Intersection Safety and Operational Improvements

SR 21 at SR 100 in Keystone Heights

October 2023


CHINA CHEF
SR 100
S.R. 21
START CROSSING
Watch For Vehicles
DON'T START
Finish Crossing If Started
TIME REMAINING
To Finish Crossing
DON'T CROSS
TO CROSS
PUSH BUTTON
SR 100

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S.R. 21
DUNKIN'
DUNKIN'
DD
STOP


DUNKIN'
DRIVE THRU
NOW HIRING
WEST
EAST
100
100
S.R. 21
Welcome
Keystone Heights
CHEF
Chinese & Thai
Eat In - Take Out
352-473-6333/6363
WE ARE ORE
WELCOME
NEW TYLE
ROAD WORK AHEAD

Section 1. Introduction

1.1 Purpose

Recognizing that the intersection of SR 21 and SR 100 serves as a gateway into the City of Keystone Heights, the North Florida Transportation Planning Organization (TPO) in conjunction with the City of Keystone Heights initiated a planning study to evaluate the performance of the intersection and recommend improvements that enhance performance and safety for all modes of transportation including vehicles, bicyclists, and pedestrians.

1.2 Objective

The objective of this study is to identify, evaluate, and develop operational and safety improvements to improve the functionality of the intersection. Elements evaluated as part of this study included:

- Optimization of existing signal timings
- Enhanced pavement markings
- Addition/modification of turn lanes
- Enhanced pedestrian crossings

1.3 Background

The SR 21/SR 100 Intersection Study was initiated by the City of Keystone Heights and funded by the North Florida TPO as a transportation planning study that investigates the operational performance of the SR 21/SR100 intersection.

1.4 Study Location

The study intersection is located within the City of Keystone Heights in Clay County, Florida. This intersection provides a northern entrance, or gateway, into downtown Keystone Heights on SR 21.


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SR 100
LEFT TURN
YIELD
ON GREEN
ROAD
WORK
AHEAD
RIGHT
LANE
ENDS
NORTH
21
CVS

SECTION 2. EXISTING CONDITIONS

2.1 Intersection Characteristics

SR 21 near SR 100 is a two-lane undivided urban minor arterial with a posted speed limit of 30 MPH approaching the SR 100 intersection. This portion of SR 21 runs primarily north and south and has an access management classification of Access Class 06. SR 21 has 12-foot travel lanes and curb and gutter. There are sidewalks along each approach to the intersection. There are no bike lanes or paved shoulders along either roadway. See Figure 2-1 for an aerial of the intersection.

The intersection is signed, striped, and signalized with the following geometry:

- Northbound SR 21: One left-turn lane and one through/right-turn lane
- Southbound SR 21: One left-turn lane, one through lane, and one right-turn lane
- Eastbound SR 100: One left-turn lane and one through/right-turn lane
- Westbound SR 100: One left-turn lane and one through/right-turn lane

Figure 2-1. Existing Intersection Configuration

2.2 Intersection Geometry

SR 21 at SR 100 is skewed intersection, further defined by lane striping for SB right/through and SB left turn movements. The WB SR 100 to NB SR 21 traffic must make an immediate “right turn only” into the Walgreens parking lot, or merge left to the NB through lane, after turning. The decision point directly after the WB to NB turn is abrupt.

The acute angle between NB SR 21 to EB SR 100 is 46 degrees, making all right turns difficult for trucks without departing from the designated striped lanes. Figure 2-2 indicates the intersection approach angles.

Figure 2-2. Intersection Geometry

2.3 Intersection Striping

Intersection lane markings have been recently repainted and include high emphasis crosswalks at all approaches as well as new markings to more clearly delineate the SR 21 northbound right turn only lane into the Walgreens on the northeast corner of the intersection. The on-street parking pavement markings have also been refreshed on SR 21 south of the intersection. Crosswalks in all four directions are longer than optimum for comfortable walk times, with the two with the sharpest skew being the longest.

View of intersection facing southwest

2.4 Context Classification

SR 21 and SR 100 both have a context classification of Rural Town (C2T). According to the FDOT Context Classification Guide, the rural town classification exhibits small concentrations of development areas immediately surrounded by rural and natural areas. This classification includes many historic towns. SR 21, south of the intersection through the small business district, acts as a gateway to the town center. Figure 2-3 illustrates this classification.

Figure 2-3. FDOT Context Classification Guide Description

2.5 Right of Way/Parcel Boundaries

Parcel boundaries were obtained from the Clay County Property Appraiser. This parcel data was used to assume general right-of-way (ROW) boundaries adjacent to both SR 21 and SR 100. Figure 2-4 illustrates the existing ROW and parcel boundaries adjacent to the intersection.

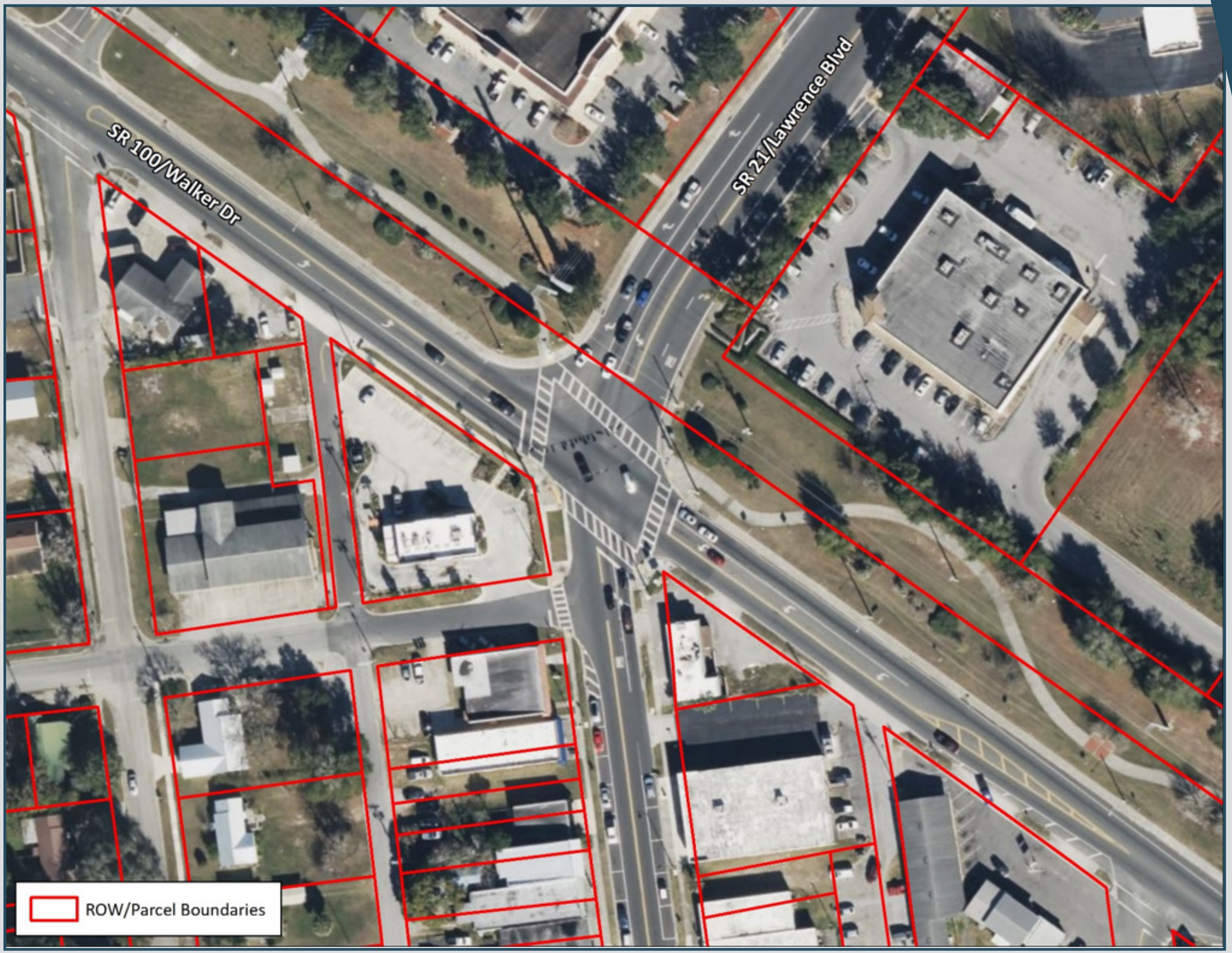
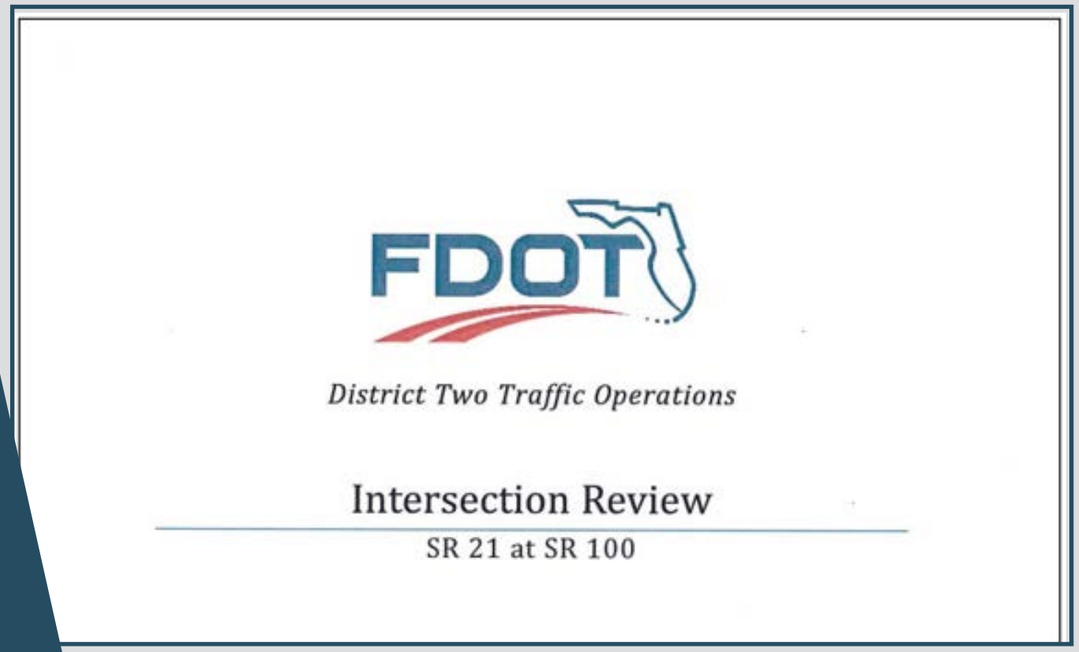


Figure 2-4. Existing Parcel and Right of Way Boundaries

2.6 Existing Land Use

Existing land use adjacent to the SR 21/SR 100 intersection was determined using the Generalized Land Use Derived from 2021 Florida Parcels dataset from the University of Florida's GeoPlan Center. The dataset was created for FDOT and generalizes 99 available land uses into 15 land use classifications. As displayed in Figure 2-5, predominant land uses adjacent to the intersection are commercial and public uses. Two large residential developments are scheduled to be constructed within the next few years. This growth was accounted for in the growth rate used for the traffic analysis in the near-term years.

