

# Al dridge Transportation Consultants, LLC Advanced Transportation Planning and Traffic Engineering

John M.W. Aldridge, PE Colorado Licensed Professional Engineer

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December 21, 2022

Mr. Robert C. Irwin Midco Investments, LLC P.O. Box 60069 Colorado Springs, CO 80960

Re: Transportation Impact Study - Revised

Haven Valley – Security-Widefield, Colorado

Dear Mr. Irwin:

Aldridge Transportation Consultants (ATC) is pleased to present this Traffic Impact Study regarding the proposed development of Haven Valley in Security-Widefield.

ATC is professional service firm specializing in traffic engineering and transportation planning. ATC's principal, John M.W. Aldridge, is a Colorado licensed professional engineer. In the past 20 years, ATC has prepared over 1,000 traffic impact studies, designed over 100 traffic signals, and has provided expert witness testimony on engineering design and access issues on multi-million dollar interchange and highway projects in Kansas and Colorado.

ATC appreciates the opportunity to be of service. Please call if you have any questions. We can be reached at 303-703-9112.

Aldridae **Transportation Consultants, LLC** 

John M.W. Aldr **Principal** 



## Signature Page

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Aldridge Transportation Consultants, LLC

John M.W. Aldridge, P.E. Principal

I, Robert C. Irwin, Manager, Midco Investments, LLC, have read and will comply with all the commitments made on my behalf within this report.

Signature and date

Mr. Robert C. Irwin, Manager Midco Investments, LLC PO Box 60069 Colorado Springs, CO 80960



#### 1. PROJECT DESCRIPTION

Midco Investments, LLC is proposing to construct 98 single family homes on the south side of Cable Lane and Alturas Dr. in Security-Widefield, Colorado. Figure 1 below shows the location of the site, site plan, and the adjacent streets and intersections. Note that the lot layout and lot count shown is up to date at the writing of this study. It is subject to change as planning and development moves forward. This project was originally studied in 2006 (coincidentally April 7, 2006, to be exact) by Pentacor Engineering. The project was then known as Patriot Village, and it presented development of 106 duplex/townhomes.





The 2006 study projected 690 average daily trips with 54 in/out AM trips and 63 in/out PM trips. This project with 98 single family attached homes will generate a comparable 706 average daily trips with 47 in/out AM trips and 57 in/out PM trips which is slightly less than the 2006 study. The LOS and operational analyses is also very similar however difficult to compare as the HCM procedures and methodology have improved vastly since 2006. The Pentacor study is attached for reference.

#### 2. GENERAL EXISTING CONDITIONS

The site will be primarily accessed by the Bradley Road and Alturas Dr. intersection. Bradley Road is a four-lane Principal Arterial. It carries approximately 12,000 ADT and is posted at 40 mph. There are sections of attached sidewalk and no bike lanes. Alturas Dr. is a low volume Collector Street. It carries under 400 ADT and is posted at 25 mph. It has attached sidewalk on both sides of the street. Cable Lane is a two-lane narrow paved Local Street that carries very little traffic likely less than 200 ADT. The estimate is based on the Alturas Dr. ADT at the Bradley Road intersection minus the traffic volume accessing the residential development on Windmill Creek Way and Rill Valley Way.

The intersection of Bradley Road and Alturas Dr. is two-way stop-sign controlled. It features a 300-foot westbound left turn deceleration lane and 200-foot eastbound left and right turn deceleration lanes. The Alturas Dr. northbound approach consists of a shared through and left turn lane and an exclusive right turn lane. The southbound approach is a single lane and all movements are shared.

The intersection of Hancock Expressway and Bradley Road was not analyzed as it is a fully developed traffic signal-controlled intersection which would not be impacted by more than a 5 percent increase on the westbound approach leg by the traffic generated by Haven Valley.

The AM and PM peak hours at the intersection of Bradley Road and Alturas Dr. were counted on Tuesday, March 9, 2021, by All Traffic Data. The impact of Covid pandemic restrictions were most felt in March and April 2020. By this time a year later traffic has returned to "normal" or per the ITE publication "What a Transportation Professional Needs to Know About Counts and Studies during a Pandemic" traffic volumes have established a "new" normal. The counts are attached.

#### 3. DEVELOPMENT SITE CHARACTERISTICS

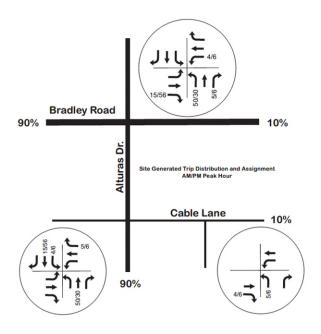
The trip generation for the residential development is defined in Table 1. It is based on the rates and values found in the *ITE Trip Generation Manual*, 11<sup>th</sup> Edition for Category Single-Family Attached ITE Code 215. The ATD and AM/PM Peak Hour site generation is shown in Table 1. There are no fixed route transit options in this area. The site trip generated ADT is 706 qualifying this study as "intermediate."

Table 1

					WEEKDAY									
						AM			PM					
ITE CODE	LAND USE	Unit	QUANTITY	ADT	IN	Оит	TOTAL	IN	Out	TOTAL				
210	Single Family	DU	98	7.20	0.15	0.33		0.33	0.25					
				706	15	32	47	32	25	57				
·	Total Trips			706	15	32	47	32	25	57				



The PM peak hour is the heaviest time of traffic on the highway and the development. It is considered the design hour volume (DHV) for operations and geometric design purposes.



The distribution of the site generated traffic mirrors that of the existing movements at the intersection. Generally, the directional split is 10 percent to the east and 90 percent to the west. The assignment of the traffic is shown in the graphic to the left. Note the distribution of traffic unto Cable Lane is nominal, in the range of 10 percent, as the there are only about 10 homes that would benefit using the access.

#### 4. FUTURE CONDITIONS

A review of the **2016 El Paso Major Transportation Corridors Plan Update** revealed only one area on Bradley Road with an existing and 2040 forecasted volume. It shows a 12,000 ADT existing volume and a 2040 volume of 19,800 ADT. That equates to a 2.5% per annum growth. The 3-year growth factor is 1.08 and the 20-year growth factor is 1.65.

The 2040 improvement plan shows no projects on this section of Bradley Road. It does indicate that Bradley Road will be widened to four-lanes from Academy Blvd. to Hancock Expy. and that Grinnell St. will be widened to four-lanes from Powers Blvd. to Bradley Road.

#### 5. PROJECT IMPACTS

ATC uses Synchro v.10 for operations analyses. The Synchro v.10 methodologies are based on the **Highway Capacity Manual, 6<sup>th</sup> Edition** (HCM). The Synchro HCM reports in the appendix are for reference. LOS is letter rating from A to F. LOS A indicates free-flow traffic conditions and no delay at intersections. LOS F is heavy traffic congestion with significant delay. LOS is provided for the overall operations at signalized intersections. LOS D is generally the benchmark for acceptable signalized intersection operations during the weekday peak hours. The critical movement, not the overall, provides the LOS rating for unsignalized intersections. The critical movement is generally a left turn from the minor approach. Caution is advised when evaluating the LOS at unsignalized intersections particularly when LOS F shows. In cases of a LOS F, the HCM suggests that other evaluation measures should be considered such as the volume over capacity ratio and the 95<sup>th</sup> percentile queue length to make the most



effective traffic control decision. LOS F at unsignalized intersections is considered normal for the weekday peak hour particularly when the v/c ratio and the 95th percentile queue length are acceptable.

