mt. Washington Road  
Traffic Impact Study

HCS 2010 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Mt Wash at Ray Nan Way							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	5/18/2022							East/West Street	Mt Washington Rd							
Analysis Year	2036							North/South Street	Ray Nan Way							
Time Analyzed	PM Peak Build							Peak Hour Factor	0.95							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Mt Wash Apt															
<b>Lanes</b>																
<p style="text-align: center;">Major Street: East-West</p>																
<b>Vehicle Volumes and Adjustments</b>																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	1	0	1	1	0		1	0	1		0	0	0
Configuration		L	T	R		L		TR		L		R			LR	
Volume, V (veh/h)		18	765	135		58	509	1		80		34		10		11
Percent Heavy Vehicles (%)		0				0				0		0		0		0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left Only								1							
<b>Critical and Follow-up Headways</b>																
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
<b>Delay, Queue Length, and Level of Service</b>																
Flow Rate, v (veh/h)		19				61				84		36			23	
Capacity, c (veh/h)		1041				733				210		386			276	
v/c Ratio		0.02				0.08				0.40		0.09			0.08	
95% Queue Length, Q <sub>95</sub> (veh)		0.1				0.3				1.8		0.3			0.3	
Control Delay (s/veh)		8.5				10.4				33.1		15.3			19.2	
Level of Service, LOS		A				B				D		C			C	
Approach Delay (s/veh)	0.2				1.1				27.7				19.2			
Approach LOS									D				C			



## Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	58	Speed Limit (mph)	35
Advancing Volume (vph)	542	No. of through lanes	1
Opposing Volume (vph)	881	Percent Heavy Vehicles (decimal percent)	0.01



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.



## Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

135

Speed Limit (mph)

35

Advancing Volume (vph)

863



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.



## Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	58	Speed Limit (mph)	35
Advancing Volume (vph)	542	No. of through lanes	1
Opposing Volume (vph)	881	Percent Heavy Vehicles (decimal percent)	0.01



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

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## Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

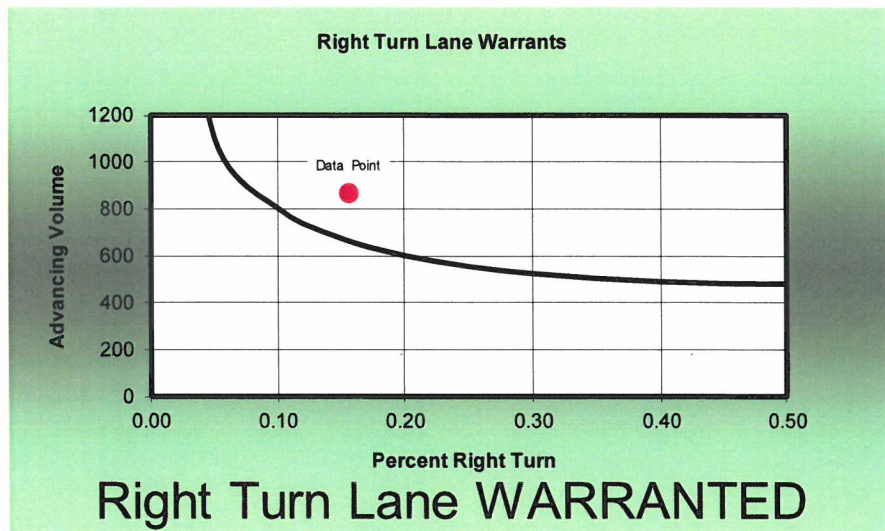
135

Speed Limit (mph)

35

Advancing Volume (vph)

863



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

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