Figure 2-5. Existing Land Use



2.7 Previous Studies

The FDOT District 2 Traffic Operations Office completed an intersection review of the SR 21 at SR 100 intersection in January 2020 (Section No. 71110000, MP 6.245, Clay County) with the principal purpose of determining traffic turning movements, and specifically north bound SR 21 right turns to east bound SR 100. The District received a request from an individual (unidentified in the report) to study the turning movements. The intersection review report also identified potential new development in the area but with no identification as to where or when this will occur.

The observed turning movement data was provided in Table 1 of the District's report: SR 21 Northbound Right-Turn Volumes varied from 16 to 30 (the peak during 3:00 PM to 4:00 PM).

A field review was performed on December 3, 2019, from 8:45 AM to 9:45 AM to document existing conditions during which very few NB right turns were observed. The District's report did state, "There was evidence that the northbound right-turn movement has off-tracked onto the curb, but no evidence of prolonged wear (cracked curb, sidewalk, etc.)." Given that few NB right turns are made from SR 21 to SR 100, local knowledge of difficult turning movement may mean that local drivers avoid the turns.

The District's report *Conclusions and Recommendations* section (2020) provides the following: "Based on the field review, crash analysis, and right-turn lane evaluation, a right-turn lane is not recommended at this time. The field review and office review found that the existing volumes of northbound right-turns did not meet or exceed the recommended thresholds outlined in the FDOT Driveway Information Guide. (The threshold cited as justification for a right turn lane for a 30-mph two lane roadway is 80 right-turning vehicles per hour, and the maximum number of right turns at this intersection during the twelve hours observed was 30.) Additionally, there is no crash history of northbound rear-ends that was attributed to vehicles slowing to turn right. No other operational improvements are recommended."

FDOT has recently completed a project that involved painting high emphasis crosswalks at the intersection as well as new striping for parking on SR 21 south of SR 100.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Section 3. Traffic Analysis

3.1 Data Collection

3.1.1. Tube Counts

Twenty-four-hour tube counts were collected on SR 21 and SR 100 over a three-day period (October 25-27, 2022) at four locations. These locations were:

- SR 21 north of SR 100
- SR 21 south of SR 100
- SR 100 east of SR 21
- SR 100 west of SR 21

3.1.2. Turning Movement Counts

Turning movement counts (TMC) were collected for eight hours on Thursday, October 27, 2022. The counts captured the AM and PM peak periods at the SR 100 at SR 21 intersection. The TMCs included vehicle classification between passenger vehicles, heavy vehicles, pedestrians, and bicyclists.

The turning movement counts were not adjusted by a seasonal adjustment factor as the seasonal adjustment factor from the 2021 Clay County Season Factor Report is less than 1.00 based on the time of year the counts were performed, indicating that the counts were collected during peak season conditions.

3.2 Existing Traffic Conditions

Utilizing traffic data collected as part of this study, the SR 21/SR 100 intersection and the surrounding approaches were evaluated to determine existing traffic characteristics. Figure 3-1 illustrates existing turning movement counts for the intersection.

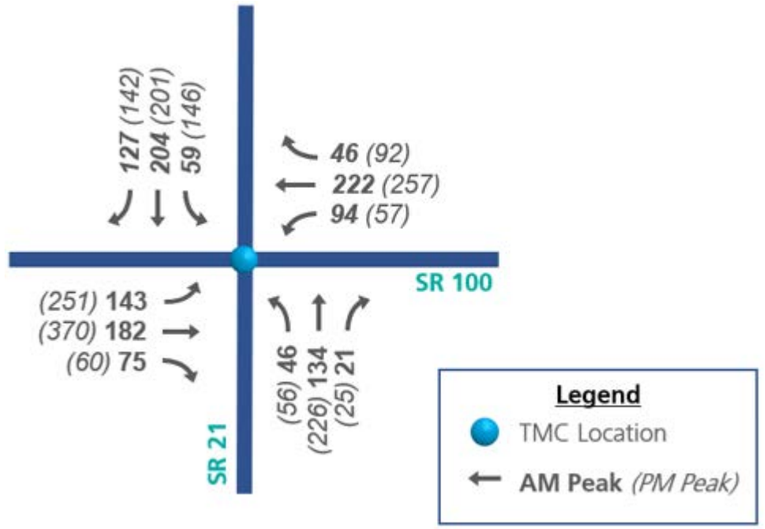


Figure 3-1. Existing Turning Movement Counts

3.3 Traffic Forecasting

3.3.1. Historical Traffic Counts

A ten-year historical trends analysis was performed using traffic count data for the most recently available AADT from FDOT's Florida Traffic Online database. Four locations were available within the study area and are listed below. Table 3-1 provides the AADT estimate between 2012 with 2021.

Table 3-1. Historical Traffic Counts

Count Location	Count ID	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
SR 100 - West of SR 19	710168	9,900	10,500	10,500	11,000	11,000	12,000	12,000	11,000	12,000	12,000
SR 100 - East of SR 19	710110	10,600	11,400	11,200	11,500	11,700	11,000	12,100	11,900	11,300	12,800
SR 19 - North of SR 100	710164	9,500	10,000	9,700	10,000	10,000	10,500	10,500	11,500	10,000	11,500
SR 19 - South of SR 100	710014	5,700	6,000	5,900	6,000	6,500	6,800	7,200	7,000	7,200	7,200

3.3.2. Regression Analysis using Historical Traffic Data

The historical counts collected from FDOT's count program were then loaded into the FDOT TRENDs worksheet to generate both the linear growth rate and decaying exponential growth rate projections between 2012 and 2021 (Table 3-2). The resulting forecast figures are provided in the Appendix.

Table 3-2. Regression Analysis

Location	Linear Analysis Growth Rate	Decaying Exponential Growth Rate
SR 100 - West of SR 19	1.78%	0.35%
SR 100 - East of SR 19	1.17%	0.22%
SR 19 - North of SR 100	1.59%	0.26%
SR 19 - South of SR 100	2.28%	0.46%

3.3.3. Population Projections

The population projections by county and district from FDOTs Demographic Analysis website were collected for Clay County for all available years. The most recently available forecast data is from 2020 to 2045 and is divided into five-year increments which are adjusted based on the 2019 population estimates. Table 3-3 shows the population estimate for Clay County projections for years 2020 to 2045. The resulting annual growth rate between 2020 and 2045 is projected to be 1.40% per year.

Table 3-3. Population Projections

	2020	2025	2030	2035	2040	2045	Growth Rate
Population (Clay)	218,900	236,700	253,400	268,100	282,000	295,500	1.40%

3.3.4. Growth Rate Summary

The recommended growth rate was selected by comparing all of the forecasts and accounting for the variability in the different methods (Table 3-4). The three methods of growth analytics are provided for comparison in the table below. Based on the variability a suggested annual growth rate of 1.5% is proposed for the study area.

3.3.5. Future Turning Movement Counts

The 1.5% annual growth rate was applied to the existing turning movement counts to determine future year 2050 turning movements.

The design year (2050) traffic utilized the 1.5% annual growth rate except for the first two years which utilized a 2% growth rate due to multiple residential developments being constructed in the area during the next two years. Additionally, a seven (7) second leading pedestrian interval was modeled as part of the signal timings in both the existing and future conditions.

Table 3-4. Growth Rate Summary

Site Location	Linear Analysis		Decaying Exponential		2045 County Population Growth	Suggested
	Growth Rate	R-Squared	Growth Rate	R-Squared		
SR 100 - West of SR 19	1.78%	73.01%	0.35%	77.30%	1.40%	1.5%
SR 100 - East of SR 19	1.17%	49.70%	0.22%	48.19%	1.40%	1.5%
SR 19 - North of SR 100	1.59%	59.05%	0.26%	51.51%	1.40%	1.5%
SR 19 - South of SR 100	2.28%	21.89%	0.46%	28.84%	1.40%	1.5%