			Lev	el of Servi	ce Summar	Y				
		LC	S/Delay(se	cs) - 95th%	ile queue l	ength (veh)				
Intersection	Exis	ting	2024 Bac	kground	2024	TOTAL	2040 Bad	kground	2040	TOTAL
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Unsignalized										
Bradley Road/Alturas Dr.	D/26.0	E/41.6	D/28.4	E/47.2	E/41.5	F/73.9	F/65.0	F/134.3	F/185.1	F/>300
	0.3	0.3	0.4	0.3	2	1.9	0.9	0.8	5.1	4.4

The intersection currently operates at LOS D/E based on the critical movement which in this case is the northbound left turn and will continue to do so in 2024 background condition. The ECM specifies that LOS D is the minimum acceptable LOS. However, per the Highway Capacity Manual, this is an acceptable operating condition through 2024 as the volume over capacity ratios are below 1 and only 1-2 cars will queue in the 95<sup>th</sup> percentile queue. In the 2040 background conditions, the intersection will operate within acceptable operations as the 95<sup>th</sup> percentile queue length is one vehicle, and the v/c ratio is approximately 0.25. In the 2040 AM and PM Total condition, acceptable operating conditions are not reported. The v/c ratio is over 1 and the queues are 5 and 6 vehicles. There are no reasonable solutions currently for the LOS E/F in the 2024 conditions.

Traffic signal control is not warranted now but could be in the future 2040 conditions, particularly if the surrounding area develops and adds more traffic to the intersection. There is no point in doing a complete traffic signal warrant analysis as the peak hour volume on the minor street approach is well below what is required to meet an applicable volume warrant (MUTCD Warrants 1-2). The intersection should, however, be periodically monitored for warrant volumes, operational delay, and crashes.

The turning movement volumes at the intersection of Alturas Dr. / Cable Lane and Prospect Point / Cable Lane are too small to be evaluated meaningfully. Consequently, traffic counting at these intersections would not provide any useful data. Both intersections will operate at the highest LOS A/A in the AM and PM peak hours and there will be no stacking or queueing during those times.

#### PEDESTRIAN AND BICYCLE IMPACT EVALUATIONS

Presently there are limited sidewalks and no bike lanes along the frontage of Bradley Road. There are sidewalks but no bike lanes on Alturas Dr. Attached sidewalks are planned for all internal streets and along the south side of Cable Lane. The map on the next page shows the site in yellow and the location of the three schools that would be attended by students in Haven Valley. French Elementary School is approximately one-half mile miles to the east. Sproul Junior High School is about the same distance to the west. Widefield High School is about three quarters of a mile to the south. Students here would be bussed or allowed to use personal vehicles. There are no grocery stores within a mile of the site.



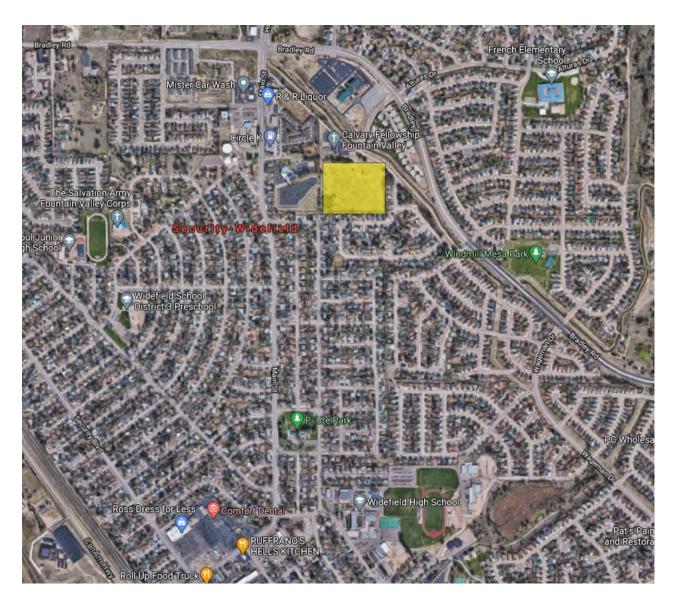


Figure 2 Surrounding Area and Facilities



#### 6. MITIGATION MEASURES

No mitigation measures are necessary to Bradley Road or Alturas Dr. to accommodate the trip generation from Haven Valley safely and efficiently. Although the northbound left turn movement would meet the ECM threshold for a dedicated left turn lane. But as there are no northbound through movements, the need for a dedicated lane is not indicated. There's no indication that the southbound approach needs any improvement such as a separate left turn lane. Traffic signal control at the Bradley Road and Alturas Dr. intersection is not warranted currently but it is anticipated to be in the future should the forecast increase in volume on Bradley Road be realized.

The site plan indicates that Cable Lane will be reconstructed east from Alturas Dr. to Hunters Run match the cross-section of Hunters Run. The roadway improvement will include curb and gutter on both sides and attached sidewalks on the south side. Most of the Haven Valley internal streets are classified as Urban Local (low volume) Roadways with 50-foot right-of-way and 24 feet of pavement. The roads meet the design ADT of 300 vpd or less. They will be posted at 25 mph meet the 150-foot spacing requirement. Road over 300 vpd will be constructed to the Urban Local standard for a design ADT of 3,000 ADT. These are still within 50-foot right-of-way but include 30 feet of pavement. The ECM design criteria str are shown below.

Table 2-7. Roadway Design Standards for Urban Co.	lectors and Locals
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	Colle	ectors	Lo	cal
Criteria	Non-		Local	Local <sup>4</sup>
	Residential	Residential		(low volume
Design Speed / Posted Speed (MPH)	40 / 35	40 / 35	25 / 25	20 / 20
Clear Zone	14'	14'	12'	7'
Minimum Centerline Curve Radius	565'	565'	200'	100'
Number of Through Lanes	2	2	2	2
Lane Width	12'	12'	12'	12'
Right-of-Way	80'	60'	60 <sup>,3</sup>	60,3
Paved Width (Excluding Gutter Pan)	48'	36'	30'	24'
Median Width (Including Curb & Gutter)	12'	n/a	n/a	n/a
Shoulder Width (Ext., Excluding Gutter)	6'	6'	n/a	n/a
Shoulder Width (Int., Excluding Gutter)	n/a	n/a	n/a	n/a
Required Curb/ Gutter Type (Vertical)	6"	6"	6" (or ramp)	6" (or ramp)
Sidewalk Width (@ FL)	5' detached	5' detached	5' attached	5' attached
Design ADT	20,000	10,000	3,000	300
Design Vehicle	WB-50	WB-50	WB-50	SU-30
Bike Lanes Permitted	No	Yes	No	No
Access Permitted	No <sup>5</sup>	No <sup>5</sup>	Yes	Yes
Access Spacing	See Table 2-35	See Table 2-35	Frontage	Frontage
Intersection Spacing	660'2	660' <sup>2</sup>	175'	150'
Parking Permitted	No	No	Yes	Yes
Minimum Flowline Grade of Curb	.50%	.50%	.50%	.50%
Centerline Grade (MinMax,)	0.5-6%1	0.5-8%1	0.5-8%1	0.5-8%1
Intersection Grades (MinMax.)	0.5-4%	0.5-4%	0.5-4%	0.5-4%

<sup>10%</sup> maximum grade permitted at the discretion of the ECM Administrator

Figure 3 shows the forecast vehicles per day (vpd) on the internal roads.