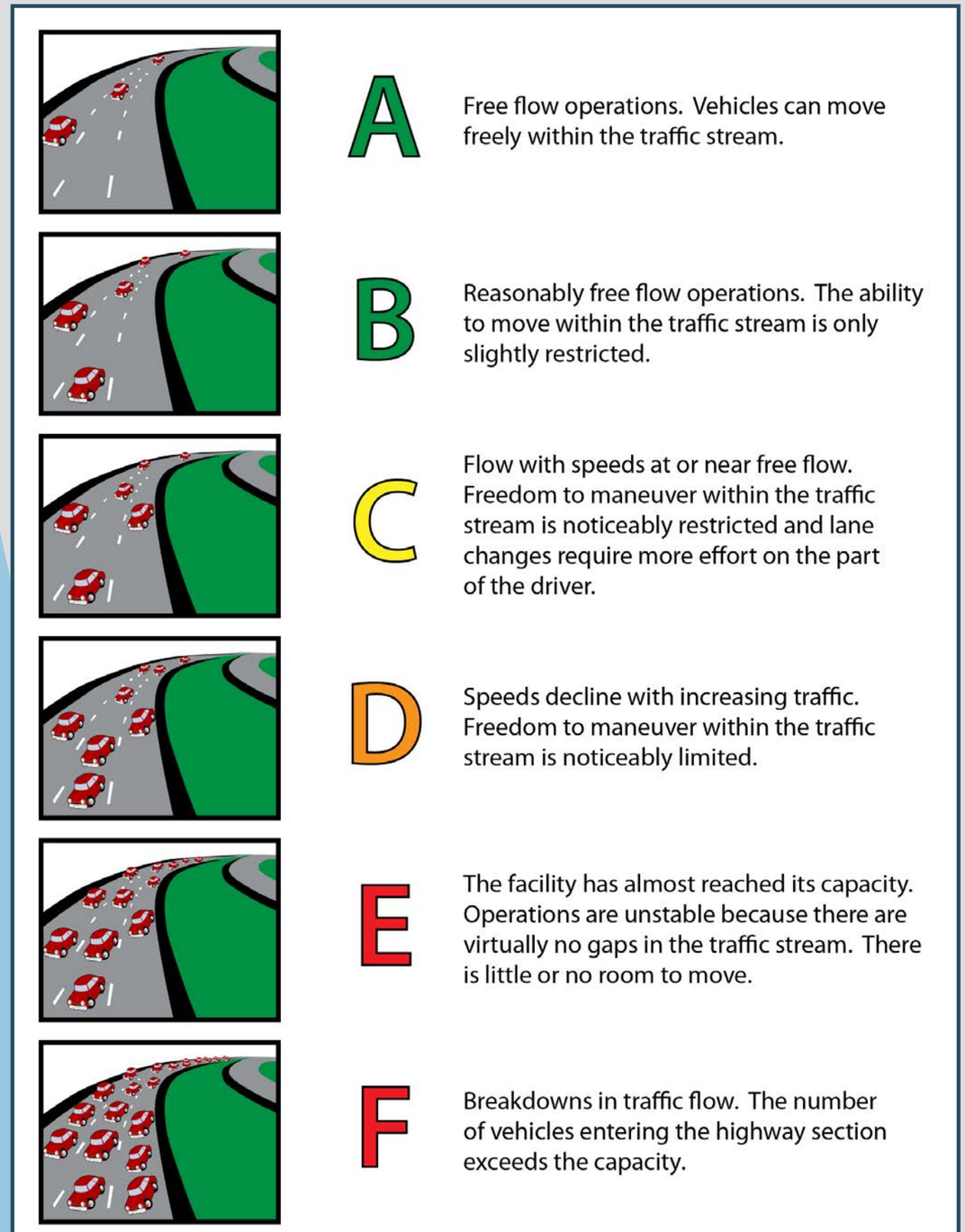


Figure 3-2. Level of Service Grades A through F

3.4 Intersection Level of Service Analysis

An operational analysis of the intersection was performed for existing traffic with current geometry and for a design year of 2050 with No-Build conditions. The intersection traffic analysis was conducted using Synchro (version 11) traffic software, which uses the HCM methodology to determine intersection delay and level of service (LOS). LOS is a measurement of congestion determined by the number of vehicles on a roadway in relation to the capacity of the roadway. LOS standards assign a grade of LOS A (least congestion) to LOS F (most congestion) to a roadway facility (see Figure 3-2).

3.4.1. 2022 Existing and 2050 No Build Intersection Performance Results

The results of the 2022 existing traffic analysis indicate that the overall intersection currently operates within target LOS (LOS D or better) in both the AM and PM peak hour for existing and future volumes. A slight improvement in northbound and southbound approach delays for the AM peak hour can be attributed to an increase in green time utilization for those approaches with the 2050 volumes. Signal timings for future year signalized intersections were optimized using Synchro's optimization tool to achieve comparable intersection operating conditions and traffic progression to regular Transportation Systems Management and Operations (TSM&O) signal retiming maintenance. Table 3.5 summarizes the existing and future no build intersection performance results.

An operational analysis of the project's intersection was performed for existing traffic with current geometry and for a design year of 2050 with No-Build conditions. The intersection traffic analysis was conducted using Synchro (version 11) traffic software, which uses the HCM methodology to determine intersection delay and level of service (LOS) as shown in Table 3-5.

Table 3-5. Existing and Future No Build Intersection Performance

Intersection	Year	AM										PM									
		EB		WB		NB		SB		Overall		EB		WB		NB		SB		Overall	
SR 100 and SR 21	2022	15.4	(B)	16.9	(B)	57.6	(E)	59.2	(E)	34.7	(C)	20.8	(C)	26.6	(C)	55.3	(E)	47.7	(D)	34.7	(C)
	2050	22.4	(C)	25.4	(C)	54.6	(D)	63.2	(E)	36.9	(C)	60.8	(E)	62.6	(E)	56.4	(E)	47.8	(D)	56.9	(E)

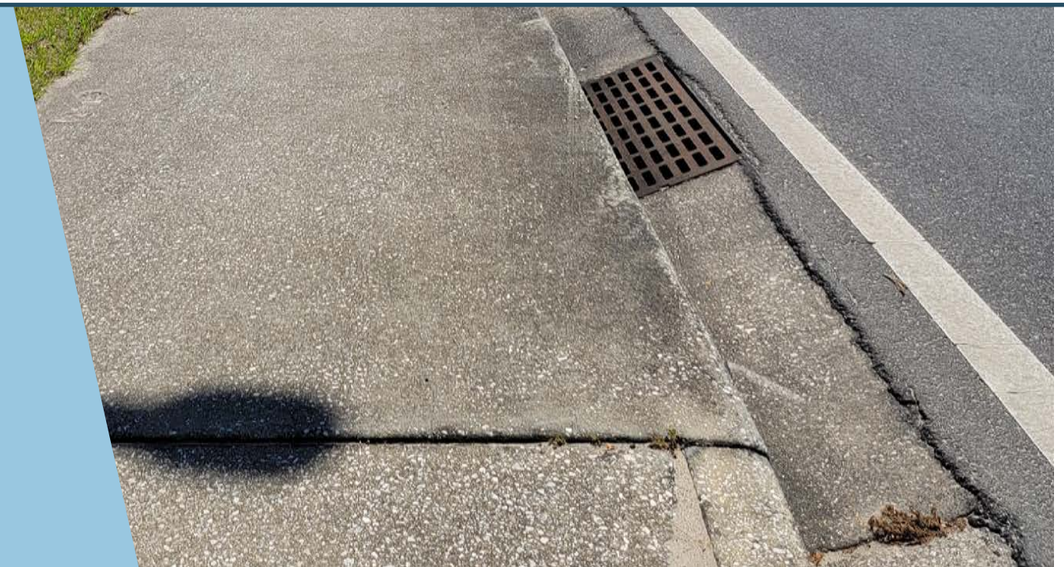
3.4.2. 2022 and 2050 Build Intersection Performance Results

The Build scenario of this intersection has the same existing geometry with the exception of an additional northbound channelized right-turn lane. The northbound approach for the build scenario thus has a left turn lane, a through lane, and a channelized right turn lane.

The results of the 2050 Build traffic analysis indicate an improvement in the overall intersection which operates within target LOS (LOS D or better) in both the AM and PM peak hour for existing and future volumes. The northbound approach also experiences a noticeable improvement and operates within target LOS (LOS D or better) for both Build scenario peak hours and volumes. Table 3-6 summarizes the existing and future build intersection performance results.

Table 3-6. Existing and Future Build Intersection Performance

Intersection	Year	AM										PM									
		EB		WB		NB		SB		Overall		EB		WB		NB		SB		Overall	
SR 100 and SR 21	2022	15.4	(B)	16.9	(B)	54.6	(D)	59.2	(E)	34.2	(C)	19.8	(B)	25.4	(C)	53.9	(D)	49.1	(D)	34.2	(C)
	2050	22.2	(C)	25.1	(C)	51.0	(D)	53.7	(D)	36.4	(D)	56.3	(E)	59.2	(E)	48.7	(D)	47.5	(D)	53.4	(D)

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Section 4. Safety Evaluation

4.1 Crash Evaluation

Existing crash data was obtained from the Signal 4 Analytics (S4) database for the five-year period from 2018 to 2022. The S4 database was developed by the GeoPlan Center at the University of Florida using crash records provided by the Florida Department of Highway Safety and Motor Vehicles (DHSMV). A review of the crash data indicated a total of 68 crashes within a 600' radius of the intersection of SR 21/SR 100 for the study period. Of these crashes, there were no fatal crashes or crashes involving bicyclists and/or pedestrians. Two crashes resulted in serious injuries and six crashes resulted in an injury. The results of the crash evaluation are summarized in this section.

The most common crash type was Rear End, with 35 crashes. Left-turn and angle crashes were the second most frequent crash types with 7 crashes each, as shown in Figure 4-1.

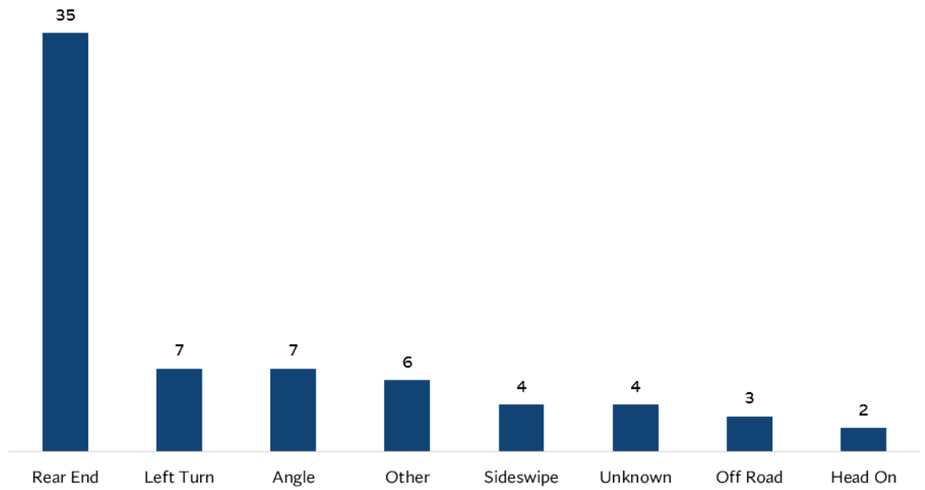


Figure 4-1. Crashes by Type

The year 2022 saw the highest number of crashes with 18. The years 2018 through 2020 experienced the fewest crashes with 12 per year.

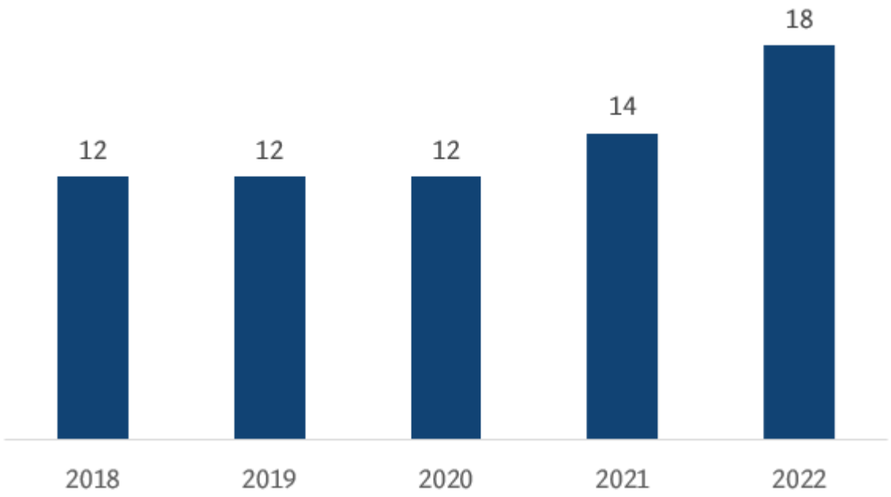


Figure 4-2. Crashes by Year

Monday experienced the highest number of crashes during the week with Saturday experiencing the fewest.

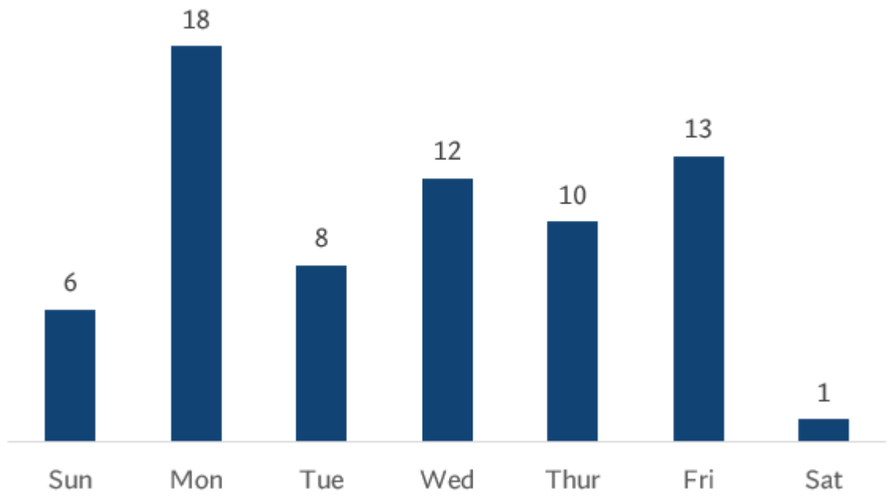


Figure 4-3. Crashes by Day of Week

A majority of crashes (54) occurred during daylight conditions. Fourteen crashes occurred in dark conditions.

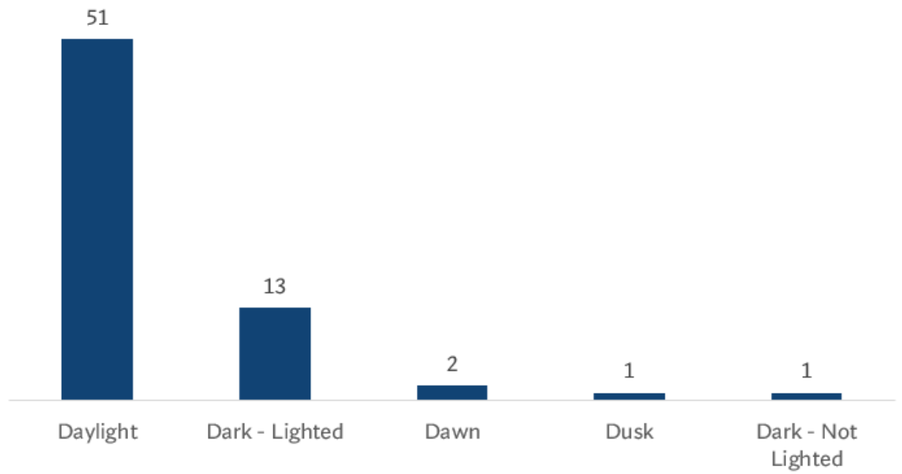


Figure 4-4. Crashes by Lighting Conditions

The number of crashes peaked in the afternoon hours from 3 p.m. to 6 p.m.

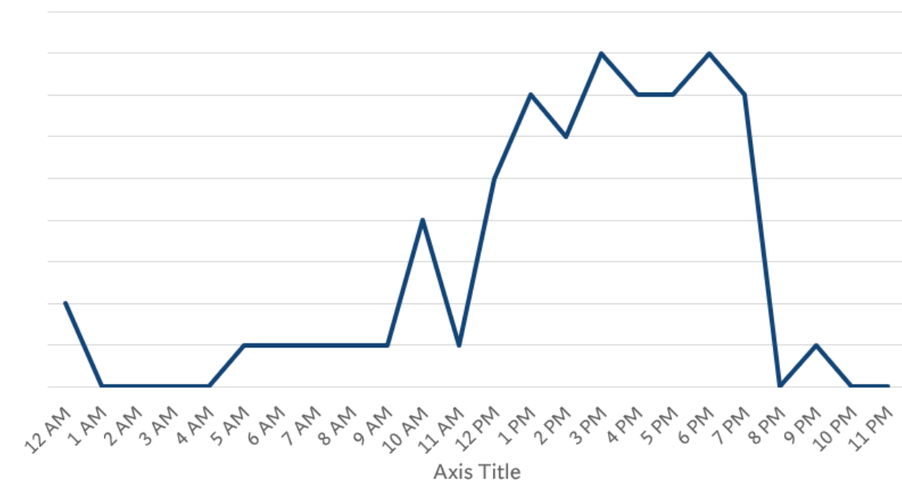


Figure 4-5. Crashes by Time-of-Day

Most crashes (62) occurred on dry road surface conditions. The remaining crashes (6) occurred on wet road surface conditions

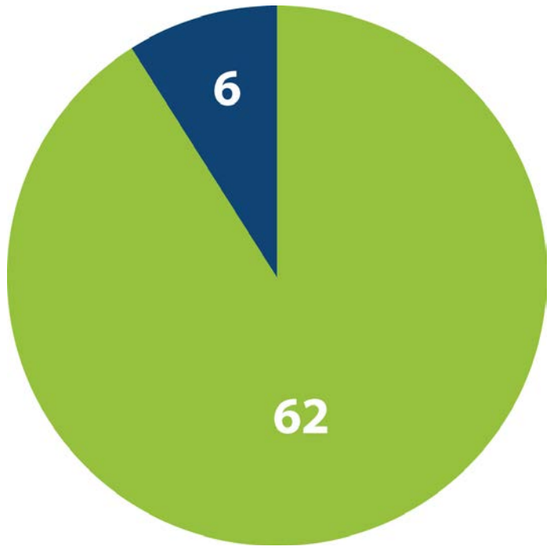


Figure 4-6. Crashes by Roadway Condition

Section 5. Proposed Improvements

5.1 Proposed Improvements

Based on the FDOT guidance, the SR 21/SR 100 intersection analysis notes a wide range of intersection treatments through a similarly wide range of complexity, contexts, and costs. Priorities can be set by complexity, cost, local preference, and right-of-way availability. Needed safety and operational improvements at the SR 21/SR 100 intersection include new and modified lane striping, crosswalk remediation, access management, signal modifications, and sight distance improvements. Figure 5-1 illustrates a concept plan of the improvements.

5.2 Pavement Markings

5.2.1. Skip Lines and New Crosswalks

A low-cost improvement for vehicular safety would be to provide new skip line striping to better represent and define turning movements in each direction. To eliminate long crosswalk distances, new crosswalks could be incorporated to align more perpendicular to the crossings and with relocated stop bars to direct traffic to stop short of the crosswalks. Crosswalks crossing diagonally do not follow the direction of leading or intercepting sidewalks, and the shortened walk distance shown in the concept is a safer alternative.

5.2.2. WB SR 100 to NB SR 21 Right Turn Lane Delineation

There is an abrupt right turn lane leading to the Walgreens entrance, immediately after the WB SR 100 to NB SR 21 right turn movement. A painted bump-out gore could be added to direct traffic directly to the NB SR 21 through lane, and then new markings and signage could be added to the right turn only lane to the CVS driveway entrance in addition to the “right lane must turn right” signage that exists currently. This improvement would remove the potential for rear end collisions by right turning vehicles that follow a vehicle intending to immediately turn right into the Walgreens site.

5.3 Signal Improvements

5.3.1. Signal Timing

Low-cost signal retiming changes could be made to allow safer pedestrian crossing within the proposed new crosswalks.

5.3.2. Lead Pedestrian Interval

A leading pedestrian interval (LPI) incorporated into the signal timing gives pedestrians the opportunity to enter the crosswalk at an intersection three to seven seconds before the vehicles are given a green light. Pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn right or left. Signal timing changes are lower cost, early intervention safety improvements that can be done in an early phase of intersection improvements. A signal timing study could be initiated by asking FDOT District staff or a consultant to perform a study and/or optimization adjustment recommendations. The analysis performed in Section 3.4.2 reflects an LPI of 7 seconds in the level of service calculation.

5.3.3. Signal Backplates

Adding retro-reflective signal backplates is also a low-cost safety countermeasure. SR 100 is aligned east-west, and at times with low sun angles, signals can be obscured by glare. **Backplates should not be installed on the existing strain pole signals but would be an important safety feature on improved mast arm signals.** Through field evaluation, background glare was observed which interferes with visual detection of the signals.

5.4 Intersection Design

5.4.1. Dedicated Northbound SR 21 Right-turn Lane

The vacant China Chef restaurant on the SE corner of the intersection is the first gateway introduction to the revitalized SR 21 S Lawrence Road downtown corridor. As noted previously, a dedicated NB SR 21 right turn lane would provide a safety improvement for the intersection. According to the FHWA Office of Safety, Proven Safety Countermeasures, the safety benefit of a dedicated right turn lane at an intersection is a 14% to 26% reduction in total crashes. The difficult northbound to eastbound 46-degree acute angle right turn at this intersection can only be accomplished by slow moving vehicles leading to a higher probability of rear end crashes. The turning movement for larger trucks is also difficult, requiring the vehicle to begin the turn at the left of the right turn lane and end it either in, or encroaching upon the WB SR 100 left turn lane. The addition of a right-turn lane would require the purchase of the existing vacant business parcel (Parcel # 022006-000-00). A concept for this improvement is discussed in further detail in Section 5.5.