<sup>&</sup>lt;sup>2</sup> 330 feet when intersecting local roadways

<sup>3 50-</sup>foot right-of-way plus two 5-foot Public Improvements Easements granted to El Paso County

<sup>&</sup>lt;sup>4</sup> Section can be used for cul-de-sacs, or roads with two ways out having a maximum of 300 ADT and a maximum length of 1,200 feet

<sup>&</sup>lt;sup>5</sup> Where no local public or private roadway can provide access, temporary or partial turn movement parcel access may be permitted





Figure 3 Internal Road Classifications and Volumes per Day

The corresponding cross-sections are presented on the next page.



Figure 2-17. Typical Urban Local (low volume) Cross Section 50' Total ROW Width

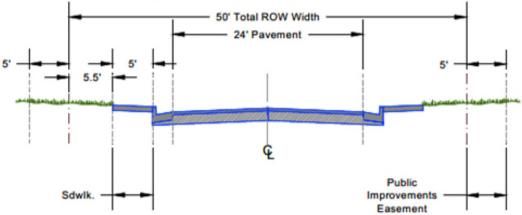
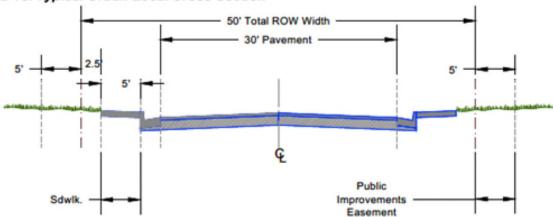


Figure 2-16. Typical Urban Local Cross Section



Per the ECM, the need for turn lanes is determined by the traffic impact study. In this case the peak hour volumes on the internal roads are too low to justify turn lanes.



The only sight distance issue is at Prospect Point and Cable Lane intersection. On 25 mph roadways, 280 feet is required. In the graphic below looking east from the intersection at 10 feet back of curb, this is currently compromised by a growth of trees and bushes. It is anticipated that the reconstruction of Cable Lane will require removal of the trees and when done the sight line will be available. Looking west the sight line is available.

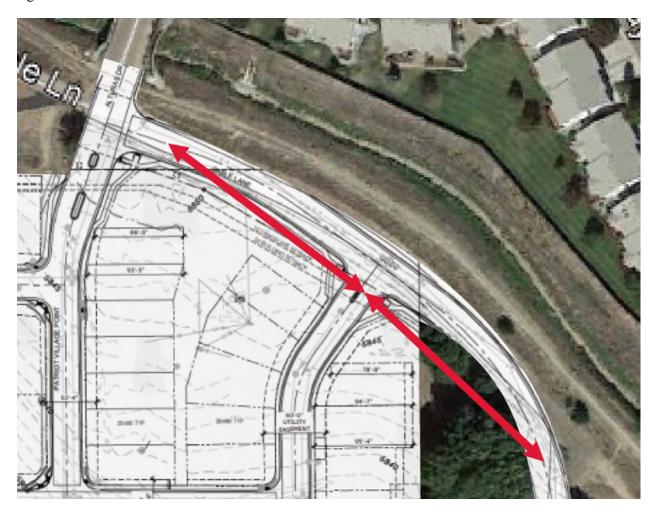


Figure 4 Sight Distance at Prospect Point and Cable Lane



Haven Valley will be assessed a County Road Impact Fee of \$3,830.00 per dwelling unit. The purpose of the program is to develop a process to identify transportation improvements needed to accommodate growth, to allocate fairly the costs of transportation improvements among new developments, and to ensure the proper and timely accounting of improvements and funds. The program does not include all roads in the unincorporated County, only higher traffic roads that provide for regional travel.

#### 7. CONCLUSIONS AND RECOMMENDED IMPROVEMENTS SUMMARY

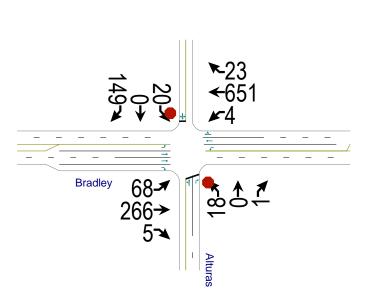
The study and operations analyses contained herein provides evidence that the recommended access locations and type will function within acceptable traffic engineering parameters promulgated by FHWA, AASHTO, MUTCD, CDOT, and El Paso County. The access locations and type are essential for safe and smooth transitions on and off the highway and to reduce to the greatest extent unnecessary on-site circulation. In my professional opinion, the transportation facilities will be adequate and available to serve the proposed development within one year of the full build out of the project and that it meets or exceeds the applicable adopted level of service provided the El Paso County Engineering Criteria Manual.

Per request from El Paso County staff we verify that this Traffic Impact Study meets the requirements for an Intermediate TIS per the Transportation Impact Study Guidelines published in the El Paso County Engineering Criteria Manual.



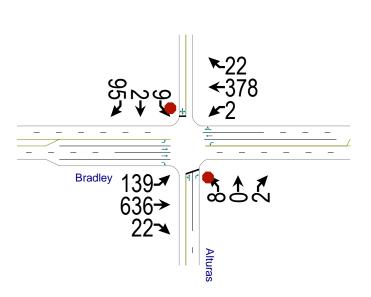
## **APPENDIX**





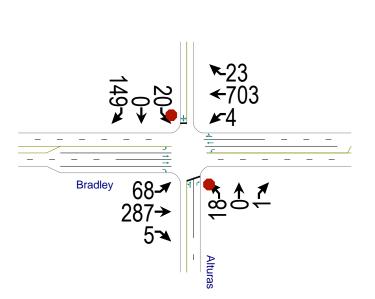
Intersection Int Delay, s/veh  3.3  Movement  EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR
Lane Configurations 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Traffic Vol, veh/h 68 266 5 4 651 23 18 0 1 20 0 149
Future Vol, veh/h 68 266 5 4 651 23 18 0 1 20 0 149
Conflicting Peds, #/hr 0 0 0 0 0 0 0 0 0 0 0 0
Sign Control Free Free Free Free Free Free Stop Stop Stop Stop Stop Stop
RT Channelized None None None
Storage Length 200 - 200 300
Veh in Median Storage, # - 0 0 0 0
Grade, % - 0 0 0 0 -
Peak Hour Factor 92 92 92 92 92 92 92 92 92 92 92 92 92
Heavy Vehicles, % 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Mvmt Flow 74 289 5 4 708 25 20 0 1 22 0 162
Major/Minor Major1 Major2 Minor1 Minor2
Conflicting Flow All 733 0 0 294 0 0 799 1178 145 1022 1171 367
Stage 1 437 437 - 729 729 -
Stage 2 362 741 - 293 442 -
Critical Hdwy 4.14 4.14 7.54 6.54 6.94 7.54 6.54 6.94
Critical Hdwy Stg 1 6.54 5.54 - 6.54 5.54 -
Critical Hdwy Stg 2 6.54 5.54 - 6.54 5.54 -
Follow-up Hdwy 2.22 2.22 3.52 4.02 3.32 3.52 4.02 3.32
Pot Cap-1 Maneuver 868 1264 276 189 876 190 191 630
Stage 1 568 578 - 380 426 -
Stage 2 629 421 - 691 575 -
Platoon blocked, %
Mov Cap-1 Maneuver 868 1264 191 172 876 177 174 630
Mov Cap-2 Maneuver 191 172 - 177 174 -
Stage 1 520 529 - 348 425 -
Stage 2 466 420 - 631 526 -
Approach EB WB NB SB
HCM Control Delay, s 1.9 0 25.1 16.9
HCM LOS D C
Minor Long/Major Mymt NDL n4 NDL n2 EDL EDT EDD W/DL W/DT W/DD CDL n4
Minor Lane/Major Mvmt NBLn1 NBLn2 EBL EBT EBR WBL WBT WBR SBLn1
Capacity (veh/h) 191 876 868 1264 484
HCM Lane V/C Ratio 0.102 0.001 0.085 0.003 0.38
HCM Control Delay (s) 26 9.1 9.5 7.9 16.9
HCM Lane LOS D A A A C
HCM 95th %tile Q(veh) 0.3 0 0.3 0 1.8





Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ች	<b>^</b>	7	ች	<b>^</b>			स	7		4	
Traffic Vol, veh/h	139	636	22	2	378	22	8	0	2	9	2	95
Future Vol, veh/h	139	636	22	2	378	22	8	0	2	9	2	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	691	24	2	411	24	9	0	2	10	2	103
Major/Minor N	/lajor1		I	Major2			Minor1		N	Minor2		
Conflicting Flow All	435	0	0	715	0	0	1204	1432	346	1075	1444	218
Stage 1	-	_	-	-	-	-	993	993	_	427	427	-
Stage 2	-	-	-	-	-	-	211	439	-	648	1017	-
Critical Hdwy	4.14	_	_	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	_	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1121	-	-	881	-	-	140	133	650	174	131	786
Stage 1	-	-	-	-	-	-	263	322	-	576	584	-
Stage 2	-	-	-	-	-	-	771	576	-	425	313	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1121	-	-	881	-	-	107	115	650	155	113	786
Mov Cap-2 Maneuver	-	-	-	-	-	-	107	115	-	155	113	-
Stage 1	-	-	-	-	-	-	227	279	-	498	583	-
Stage 2	-	-	-	-	-	-	666	575	-	367	271	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0			35.4			13.5		
HCM LOS	1.0						E			В		
							_					
Minor Lane/Major Mvmt		NBLn1 I	NRI n2	EBL	EBT	EBR	WBL	WBT	WBR S	SRI n1		
Capacity (veh/h)		107		1121	ED1	- EDN	881	-	- VVDIC			
HCM Lane V/C Ratio			0.003		_		0.002	_		0.214		
HCM Control Delay (s)		41.6	10.6	8.7	-	-	9.1	-	-			
HCM Lane LOS		41.0 E	10.0 B	ο. <i>τ</i>	-	_	9.1 A	-	<u>-</u>	13.5 B		
HCM 95th %tile Q(veh)		0.3	0	0.5	-	-	0	_	<u>-</u>	0.8		
HOW JOHN JOHN Q(VEII)		0.5	U	0.5			0	_	_	0.0		

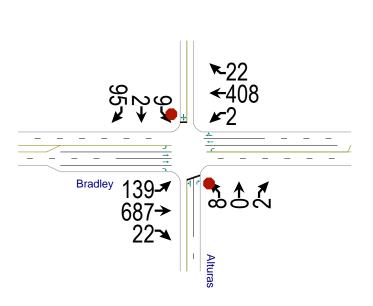




JMWA 03/15/2021

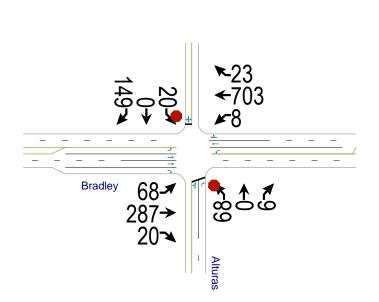
Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	<b>^</b>	7	ሻ	<b>^</b>			र्स	7		4	
Traffic Vol, veh/h	68	266	5	4	651	23	18	Ö	1	20	0	149
Future Vol, veh/h	68	266	5	4	651	23	18	0	1	20	0	149
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	312	5	4	764	25	20	0	1	22	0	162
Major/Minor N	jor/Minor Major1 Majo					ı	Minor1		_	Minor2		
Conflicting Flow All	789	0	0	317	0	0	850	1257	156	1089	1250	395
Stage 1	-	-	-		-	-	460	460	-	785	785	-
Stage 2	_	-	-	_	_	_	390	797	_	304	465	-
Critical Hdwy	4.14	-	_	4.14	_	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	_	-	-		-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	_	_	6.54	5.54	_	6.54	5.54	-
Follow-up Hdwy	2.22	-	_	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	827	-	-	1240	_	_	254	170	862	170	172	604
Stage 1	-	-	-	-	-	-	551	564	-	352	402	-
Stage 2	-	-	-	-	-	_	606	397	_	681	561	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	827	_	_	1240	-	-	173	154	862	158	156	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	154	-	158	156	-
Stage 1	-	-	-	-	-	-	502	514	-	321	401	-
Stage 2	-	-	-	-	-	-	442	396	-	619	511	-
Ü												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.8			0			27.4			18.3		
HCM LOS							D			С		
Minor Lane/Major Mvmt	t	NBLn1 I	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR S	SBLn1		
Capacity (veh/h)		173	862	827	-	-	1240	-	-	453		
HCM Lane V/C Ratio			0.001		-	-	0.004	-	_	0.406		
HCM Control Delay (s)		28.4	9.2	9.8	-	-	7.9	-	-	18.3		
HCM Lane LOS		D	Α	Α	-	-	Α	-	-	С		
HCM 95th %tile Q(veh)		0.4	0	0.3	-	-	0	-	-	1.9		





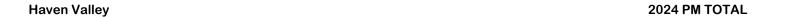
Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	Ť	<b>↑</b> ↑	LDIX.	VVDL	<u>₩</u>	VIDIN	NDL	4	TION.	ODL	4	ODIN
Traffic Vol, veh/h	139	636	22	2	378	22	8	0	2	9	2	95
Future Vol, veh/h	139	636	22	2	378	22	8	0	2	9	2	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	_	0	-	-	-
Veh in Median Storage,		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	_	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	747	24	2	444	24	9	0	2	10	2	103
Major/Minor M	1ajor1			Major2			Minor1		_	Minor2		
Conflicting Flow All	468	0	0	771	0	0	1276	1521	374	1136	1533	234
Stage 1	-	-	-	-	-	-	1049	1049	-	460	460	-
Stage 2	-	-	-	-	-	-	227	472	_	676	1073	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	_	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1090	-	-	840	-	-	124	117	623	157	115	768
Stage 1	-	-	-	-	-	-	243	303	-	551	564	-
Stage 2	-	-	-	-	-	-	755	557	-	409	295	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1090	-	-	840	-	-	94	101	623	140	99	768
Mov Cap-2 Maneuver	-	-	-	-	-	-	94	101	-	140	99	-
Stage 1	-	-	-	-	-	-	209	261	-	474	563	-
Stage 2	-	-	-	-	-	-	649	556	-	351	254	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0			39.9			14.1		
HCM LOS							Е			В		
Minor Lane/Major Mvmt		NBLn1 I	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR S	SBLn1		
Capacity (veh/h)		94	623	1090	-	-	840	-	-	509		
HCM Lane V/C Ratio			0.003		_	_	0.003	_	_	0.226		
HCM Control Delay (s)		47.2	10.8	8.8	-	-	9.3	-	-	14.1		
HCM Lane LOS		E	В	Α	-	-	Α	-	-	В		
HCM 95th %tile Q(veh)		0.3	0	0.5	-	-	0	-	-	0.9		