View northbound on SR 21

View of intersection facing southwest

5.4.2. SB SR 21 Right Turn Movement

To segregate SB SR 21 to WB SR 100 right turning vehicles and to provide crosswalk pedestrian safe havens, a curbed directional traffic separator median could be built at moderate cost. This would shorten the walk distance across through lanes and provide a more direct crosswalk alignment than exists presently.

Appropriate pedestrian crosswalk notification and yield signs should be installed prior to and at the crosswalk. Shark teeth pavement markings should be included along with yield conditions signage prior to advancing to WB SR 100.

This separator island would be located where the wear pattern on the street surface would indicate the turning movements today. A lower cost alternative that may be done in advance of the curbed median would be to define the condition with pavement markings.

An Autoturn analysis was performed at this intersection and it was determined that a smaller semi-truck (WB-40) could navigate this turning movement with a raised separator. However, the largest semi-truck (WB-62FL) would necessitate a smaller raised separator in order to make the turn (See Appendix C). Further engineering design and analysis would need to occur in order to determine the appropriate size of a traffic separator at this location.

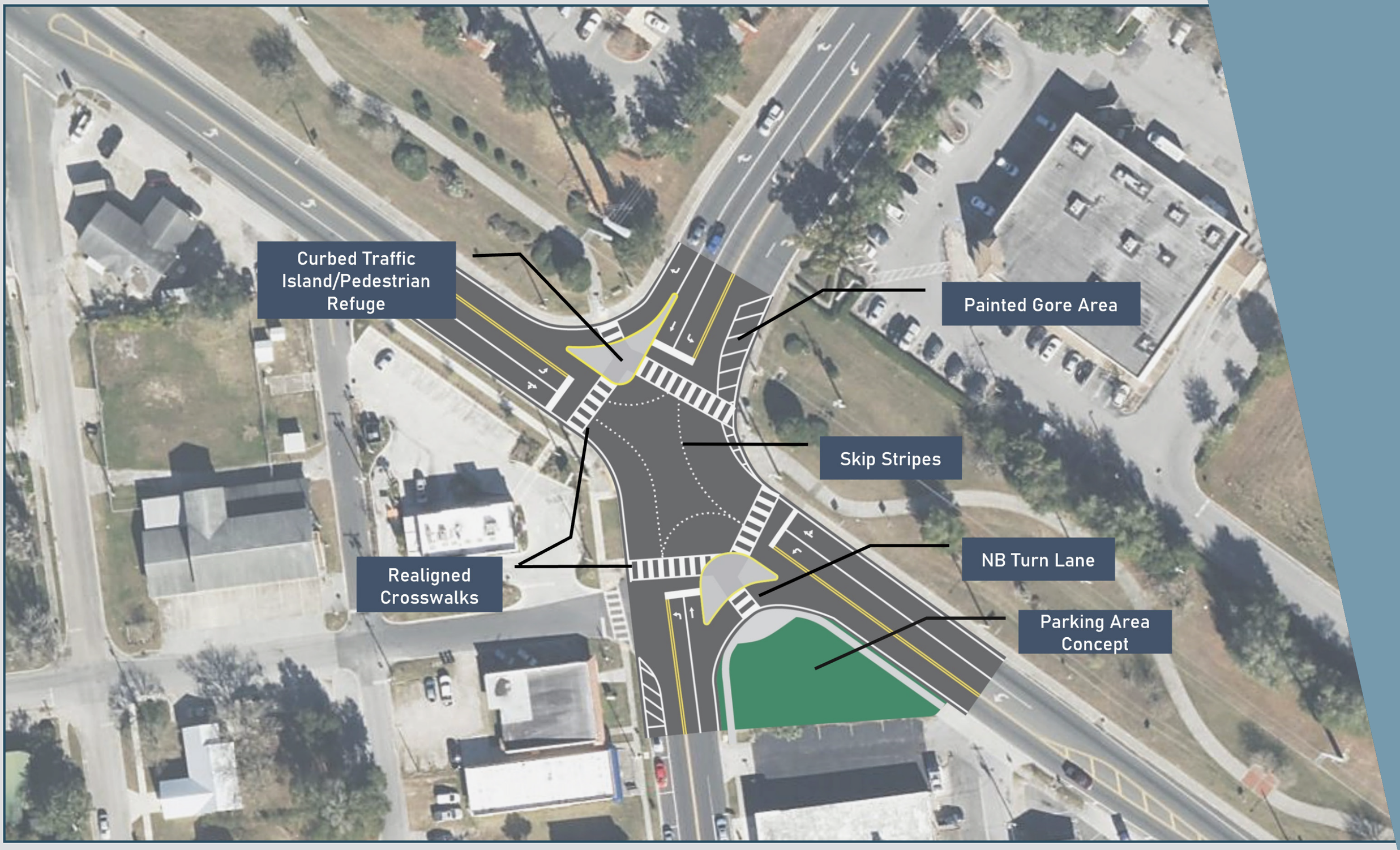


Figure 5-1. SR 21/SR 100 Concept Plan

5.5 Turn Lane and Parking Area Concept

The focus of the SR 21/SR 200 Intersection Study was on the turning movements required in each direction on both roadways. The most difficult turning movement is an acute, 46-degree angle northbound right turn from SR 21 to SR 100 requiring large wheelbase vehicles to encroach left into the left turn lane on SR 21 and turning close to or into the left turn lane on SR 100. One solution discussed was to provide a dedicated right turn lane on SR 21 and provide a directional curbed median that would provide for right turns, but also allow a safer visible pedestrian crossing in a crosswalk across the right turn lane. To allow for the new right turn lane, acquisition of a parcel on the south-east corner would be required. An Autoturn analysis was performed to determine the appropriate turning radius for the NB right turn movement (See Appendix C). The concepts shown in the following pages represent an appropriate radius that would accommodate large semi-trucks.

5.5.1. Proposed Parking Area

A concept for adaptive reuse of the acquired parcel for both a parking area and public space was considered and developed. Later, the concept was revised to investigate creating additional public parking on the acquired parcel, while developing arrangements that improved the parking for the remaining adjacent structure—a potential public-private partnership arrangement.

Figure 5-2 and Figure 5-3 on the following pages illustrate the proposed turn lane and parking area concept with the ROW boundaries overlaid. It should be noted that this concept was developed as a desktop exercise using available GIS data. No field survey data was collected. Any future concept would need to go through a thorough design and engineering process. The acreage calculations are approximations for the reuse of parcel #022006-000-00 and are for reference only.

Figure 5-2. Right of Way and Parcel Boundaries

Figure 5-3. Area Needed for Parking Area, Turn Lane and Open Space

Aerial View of Gateway Feature and Parking Area

View of Gateway Feature Facing South

View of Parking Area of Gateway Feature

5.6 Public Parking

Through discussions with the City of Keystone Heights, the original concept was revised to show parking on the publicly acquired parcel shared with the existing private parking already in place. Approximately eight additional parking spaces could be added depending on the chosen site layout, and these additional spaces would mitigate the loss of one or two of the on-street parking spaces that would be used to create the right-turn lane.

Aerial View of Parking Area

5.7 Access Management

The parking concept plan indicates removal of the existing driveway access from SR 21 to the parking lot to eliminate it from close proximity to the intersection. Access to the new parking lot arrangement will be from SR 100 and Beasley Lane with a shared driveway with the existing parking lots. That would be a safe location for a full access driveway allowing left turns in from the median left turn lane, and out to the left turn lane.


BLUE STAR
MEMORIAL HIGHWAY
A tribute to the Armed Forces that have defended the United States of America
Garden Club of the Lakes, Inc.
Florida Federation of Garden Clubs, Inc.
The City of Keystone Heights
The Florida Department of Transportation
KEYSTONE
BIKE ROUTES
GOLD HEAD BRANCH
STATE PARK
6 MILES
CHINA CHEF

Section 6. Conclusion

This study focused on identifying problem areas at the SR 21/SR 200 intersection and providing recommendations to improve existing and future operations of the intersection as well as enhance multimodal mobility and safety for all users. The goal of the parking area concept is to reuse an existing vacant parcel to provide a safer turning movement to accommodate large trucks making a northbound right turn as well as to provide an entrance feature to downtown Keystone Heights.

Some of the recommendations identified as part of this study could be completed incrementally as funding becomes available. Table 6-1 provides a summary of all recommended improvements by phase.

Table 6-1. Summary of Recomended Improvements

Category	Proposed Improvement	Anticipated Effectiveness
Short-Term Improvements		
Pavement Markings	Skip Lines	There are no skip lines through the intersection currently. For this skewed intersection, skip lines would visually aid driver making turn movements.
	WB SR 100 to NB SR 21 Right Turn Delineation	A striped area for the WB SR 100 to NB SR 21 would prompt drivers to turn right into the through NB lane and then move into the right turn only lane to the Walgreens driveway after the turn which would decrease driver confusion and last second merging.
Signal Enhancements	Lead Pedestrian Interval (LPI)	Lead pedestrian interval signal timing would benefit pedestrians crossing multiple lanes and the additional crossing time could be added to the countdown timer pedestrian signal head. Audible countdowns could also be installed to aid sight limited individuals. These crossing aids would encourage pedestrian activity within the town center/business district. The analysis performed in Section 3.4.2 reflects a LPI of 7 seconds in the level of service calculation.
Medium-Term Improvements		
Intersection Design	Curbed Traffic Island SB SR 21 Right Turn Movement	The curbed traffic separator island at the NW quadrant of the intersection would make both vehicular turning movements and pedestrian crossings more predictable and controlled. The SB SR 21 to WB SR 100 right turn would be a yield-to-pedestrians movement at the pedestrian crossing and would be a safer right-turn on red after stop condition when entering WB SR 100 traffic.
Long-Term Improvements		
Signal Enhancements	Mast Arm Signals	Mast arm signals could be installed to more directly face the drivers approaching the intersection in each direction. The stability advantage for maintenance during high wind events would be improved.
	Signal Backplates	Signal backplates would improve signal visibility in low sun conditions on SR 100. Images indicate high glare conditions at times in both eastbound and westbound directions.
Intersection Design	Dedicated Northbound SR 21 Right-turn Lane	Intersection redesigns and construction are higher cost elements that can improve safety and operations at the SR 21/SR 100 intersection. If property acquisition can be accomplished to obtain right-of-way for the right turn lane, improvements to turning movements and pedestrian safety can be made.
Parking Area Concept	Construction of a new sign feature on SE corner of intersection	The Parking Area Concept would provide a monument feature delineating the entrance into downtown Keystone Heights. It would allow for additional parking spaces as well as provide a more pedestrian-friendly environment on that quadrant of the intersection. It would also provide a visually appealing sign feature to the downtown area.


EAST
WEST
100
100
CHINA CHEF
DUNKIN'
SR 100
SR 21

Appendix A: Traffic Data

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 1
Station ID: 1
SR 21 NORTH OF
SR 100

Start Time	25-Oct-22 Tue	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	88		
12:15		0	107		
12:30		0	99		
12:45		0	101	0	395
01:00		0	95		
01:15		0	90		
01:30		0	74		
01:45		0	86	0	345
02:00		0	109		
02:15		0	110		
02:30		0	117		
02:45		0	99	0	435
03:00		0	95		
03:15		0	85		
03:30		0	104		
03:45		0	104	0	388
04:00		0	106		
04:15		0	109		
04:30		0	119		
04:45		0	122	0	456
05:00		0	136		
05:15		0	106		
05:30		0	140		
05:45		0	115	0	497
06:00		48	0		
06:15		80	0		
06:30		80	0		
06:45		106	0	314	0
07:00		105	0		
07:15		77	0		
07:30		97	0		
07:45		115	0	394	0
08:00		98	0		
08:15		83	0		
08:30		90	0		
08:45		83	0	354	0
09:00		74	0		
09:15		78	0		
09:30		73	0		
09:45		93	0	318	0
10:00		78	0		
10:15		71	0		
10:30		74	0		
10:45		95	0	318	0
11:00		81	0		
11:15		78	0		
11:30		94	0		
11:45		80	0	333	0
Total		2031	2516		
Percent		44.7%	55.3%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 1
Station ID: 1
SR 21 NORTH OF
SR 100

Start Time	26-Oct-22 Wed	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	101		
12:15		0	86		
12:30		0	103		
12:45		0	88	0	378
01:00		0	128		
01:15		0	99		
01:30		0	100		
01:45		0	81	0	408
02:00		0	81		
02:15		0	90		
02:30		0	112		
02:45		0	88	0	371
03:00		0	91		
03:15		0	100		
03:30		0	116		
03:45		0	115	0	422
04:00		0	101		
04:15		0	101		
04:30		0	82		
04:45		0	123	0	407
05:00		0	133		
05:15		0	126		
05:30		0	146		
05:45		0	114	0	519
06:00		40	0		
06:15		78	0		
06:30		73	0		
06:45		114	0	305	0
07:00		92	0		
07:15		94	0		
07:30		93	0		
07:45		111	0	390	0
08:00		98	0		
08:15		87	0		
08:30		75	0		
08:45		85	0	345	0
09:00		77	0		
09:15		63	0		
09:30		85	0		
09:45		62	0	287	0
10:00		80	0		
10:15		68	0		
10:30		100	0		
10:45		89	0	337	0
11:00		70	0		
11:15		78	0		
11:30		87	0		
11:45		99	0	334	0
Total		1998	2505		
Percent		44.4%	55.6%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 1
Station ID: 1
SR 21 NORTH OF
SR 100

Start Time	27-Oct-22 Thu	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	97		
12:15		0	90		
12:30		0	105		
12:45		0	98	0	390
01:00		0	55		
01:15		0	95		
01:30		0	98		
01:45		0	75	0	323
02:00		0	98		
02:15		0	102		
02:30		0	121		
02:45		0	96	0	417
03:00		0	90		
03:15		0	91		
03:30		0	99		
03:45		0	106	0	386
04:00		0	112		
04:15		0	130		
04:30		0	119		
04:45		0	123	0	484
05:00		0	112		
05:15		0	104		
05:30		0	139		
05:45		0	134	0	489
06:00		55	0		
06:15		63	0		
06:30		69	0		
06:45		94	0	281	0
07:00		106	0		
07:15		71	0		
07:30		93	0		
07:45		101	0	371	0
08:00		127	0		
08:15		86	0		
08:30		79	0		
08:45		98	0	390	0
09:00		86	0		
09:15		77	0		
09:30		56	0		
09:45		77	0	296	0
10:00		87	0		
10:15		79	0		
10:30		74	0		
10:45		89	0	329	0
11:00		65	0		
11:15		91	0		
11:30		104	0		
11:45		102	0	362	0
Total		2029	2489		
Percent		44.9%	55.1%		
Grand Total		6058	7510		
Percent		44.6%	55.4%		
ADT		ADT 4,523		AADT 4,523	

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 2
Station ID: 2
SR 21 SOUTH OF
SR 100

Start Time	25-Oct-22 Tue	NB Morning	NB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	82		
12:15		0	55		
12:30		0	55		
12:45		0	68	0	260
01:00		0	52		
01:15		0	48		
01:30		0	44		
01:45		0	92	0	236
02:00		0	53		
02:15		0	51		
02:30		0	51		
02:45		0	67	0	222
03:00		0	90		
03:15		0	69		
03:30		0	72		
03:45		0	54	0	285
04:00		0	62		
04:15		0	78		
04:30		0	89		
04:45		0	68	0	297
05:00		0	73		
05:15		0	66		
05:30		0	80		
05:45		0	93	0	312
06:00		19	0		
06:15		32	0		
06:30		27	0		
06:45		29	0	107	0
07:00		45	0		
07:15		47	0		
07:30		41	0		
07:45		39	0	172	0
08:00		44	0		
08:15		48	0		
08:30		54	0		
08:45		41	0	187	0
09:00		46	0		
09:15		32	0		
09:30		41	0		
09:45		42	0	161	0
10:00		50	0		
10:15		57	0		
10:30		52	0		
10:45		51	0	210	0
11:00		54	0		
11:15		53	0		
11:30		72	0		
11:45		59	0	238	0
Total		1075	1612		
Percent		40.0%	60.0%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 2
Station ID: 2
SR 21 SOUTH OF
SR 100

Start Time	26-Oct-22 Wed	NB Morning	NB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	54		
12:15		0	72		
12:30		0	51		
12:45		0	43	0	220
01:00		0	73		
01:15		0	51		
01:30		0	78		
01:45		0	52	0	254
02:00		0	77		
02:15		0	44		
02:30		0	49		
02:45		0	70	0	240
03:00		0	60		
03:15		0	65		
03:30		0	65		
03:45		0	78	0	268
04:00		0	73		
04:15		0	69		
04:30		0	56		
04:45		0	70	0	268
05:00		0	92		
05:15		0	112		
05:30		0	63		
05:45		0	62	0	329
06:00		15	0		
06:15		33	0		
06:30		25	0		
06:45		34	0	107	0
07:00		50	0		
07:15		49	0		
07:30		29	0		
07:45		33	0	161	0
08:00		53	0		
08:15		58	0		
08:30		42	0		
08:45		37	0	190	0
09:00		47	0		
09:15		41	0		
09:30		53	0		
09:45		49	0	190	0
10:00		34	0		
10:15		44	0		
10:30		55	0		
10:45		47	0	180	0
11:00		61	0		
11:15		64	0		
11:30		51	0		
11:45		60	0	236	0
Total		1064	1579		
Percent		40.3%	59.7%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 2
Station ID: 2
SR 21 SOUTH OF
SR 100

Start Time	27-Oct-22 Thu	NB Morning	NB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	71		
12:15		0	74		
12:30		0	58		
12:45		0	69	0	272
01:00		0	67		
01:15		0	48		
01:30		0	66		
01:45		0	85	0	266
02:00		0	71		
02:15		0	74		
02:30		0	74		
02:45		0	81	0	300
03:00		0	80		
03:15		0	90		
03:30		0	63		
03:45		0	60	0	293
04:00		0	74		
04:15		0	79		
04:30		0	73		
04:45		0	72	0	298
05:00		0	67		
05:15		0	80		
05:30		0	76		
05:45		0	84	0	307
06:00		19	0		
06:15		26	0		
06:30		29	0		
06:45		34	0	108	0
07:00		52	0		
07:15		53	0		
07:30		35	0		
07:45		34	0	174	0
08:00		49	0		
08:15		62	0		
08:30		45	0		
08:45		45	0	201	0
09:00		33	0		
09:15		34	0		
09:30		44	0		
09:45		54	0	165	0
10:00		47	0		
10:15		36	0		
10:30		56	0		
10:45		50	0	189	0
11:00		46	0		
11:15		59	0		
11:30		61	0		
11:45		69	0	235	0
Total		1072	1736		
Percent		38.2%	61.8%		
Grand Total		3211	4927		
Percent		39.5%	60.5%		
ADT		ADT 2,713		AADT 2,713	

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 3
Station ID: 3
SR 100 EAST OF
SR 21

Start Time	25-Oct-22 Tue	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	106		
12:15		0	75		
12:30		0	93		
12:45		0	90	0	364
01:00		0	85		
01:15		0	85		
01:30		0	83		
01:45		0	98	0	351
02:00		0	76		
02:15		0	94		
02:30		0	83		
02:45		0	85	0	338
03:00		0	97		
03:15		0	103		
03:30		0	97		
03:45		0	97	0	394
04:00		0	98		
04:15		0	100		
04:30		0	81		
04:45		0	98	0	377
05:00		0	97		
05:15		0	105		
05:30		0	106		
05:45		0	64	0	372
06:00		54	0		
06:15		57	0		
06:30		89	0		
06:45		116	0	316	0
07:00		114	0		
07:15		68	0		
07:30		83	0		
07:45		95	0	360	0
08:00		91	0		
08:15		71	0		
08:30		103	0		
08:45		73	0	338	0
09:00		80	0		
09:15		80	0		
09:30		74	0		
09:45		83	0	317	0
10:00		82	0		
10:15		75	0		
10:30		72	0		
10:45		75	0	304	0
11:00		78	0		
11:15		83	0		
11:30		99	0		
11:45		107	0	367	0
Total		2002	2196		
Percent		47.7%	52.3%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 3
Station ID: 3
SR 100 EAST OF
SR 21