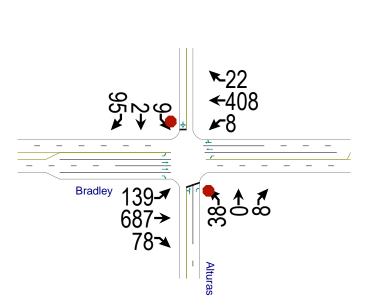




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Intersection   Int Delay, s/veh
Movement   EBL   EBT   EBR   WBL   WBT   WBR   NBL   NBT   NBR   SBL   SBT   SBR   SBL   SBT   SBR   SBL   SBT   SBR   ST   SBR   ST   SBR   ST   SBR   ST   SBR   SBT   SBT   SBR   SBT   SBT   SBR   SBT   SBT   SBR   SBT   SBR   SBT
Lane Configurations
Traffic Vol, veh/h
Future Vol, veh/h
Conflicting Peds, #/hr   O   O   O   O   O   O   O   O   O
Sign Control         Free RT
RT Channelized         -         None         -         None         -         None           Storage Length         200         -         200         300         -         -         -         0         -
Storage Length   200   - 200   300   0
Veh in Median Storage, #         0         -         -         0         -         -         0         0         -         0
Grade, %         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         0         -         -         0         0         -         0         0         -         -         0         0         -         0         0         -         0<
Peak Hour Factor   92   92   92   92   92   92   92   9
Heavy Vehicles, %   2   2   2   2   2   2   2   2   2
Mynt Flow         74         312         22         9         764         25         74         0         7         22         0         162           Major/Minor         Major1         Major2         Minor1         Minor2           Conflicting Flow All         789         0         0         334         0         0         860         1267         156         1099         1277         395           Stage 1         -         -         -         -         -         -         460         460         -         795         795         -           Stage 2         -         -         -         -         -         -         400         807         -         304         482         -           Critical Hdwy         4.14         -         -         4.14         -         -         7.54         6.54         6.94         7.54         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -
Major/Minor         Major1         Major2         Minor1         Minor2           Conflicting Flow All         789         0         0         334         0         0         860         1267         156         1099         1277         395           Stage 1         -         -         -         -         -         -         460         460         -         795         795         -           Stage 2         -         -         -         -         -         400         807         -         304         482         -           Critical Hdwy         4.14         -         -         4.14         -         -         7.54         6.54         6.94         7.54         6.54         6.94           Critical Hdwy Stg 1         -         -         -         -         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54         -         6.54         5.54
Conflicting Flow All       789       0       0       334       0       0       860       1267       156       1099       1277       395         Stage 1       -       -       -       -       -       460       460       -       795       795       -         Stage 2       -       -       -       -       -       400       807       -       304       482       -         Critical Hdwy       4.14       -       -       4.14       -       -       4.04       -       7.54       6.54       6.94       7.54       6.54       6.94         Critical Hdwy Stg 1       -       -       -       -       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       6.54
Conflicting Flow All       789       0       0       334       0       0       860       1267       156       1099       1277       395         Stage 1       -       -       -       -       -       -       460       460       -       795       795       -         Stage 2       -       -       -       -       -       400       807       -       304       482       -         Critical Hdwy       4.14       -       -       4.14       -       -       4.04       -       7.54       6.54       6.94       7.54       6.54       6.94         Critical Hdwy Stg 1       -       -       -       -       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.64
Conflicting Flow All       789       0       0       334       0       0       860       1267       156       1099       1277       395         Stage 1       -       -       -       -       -       -       460       460       -       795       795       -         Stage 2       -       -       -       -       -       400       807       -       304       482       -         Critical Hdwy       4.14       -       -       4.14       -       -       4.14       -       -       6.54       6.94       7.54       6.54       6.94         Critical Hdwy Stg 1       -       -       -       -       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.64 <t< td=""></t<>
Stage 1       -       -       -       -       460       460       -       795       795       -         Stage 2       -       -       -       -       -       400       807       -       304       482       -         Critical Hdwy       4.14       -       -       4.14       -       -       7.54       6.54       6.94       7.54       6.54       6.94         Critical Hdwy Stg 1       -       -       -       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.54       5.54       -       6.64       3.32       9.22       8.02       1.02
Stage 2       -       -       -       -       400       807       -       304       482       -         Critical Hdwy       4.14       -       -       4.14       -       -       7.54       6.54       6.94       7.54       6.54       6.94         Critical Hdwy Stg 1       -       -       -       -       -       6.54       5.54       -       6.54       5.54       -         Critical Hdwy Stg 2       -       -       -       -       -       6.54       5.54       -       6.54       5.54       -         Follow-up Hdwy       2.22       -       -       2.22       -       3.52       4.02       3.32       3.52       4.02       3.32         Pot Cap-1 Maneuver       827       -       1222       -       250       168       862       167       165       604         Stage 2       -       -       -       -       -       597       392       -       681       552       -         Platoon blocked, %       -       -       -       -       -       170       152       862       153       149       604         Mov Cap-1 Maneuver
Critical Hdwy 4.14 - 4.14 - 7.54 6.54 6.94 7.54 6.54 6.94 Critical Hdwy Stg 1 6.54 5.54 - 6.54 5.54 5.54 - 6.54 5.54 5.54 - 6.54 5.54 5.54 5.54 - 6.54 5.54 5.54 5.54 5.54 5.54 5.54 5.54
Critical Hdwy Stg 1       -       -       -       -       -       6.54       5.54       -       6.54       5.54       -         Critical Hdwy Stg 2       -       -       -       -       6.54       5.54       -       6.54       5.54       -         Follow-up Hdwy       2.22       -       -       2.22       -       -       3.52       4.02       3.32       3.52       4.02       3.32         Pot Cap-1 Maneuver       827       -       1222       -       -       250       168       862       167       165       604         Stage 1       -       -       -       -       -       551       564       -       347       398       -         Platoon blocked, %       -       -       -       -       -       597       392       -       681       552       -         Mov Cap-1 Maneuver       827       -       1222       -       170       152       862       153       149       604         Mov Cap-2 Maneuver       -       -       -       -       -       170       152       -       153       149       -         Stage 1
Critical Hdwy Stg 2 6.54 5.54 - 6.54 5.54 - Follow-up Hdwy 2.22 - 2.22 - 3.52 4.02 3.32 3.52 4.02 3.32 Pot Cap-1 Maneuver 827 - 1222 - 250 168 862 167 165 604 Stage 1 551 564 - 347 398 - Stage 2 597 392 - 681 552 - Platoon blocked, % 597 392 - 681 552 - Platoon blocked, % 170 152 862 153 149 604 Mov Cap-2 Maneuver 827 - 1222 170 152 862 153 149 Stage 1 502 514 - 316 395 - Stage 2 434 389 - 615 503 434 389 - 615 503
Follow-up Hdwy 2.22 2.22 3.52 4.02 3.32 3.52 4.02 3.32  Pot Cap-1 Maneuver 827 - 1222 250 168 862 167 165 604  Stage 1 551 564 - 347 398 -  Stage 2 597 392 - 681 552 -  Platoon blocked, %  Mov Cap-1 Maneuver 827 - 1222 170 152 862 153 149 604  Mov Cap-2 Maneuver 170 152 862 153 149 -  Stage 1 502 514 - 316 395 -  Stage 2 434 389 - 615 503 -  Approach EB WB NB SB  HCM Control Delay, s 1.8 0.1 38.9 18.5
Pot Cap-1 Maneuver         827         -         -         1222         -         -         250         168         862         167         165         604           Stage 1         -         -         -         -         -         551         564         -         347         398         -           Stage 2         -         -         -         -         597         392         -         681         552         -           Platoon blocked, %         -         -         -         -         -         -         -         -         827         -         1222         -         -         170         152         862         153         149         604           Mov Cap-1 Maneuver         827         -         -         1222         -         -         170         152         862         153         149         -           Mov Cap-2 Maneuver         -         -         -         -         -         170         152         -         153         149         -           Stage 1         -         -         -         -         -         502         514         -         316         395
Stage 1       -       -       -       -       551       564       -       347       398       -         Stage 2       -       -       -       -       597       392       -       681       552       -         Platoon blocked, %       -
Stage 2       -       -       -       -       597       392       -       681       552       -         Platoon blocked, %       -       -       -       -       -       -         Mov Cap-1 Maneuver       827       -       -       1222       -       -       170       152       862       153       149       604         Mov Cap-2 Maneuver       -       -       -       -       -       170       152       -       153       149       -         Stage 1       -       -       -       -       -       502       514       -       316       395       -         Stage 2       -       -       -       -       -       434       389       -       615       503       -         Approach       EB       WB       NB       SB         HCM Control Delay, s       1.8       0.1       38.9       18.5
Platoon blocked, %       -       -       -       -         Mov Cap-1 Maneuver       827       -       -       1222       -       -       170       152       862       153       149       604         Mov Cap-2 Maneuver       -       -       -       -       -       170       152       -       153       149       -         Stage 1       -       -       -       -       -       502       514       -       316       395       -         Stage 2       -       -       -       -       -       434       389       -       615       503       -         Approach       EB       WB       NB       SB         HCM Control Delay, s       1.8       0.1       38.9       18.5
Mov Cap-1 Maneuver         827         -         -         1222         -         -         170         152         862         153         149         604           Mov Cap-2 Maneuver         -         -         -         -         -         170         152         -         153         149         -           Stage 1         -         -         -         -         -         502         514         -         316         395         -           Stage 2         -         -         -         -         -         -         434         389         -         615         503         -           Approach         EB         WB         NB         SB           HCM Control Delay, s         1.8         0.1         38.9         18.5
Mov Cap-2 Maneuver       -       -       -       -       -       170       152       -       153       149       -         Stage 1       -       -       -       -       -       502       514       -       316       395       -         Stage 2       -       -       -       -       -       434       389       -       615       503       -         Approach       EB       WB       NB       SB         HCM Control Delay, s       1.8       0.1       38.9       18.5
Stage 1       -       -       -       -       502       514       -       316       395       -         Stage 2       -       -       -       -       -       -       434       389       -       615       503       -         Approach       EB       WB       NB       SB         HCM Control Delay, s       1.8       0.1       38.9       18.5
Stage 2         -         -         -         -         434         389         -         615         503         -           Approach         EB         WB         NB         SB           HCM Control Delay, s         1.8         0.1         38.9         18.5
Approach         EB         WB         NB         SB           HCM Control Delay, s         1.8         0.1         38.9         18.5
HCM Control Delay, s 1.8 0.1 38.9 18.5
HCM Control Delay, s 1.8 0.1 38.9 18.5
7,
Minor Lane/Major Mvmt NBLn1 NBLn2 EBL EBT EBR WBL WBT WBR SBLn1
Capacity (veh/h) 170 862 827 1222 448
110111
HCM Lane V/C Ratio 0.435 0.008 0.089 0.007 0.41 HCM Control Delay (s) 41.5 9.2 9.8 8 18.5
HCM 95th %tile Q(veh) 2 0 0.3 0 2