Start Time	26-Oct-22 Wed	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	89		
12:15		0	88		
12:30		0	90		
12:45		0	102	0	369
01:00		0	80		
01:15		0	97		
01:30		0	93		
01:45		0	101	0	371
02:00		0	80		
02:15		0	96		
02:30		0	96		
02:45		0	76	0	348
03:00		0	103		
03:15		0	96		
03:30		0	106		
03:45		0	88	0	393
04:00		0	105		
04:15		0	87		
04:30		0	95		
04:45		0	94	0	381
05:00		0	95		
05:15		0	94		
05:30		0	105		
05:45		0	94	0	388
06:00		53	0		
06:15		52	0		
06:30		92	0		
06:45		126	0	323	0
07:00		97	0		
07:15		76	0		
07:30		103	0		
07:45		97	0	373	0
08:00		106	0		
08:15		83	0		
08:30		77	0		
08:45		98	0	364	0
09:00		80	0		
09:15		97	0		
09:30		84	0		
09:45		91	0	352	0
10:00		83	0		
10:15		95	0		
10:30		89	0		
10:45		71	0	338	0
11:00		73	0		
11:15		97	0		
11:30		78	0		
11:45		83	0	331	0
Total		2081	2250		
Percent		48.0%	52.0%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 3
Station ID: 3
SR 100 EAST OF
SR 21

Start Time	27-Oct-22 Thu	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	95		
12:15		0	95		
12:30		0	92		
12:45		0	89	0	371
01:00		0	68		
01:15		0	101		
01:30		0	78		
01:45		0	87	0	334
02:00		0	86		
02:15		0	101		
02:30		0	105		
02:45		0	79	0	371
03:00		0	97		
03:15		0	80		
03:30		0	106		
03:45		0	82	0	365
04:00		0	91		
04:15		0	98		
04:30		0	124		
04:45		0	106	0	419
05:00		0	110		
05:15		0	114		
05:30		0	87		
05:45		0	95	0	406
06:00		50	0		
06:15		67	0		
06:30		74	0		
06:45		114	0	305	0
07:00		125	0		
07:15		78	0		
07:30		90	0		
07:45		105	0	398	0
08:00		79	0		
08:15		98	0		
08:30		95	0		
08:45		90	0	362	0
09:00		73	0		
09:15		76	0		
09:30		65	0		
09:45		90	0	304	0
10:00		68	0		
10:15		80	0		
10:30		91	0		
10:45		90	0	329	0
11:00		82	0		
11:15		83	0		
11:30		94	0		
11:45		93	0	352	0
Total		2050	2266		
Percent		47.5%	52.5%		
Grand Total		6133	6712		
Percent		47.7%	52.3%		
ADT		ADT 4,282		AADT 4,282	

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 4
Station ID: 4
SR 100 WEST OF
SR 21

Start Time	25-Oct-22 Tue	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	129		
12:15		0	109		
12:30		0	100		
12:45		0	119	0	457
01:00		0	122		
01:15		0	91		
01:30		0	105		
01:45		0	135	0	453
02:00		0	112		
02:15		0	97		
02:30		0	110		
02:45		0	142	0	461
03:00		0	131		
03:15		0	132		
03:30		0	139		
03:45		0	138	0	540
04:00		0	132		
04:15		0	135		
04:30		0	132		
04:45		0	147	0	546
05:00		0	188		
05:15		0	184		
05:30		0	157		
05:45		0	123	0	652
06:00		48	0		
06:15		57	0		
06:30		47	0		
06:45		64	0	216	0
07:00		85	0		
07:15		100	0		
07:30		76	0		
07:45		82	0	343	0
08:00		108	0		
08:15		110	0		
08:30		69	0		
08:45		107	0	394	0
09:00		81	0		
09:15		104	0		
09:30		86	0		
09:45		90	0	361	0
10:00		96	0		
10:15		76	0		
10:30		87	0		
10:45		85	0	344	0
11:00		87	0		
11:15		115	0		
11:30		105	0		
11:45		110	0	417	0
Total		2075	3109		
Percent		40.0%	60.0%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

Site Code: 4
Station ID: 4
SR 100 WEST OF
SR 21

Start Time	26-Oct-22 Wed	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	162		
12:15		0	126		
12:30		0	116		
12:45		0	100	0	504
01:00		0	118		
01:15		0	119		
01:30		0	137		
01:45		0	113	0	487
02:00		0	112		
02:15		0	104		
02:30		0	111		
02:45		0	155	0	482
03:00		0	125		
03:15		0	137		
03:30		0	131		
03:45		0	126	0	519
04:00		0	137		
04:15		0	130		
04:30		0	140		
04:45		0	141	0	548
05:00		0	190		
05:15		0	167		
05:30		0	154		
05:45		0	114	0	625
06:00		41	0		
06:15		46	0		
06:30		46	0		
06:45		61	0	194	0
07:00		101	0		
07:15		84	0		
07:30		76	0		
07:45		111	0	372	0
08:00		99	0		
08:15		83	0		
08:30		89	0		
08:45		107	0	378	0
09:00		87	0		
09:15		78	0		
09:30		115	0		
09:45		94	0	374	0
10:00		113	0		
10:15		91	0		
10:30		106	0		
10:45		86	0	396	0
11:00		102	0		
11:15		111	0		
11:30		118	0		
11:45		104	0	435	0
Total		2149	3165		
Percent		40.4%	59.6%		

All Traffic Data Services, Inc.

WWW.ALLTRAFFICDATA.NET

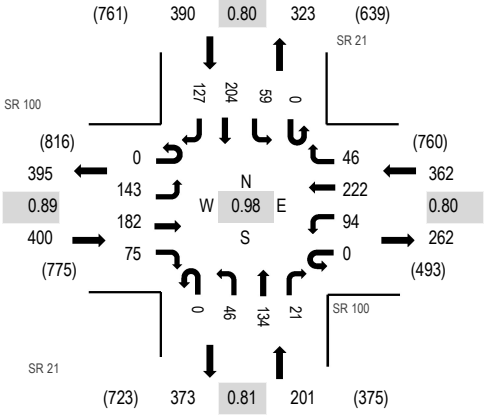
Site Code: 4
Station ID: 4
SR 100 WEST OF
SR 21

Start Time	27-Oct-22 Thu	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		0	126		
12:15		0	121		
12:30		0	97		
12:45		0	127	0	471
01:00		0	98		
01:15		0	120		
01:30		0	98		
01:45		0	165	0	481
02:00		0	122		
02:15		0	115		
02:30		0	119		
02:45		0	144	0	500
03:00		0	128		
03:15		0	143		
03:30		0	122		
03:45		0	131	0	524
04:00		0	137		
04:15		0	169		
04:30		0	139		
04:45		0	137	0	582
05:00		0	195		
05:15		0	180		
05:30		0	166		
05:45		0	140	0	681
06:00		46	0		
06:15		43	0		
06:30		41	0		
06:45		59	0	189	0
07:00		92	0		
07:15		84	0		
07:30		101	0		
07:45		98	0	375	0
08:00		91	0		
08:15		98	0		
08:30		99	0		
08:45		112	0	400	0
09:00		90	0		
09:15		83	0		
09:30		102	0		
09:45		89	0	364	0
10:00		108	0		
10:15		112	0		
10:30		78	0		
10:45		94	0	392	0
11:00		101	0		
11:15		101	0		
11:30		107	0		
11:45		111	0	420	0
Total		2140	3239		
Percent		39.8%	60.2%		
Grand Total		6364	9513		
Percent		40.1%	59.9%		
ADT		ADT 5,292		AADT 5,292	

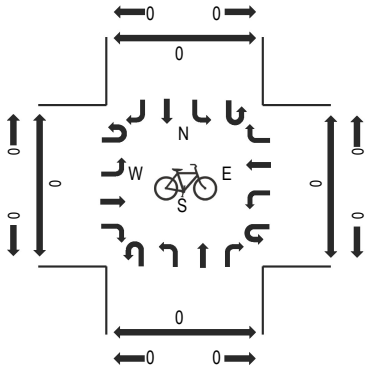
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 SR 21 & SR 100 AM
Date: Thursday, October 27, 2022
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

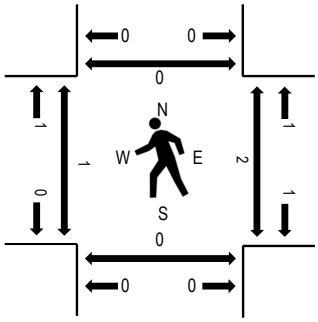
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	38	41	13	0	51	54	20	0	11	33	8	0	5	65	36	375	1,318	0	0	0	0
7:15 AM	0	38	40	6	0	11	58	9	0	9	44	0	0	4	37	30	286	1,289	0	0	0	0
7:30 AM	0	38	44	19	0	14	65	11	0	8	25	2	0	12	52	29	319	1,347	0	0	0	0
7:45 AM	0	25	59	14	0	16	74	15	0	9	20	5	0	11	52	38	338	1,346	0	0	0	0
8:00 AM	0	30	45	16	0	26	41	12	0	14	32	3	0	14	64	49	346	1,353	1	0	0	0
8:15 AM	0	39	38	21	0	22	63	13	0	10	44	8	0	13	46	27	344		0	1	0	0
8:30 AM	0	36	42	21	0	29	56	10	0	11	29	5	0	16	37	26	318		0	1	0	0
8:45 AM	0	38	57	17	0	17	62	11	0	11	29	5	0	16	57	25	345		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	8	3	0	1	11	0	0	1	2	0	0	1	0	2	29
Lights	0	139	170	70	0	91	207	43	0	41	125	21	0	54	198	125	1,284
Mediums	0	4	4	2	0	2	4	3	0	4	7	0	0	4	6	0	40
Total	0	143	182	75	0	94	222	46	0	46	134	21	0	59	204	127	1,353