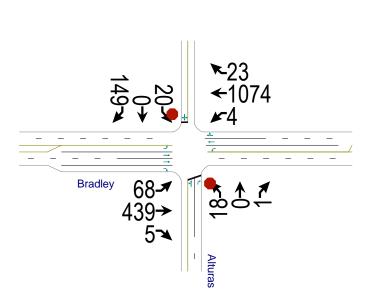




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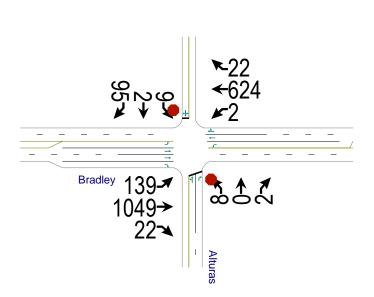
Intersection												
Int Delay, s/veh	3.9											
• •		EDT	<b>EDD</b>	MAIDI	MOT	WDD	MDI	NDT	NDD	ODI	ODT	000
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>^</b>	7	<u>ች</u>	<b>^</b>			4	7		4	•-
Traffic Vol, veh/h	139	636	78	8	378	22	38	0	8	9	2	95
Future Vol, veh/h	139	636	78	8	378	22	38	0	8	9	2	95
Conflicting Peds, #/hr	0	_ 0	_ 0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	747	85	9	444	24	41	0	9	10	2	103
Major/Minor N	/lajor1			Major2		- 1	Minor1			Minor2		
Conflicting Flow All	468	0	0	832	0	0	1290	1535	374	1150	1608	234
Stage 1	-	-	-	-	-	-	1049	1049	-	474	474	
Stage 2	_	_	_	_	_	_	241	486	_	676	1134	_
Critical Hdwy	4.14	_	_	4.14	-	_	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	_	_		_	_	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	_	_	_	-	_	6.54	5.54	-	6.54	5.54	_
Follow-up Hdwy	2.22	_	_	2.22	_	_	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1090	_	_	796	-	-	121	115	623	153	104	768
Stage 1	-	_	_	-	_	_	243	303	-	540	556	-
Stage 2	_	_	_	-	-	-	741	549	-	409	276	-
Platoon blocked, %		_	_		_	_						
Mov Cap-1 Maneuver	1090	_	_	796	-	-	91	98	623	134	89	768
Mov Cap-2 Maneuver	-	_	_	-	_	_	91	98	-	134	89	-
Stage 1	_	-	_	-	-	-	209	261	-	465	550	_
Stage 2	_	_	_	_	_	_	632	543	_	347	238	_
								•				
A	FD			\A/D			ND			00		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.2			62.9			14.4		
HCM LOS							F			В		
Minor Lane/Major Mvmt	l	NBLn1 I	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR S	SBLn1		
Capacity (veh/h)		91	623	1090	-	_	796	-	-	40-		
HCM Lane V/C Ratio			0.014		-	-	0.011	-	-	0.232		
HCM Control Delay (s)		73.9	10.9	8.8	-	-	9.6	-	-			
HCM Lane LOS		F	В	A	-	-	A	-	-	В		
HCM 95th %tile Q(veh)		1.9	0	0.5	_	_	0	_	-	0.9		



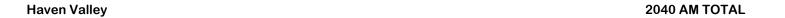


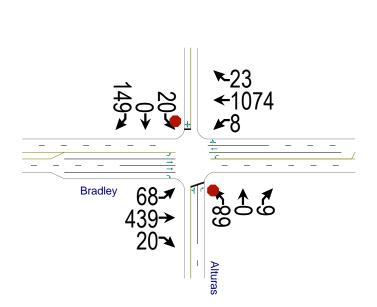
Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	<b>^</b>	7	ሻ	<b>^</b>			र्स	7		4	
Traffic Vol, veh/h	68	266	5	4	651	23	18	Ö	1	20	0	149
Future Vol, veh/h	68	266	5	4	651	23	18	0	1	20	0	149
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	477	5	4	1168	25	20	0	1	22	0	162
Major/Minor N	/lajor1		ı	Major2		ľ	/linor1		ľ	Minor2		
Conflicting Flow All	1193	0	0	482	0	0	1217	1826	239	1576	1819	597
Stage 1	-	-	-	-	-	-	625	625	-	1189	1189	-
Stage 2	-	-	-	-	-	-	592	1201	-	387	630	-
Critical Hdwy	4.14	_	_	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	581	-	-	1077	-	-	137	76	762	74	77	446
Stage 1	-	-	-	-	-	-	439	475	-	199	260	-
Stage 2	-	-	-	-	-	-	460	256	-	608	473	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	581	-	-	1077	-	-	79	66	762	67	67	446
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	66	-	67	67	-
Stage 1	-	-	-	-	-	-	383	415	-	174	259	-
Stage 2	-	-	-	-	-	-	292	255	-	530	413	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.6			0			62.1			43.7		
HCM LOS							F			Е		
Minor Lane/Major Mvm		NBLn1 I	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR S	SBL <sub>n1</sub>		
Capacity (veh/h)		79	762	581	-	-	1077	-	-	267		
HCM Lane V/C Ratio		0.248	0.001	0.127	-	-	0.004	-	-	0.688		
HCM Control Delay (s)		65	9.7	12.1	-	-	8.4	-	-	43.7		
HCM Lane LOS		F	Α	В	-	-	Α	-	-	Е		
HCM 95th %tile Q(veh)		0.9	0	0.4	-	-	0	-	-	4.6		





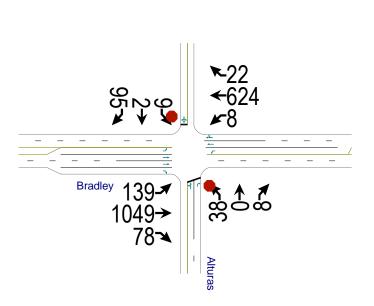
Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	<b>^</b>	7	ሻ	<b>^</b>			ર્ન	7		4	
Traffic Vol, veh/h	139	636	22	2	378	22	8	Ö	2	9	2	95
Future Vol, veh/h	139	636	22	2	378	22	8	0	2	9	2	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	1141	24	2	678	24	9	0	2	10	2	103
Major/Minor N	/lajor1		ı	Major2		ı	Minor1		1	Minor2		
Conflicting Flow All	702	0	0	1165	0	0	1787	2149	571	1567	2161	351
Stage 1	-	-	-	-	-	-	1443	1443	-	694	694	_
Stage 2	_	-	-	-	-	-	344	706	-	873	1467	-
Critical Hdwy	4.14	-	-	4.14	_	_	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	_	-	-	_	-	6.54	5.54	_	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	891	-	-	595	_	_	51	48	464	75	47	645
Stage 1	-	-	-	-	-	-	139	196	-	399	442	-
Stage 2	-	-	-	-	-	_	645	437	_	311	190	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	891	_	-	595	-	-	36	40	464	65	39	645
Mov Cap-2 Maneuver	_	-	-	-	-	-	36	40	-	65	39	-
Stage 1	-	_	-	-	-	-	116	163	-	332	441	-
Stage 2	-	-	-	-	-	-	537	436	-	257	158	-
<b>3</b> <sup>1</sup>												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.1			0			110			22.9		
HCM LOS							F			С		
Minor Lane/Major Mvm	l	NBLn1 I	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR S	SBLn1		
Capacity (veh/h)		36	464	891	-	-	595	-	-	315		
HCM Lane V/C Ratio		0.242		0.17	-	-	0.004	-	-	0.366		
HCM Control Delay (s)		134.3	12.8	9.9	-	-	11.1	-	-	22.9		
HCM Lane LOS		F	В	Α	-	-	В	-	-	С		
HCM 95th %tile Q(veh)		0.8	0	0.6	_	-	0	_	_	1.6		





Intersection												
Int Delay, s/veh	11.3											
		EDT	<b>EDD</b>	MAIDI	MOT	WDD	MDI	NDT	NDD	ODI	ODT	000
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>^</b>	7	<u>ች</u>	<b>^</b>			4	7		4	
Traffic Vol, veh/h	68	266	20	8	651	23	68	0	6	20	0	149
Future Vol, veh/h	68	266	20	8	651	23	68	0	6	20	0	149
Conflicting Peds, #/hr	0	_ 0	_ 0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-
Veh in Median Storage	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	477	22	9	1168	25	74	0	7	22	0	162
Major/Minor N	Major1			Major2			Minor1		N	Minor2		
Conflicting Flow All	1193	0	0	499	0	0	1227	1836	239	1586	1846	597
Stage 1	-	-	-	-	_	-	625	625	-	1199	1199	-
Stage 2	_	_	_	-	_	-	602	1211	-	387	647	_
Critical Hdwy	4.14	-	-	4.14	_	_	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	_	_	-	_	-	6.54	5.54		6.54	5.54	-
Critical Hdwy Stg 2	_	-	-	_	_	_	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	581	-	-	1061	_	_	134	75	762	73	74	446
Stage 1	-	-	-	-	-	-	439	475	-	197	257	_
Stage 2	-	_	_	-	-	-	453	253	-	608	465	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	581	-	-	1061	-	-	77	65	762	65	64	446
Mov Cap-2 Maneuver	-	_	-	-	-	-	77	65	-	65	64	-
Stage 1	-	-	-	-	-	-	383	415	-	172	255	-
Stage 2	-	-	-	-	-	-	286	251	-	526	406	-
Annroach	EB			WB			NB			SB		
Approach												
HCM Control Delay, s	1.6			0.1			170.9			45.2		
HCM LOS							F			E		
Minor Lane/Major Mvm	t	NBLn1 I	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR 9	SBL <sub>n1</sub>		
Capacity (veh/h)		77	762	581	_	-	1061	-	-	263		
HCM Lane V/C Ratio			0.009	0.127	-	-	0.008	-	-	0.698		
HCM Control Delay (s)		185.1	9.8	12.1	-	-	8.4	-	-	45.2		
HCM Lane LOS		F	Α	В	-	-	Α	-	-	Е		
HCM 95th %tile Q(veh)		5.1	0	0.4	-	-	0	-	-	4.7		





Intersection													
Int Delay, s/veh	9.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	<u>ነ</u>	<b>^</b>	7	<b>ነ</b>	<b>^</b>			ન	7		4		
Traffic Vol, veh/h	139	636	78	8	378	22	38	0	8	9	2	95	
Future Vol, veh/h	139	636	78	8	378	22	38	0	8	9	2	95	
Conflicting Peds, #/hr	0		0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-		-	-	None	-	-	None	-	-	None	
Storage Length	200	-	200	300	-	-	-	-	0	-	-	-	
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2		2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	151	1141	85	9	678	24	41	0	9	10	2	103	
Major/Minor	Major1			Major2		ı	Minor1			Minor2			
Conflicting Flow All	702	0	0	1226	0	0	1801	2163	571	1581	2236	351	
Stage 1	-	-	-	-	-	-	1443	1443	-	708	708	-	
Stage 2	_	_	_	_	_	_	358	720	_	873	1528	_	
Critical Hdwy	4.14	-	_	4.14	_	-	7.54	6.54	6.94	7.54	6.54	6.94	
Critical Hdwy Stg 1		-	_		_	-	6.54	5.54	-	6.54	5.54	-	
Critical Hdwy Stg 2	-	_	-	_	-	_	6.54	5.54	_	6.54	5.54	_	
Follow-up Hdwy	2.22	-	_	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32	
Pot Cap-1 Maneuver	891	-	-	564	-	-	50	47	464	73	42	645	
Stage 1	-	-	-	-	-	-	139	196	-	392	436	-	
Stage 2	-	-	-	-	-	-	633	430	-	311	178	-	
Platoon blocked, %		-	-		-	-							
Mov Cap-1 Maneuver	891	-	-	564	-	-	~ 34	38	464	62	34	645	
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 34	38	-	62	34	-	
Stage 1	-	-	-	-	-	-	116	163	-	326	429	-	
Stage 2	-	-	-	-	-	-	521	423	-	253	148	-	
Approach	EB			WB			NB			SB			
HCM Control Delay, s	1.1			0.1		\$	336.5			24.1			
HCM LOS							F			С			
Minor Lane/Major Mvn	nt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR :	SBLn1			
Capacity (veh/h)		34	464	891	-	-	564	-	-	302			
HCM Lane V/C Ratio			0.019	0.17	-	-	0.015	-	-	0.382			
HCM Control Delay (s)	) (	\$ 404.6	12.9	9.9	-	-	11.5	-	-				
HCM Lane LOS		F	В	Α	-	-	В	-	-	С			
HCM 95th %tile Q(veh	1)	4.4	0.1	0.6	-	-	0	-	-	1.7			
Notes													
~: Volume exceeds ca	pacity	\$: De	elay exc	eeds 30	00s	+: Com	putatior	Not De	efined	*: All	major v	olume i	

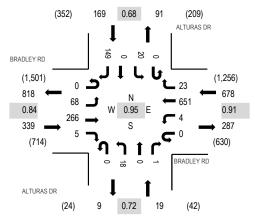


Location: 1 ALTURAS DR & BRADLEY RD AM

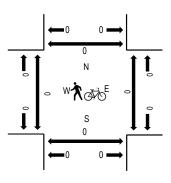
**Date:** Tuesday, March 9, 2021 **Peak Hour:** 07:00 AM - 08:00 AM

**Peak 15-Minutes:** 07:30 AM - 07:45 AM

## Peak Hour - All Vehicles



## Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

## **Traffic Counts**

Interval	E	BRADLEY RD Westbound				/	ALTUR <i>A</i> Northb			,	ALTUR South	AS DR bound			Rolling	Pedestrian Crossings						
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru R	ight	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	North
7:00 AM	0	13	53	0	0	2	183	2	0	5	0	0	0	3	0	49	310	1,205	0	0	0	0
7:15 AM	0	23	68	2	0	0	154	9	0	4	0	1	0	4	0	32	297	1,183	0	0	0	0
7:30 AM	0	19	78	1	0	0	164	7	0	4	0	0	0	6	0	38	317	1,200	0	0	0	0
7:45 AM	0	13	67	2	0	2	150	5	0	5	0	0	0	7	0	30	281	1,190	0	0	0	0
8:00 AM	0	10	94	2	1	0	142	5	0	2	0	1	0	4	1	26	288	1,159	0	0	0	0
8:15 AM	0	36	84	1	0	3	125	18	0	6	0	2	0	7	1	31	314		0	0	0	0
8:30 AM	0	15	56	1	0	2	146	16	0	4	0	0	0	16	2	49	307		0	0	0	0
8:45 AM	0	12	62	2	0	0	114	6	0	6	0	2	0	14	0	32	250		0	0	0	0
Count Total	0	141	562	11	1	9	1,178	68	0	36	0	6	0	61	4	287	2,364		0	0	0	0
Peak Hour	0	68	266	5	0	4	651	23	0	18	0	1	0	20	) (	149	9 1,205	;	0	0	0	0

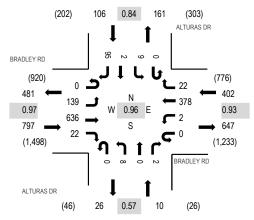


Location: 1 ALTURAS DR & BRADLEY RD PM

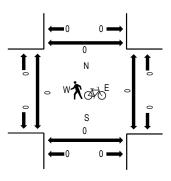
**Date:** Tuesday, March 9, 2021 **Peak Hour:** 04:45 PM - 05:45 PM

**Peak 15-Minutes:** 05:15 PM - 05:30 PM

## Peak Hour - All Vehicles



## Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

## **Traffic Counts**

_																							
		Е	BRADL	EY RD		В	RADLE	EY RD	,	ALTUR/	AS DR		/	ALTUR	AS DR								
Interval			ound		Westbound					Northb	ound			South	oound			Rolling	Pedestrian Crossings			ngs	
	Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru F	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	North
	4:00 PM	0	29	150	3	0	0	97	7	0	3	0	0	0	3	1	21	314	1,256	1	0	0	0
	4:15 PM	0	26	156	2	1	0	75	7	0	5	0	2	0	5	0	27	306	1,244	0	0	0	0
	4:30 PM	0	35	139	8	0	1	87	4	0	2	0	2	0	3	0	18	299	1,282	0	0	1	0
	4:45 PM	0	34	166	5	0	1	95	4	0	2	0	0	0	4	2	24	337	1,315	0	0	0	0
	5:00 PM	0	35	149	4	0	0	83	5	0	0	0	1	0	2	0	23	302	1,246	0	0	0	0
	5:15 PM	0	38	161	7	0	0	102	6	0	3	0	1	0	0	0	26	344		0	0	0	0
	5:30 PM	0	32	160	6	0	1	98	7	0	3	0	0	0	3	0	22	332		0	0	0	0
	5:45 PM	0	30	118	5	1	0	91	3	0	1	1	0	0	6	0	12	268		0	0	0	0
	Count Total	0	259	1,199	40	2	3	728	43	0	19	1	6	0	26	3	173	2,502		1	0	1	0
	Peak Hour	0	139	636	22	0	2	378	22	0	8	0	2	. 0	g	) 2	95	1,315		0	0	0	0