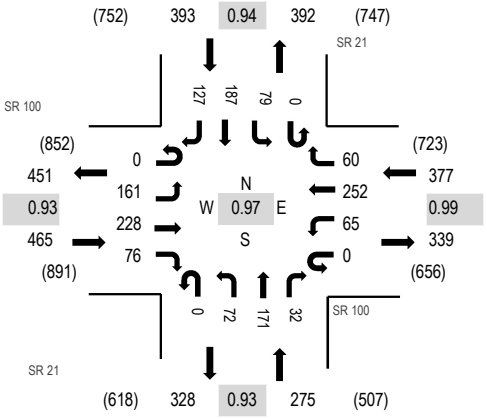
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		5.3%				5.8%				7.0%				3.3%			5.1%
Heavy Vehicle %	0.0%	2.8%	6.6%	6.7%	0.0%	3.2%	6.8%	6.5%	0.0%	10.9%	6.7%	0.0%	0.0%	8.5%	2.9%	1.6%	5.1%
Peak Hour Factor		0.89				0.80				0.81				0.80			0.98
Peak Hour Factor	0.00	0.92	0.80	0.89	0.00	0.81	0.85	0.69	0.00	0.82	0.76	0.66	0.00	0.92	0.84	0.74	0.98

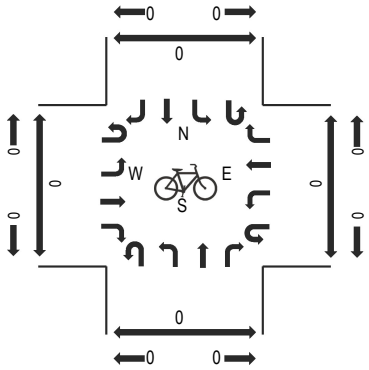
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 SR 21 & SR 100 Noon
Date: Thursday, October 27, 2022
Peak Hour: 11:30 AM - 12:30 PM
Peak 15-Minutes: 12:00 PM - 12:15 PM

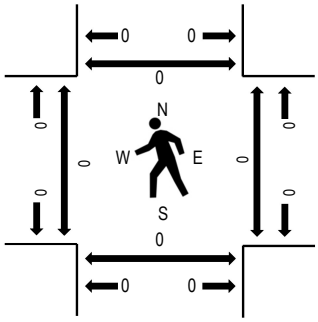
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
11:00 AM	0	32	49	20	0	12	43	27	0	17	25	4	0	17	29	19	294	1,369	0	0	0	1
11:15 AM	0	35	51	15	0	14	56	13	0	11	38	10	0	13	50	28	334	1,464	0	0	0	0
11:30 AM	0	45	51	11	0	18	64	12	0	11	43	7	0	16	63	25	366	1,510	0	0	0	0
11:45 AM	0	31	55	25	0	19	63	11	0	20	39	10	0	21	46	35	375	1,496	0	0	0	0
12:00 PM	0	44	62	20	0	11	63	21	0	25	39	7	0	22	43	32	389	1,504	0	0	0	0
12:15 PM	0	41	60	20	0	17	62	16	0	16	50	8	0	20	35	35	380		0	0	0	0
12:30 PM	0	39	44	14	0	18	61	13	0	19	33	6	0	27	44	34	352		0	0	0	0
12:45 PM	0	41	67	19	0	12	58	19	0	22	40	7	0	22	43	33	383		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	14	1	0	0	22	0	0	1	6	0	0	3	2	2	51
Lights	0	157	209	75	0	65	220	58	0	67	158	31	0	72	176	118	1,406
Mediums	0	4	5	0	0	0	10	2	0	4	7	1	0	4	9	7	53
Total	0	161	228	76	0	65	252	60	0	72	171	32	0	79	187	127	1,510

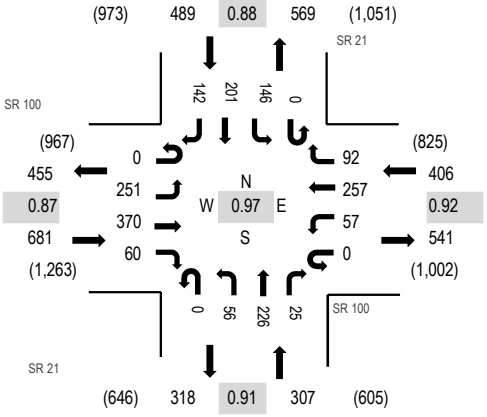
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		5.2%				9.0%				6.9%				6.9%			6.9%
Heavy Vehicle %	0.0%	2.5%	8.3%	1.3%	0.0%	0.0%	12.7%	3.3%	0.0%	6.9%	7.6%	3.1%	0.0%	8.9%	5.9%	7.1%	6.9%
Peak Hour Factor		0.93				0.99				0.93				0.94			0.97
Peak Hour Factor	0.00	0.94	0.87	0.79	0.00	0.86	0.98	0.82	0.00	0.82	0.86	0.85	0.00	0.84	0.80	0.97	0.97

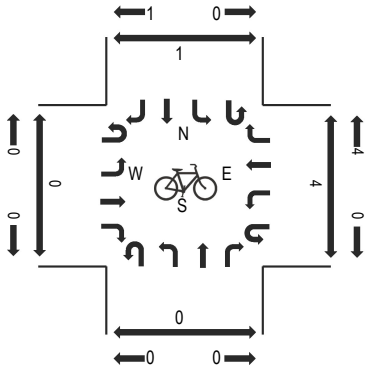
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 SR 21 & SR 100 PM
Date: Thursday, October 27, 2022
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

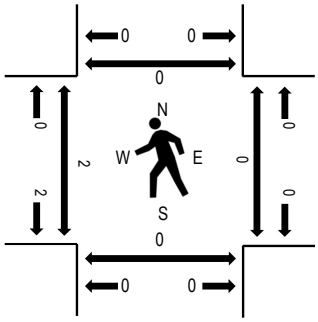
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	40	86	11	0	13	66	12	0	21	45	8	0	24	44	44	414	1,783	1	0	0	0
4:15 PM	0	68	86	15	0	14	67	17	0	15	59	5	0	34	46	50	476	1,853	0	0	0	0
4:30 PM	0	50	71	18	0	21	90	13	0	16	53	4	0	30	57	32	455	1,855	2	0	0	0
4:45 PM	0	49	74	14	0	19	68	19	0	9	57	6	0	33	56	34	438	1,868	0	0	2	0
5:00 PM	0	71	112	12	0	13	73	24	0	16	44	7	0	34	53	25	484	1,883	0	0	0	0
5:15 PM	0	57	109	14	0	22	74	18	0	12	63	5	0	36	38	30	478		2	0	0	0
5:30 PM	0	63	87	16	0	8	54	25	0	8	61	7	0	42	47	50	468		0	0	0	0
5:45 PM	0	60	62	18	0	14	56	25	0	20	58	6	0	34	63	37	453		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	1	0	0	12	0	0	0	2	0	0	1	7	1	25
Lights	0	250	368	59	0	56	236	90	0	55	221	25	0	143	189	138	1,830
Mediums	0	1	1	0	0	1	9	2	0	1	3	0	0	2	5	3	28
Total	0	251	370	60	0	57	257	92	0	56	226	25	0	146	201	142	1,883

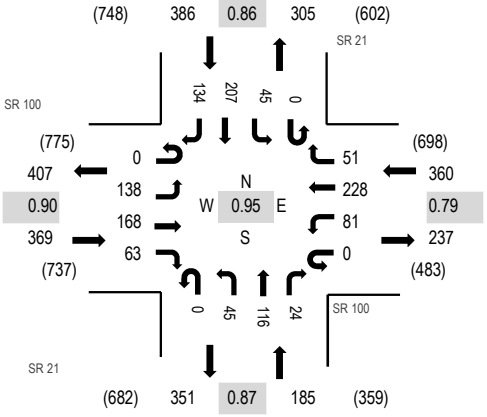
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		0.6%				5.9%				2.0%				3.9%			2.8%
Heavy Vehicle %	0.0%	0.4%	0.5%	1.7%	0.0%	1.8%	8.2%	2.2%	0.0%	1.8%	2.2%	0.0%	0.0%	2.1%	6.0%	2.8%	2.8%
Peak Hour Factor		0.87				0.92				0.91				0.88			0.97
Peak Hour Factor	0.00	0.88	0.85	0.83	0.00	0.85	0.85	0.92	0.00	0.73	0.90	0.89	0.00	0.87	0.93	0.80	0.97

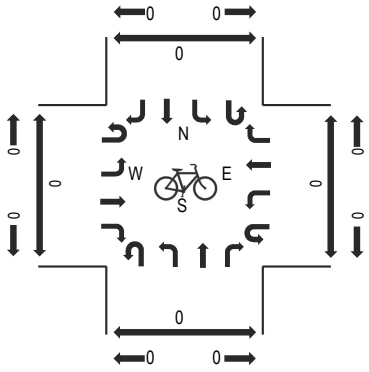
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 SR 21 & SR 100 AM
Date: Tuesday, October 25, 2022
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

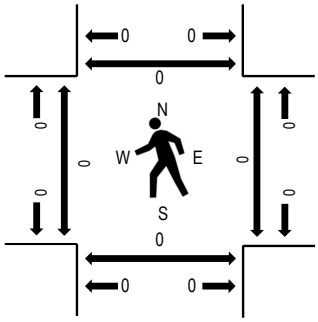
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	38	34	13	0	51	47	16	0	8	30	7	0	3	60	42	349	1,269	0	0	0	0
7:15 AM	0	39	53	8	0	17	41	10	0	11	34	2	0	6	44	27	292	1,261	0	0	0	0
7:30 AM	0	24	48	4	0	7	72	4	0	8	28	5	0	8	57	32	297	1,281	0	0	0	0
7:45 AM	0	25	46	11	0	14	65	16	0	11	26	2	0	13	59	43	331	1,300	0	0	0	0
8:00 AM	0	39	44	25	0	29	50	12	0	13	22	9	0	13	52	33	341	1,273	0	0	0	0
8:15 AM	0	44	53	13	0	16	45	10	0	10	29	9	0	9	53	21	312		0	0	0	0
8:30 AM	0	30	25	14	0	22	68	13	0	11	39	4	0	10	43	37	316		0	0	0	0
8:45 AM	0	33	58	16	0	14	48	11	0	8	30	3	0	19	40	24	304		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	11	0	0	0	8	1	0	2	3	0	0	0	2	0	28
Lights	0	133	151	61	0	79	214	48	0	42	111	24	0	41	201	130	1,235
Mediums	0	4	6	2	0	2	6	2	0	1	2	0	0	4	4	4	37
Total	0	138	168	63	0	81	228	51	0	45	116	24	0	45	207	134	1,300

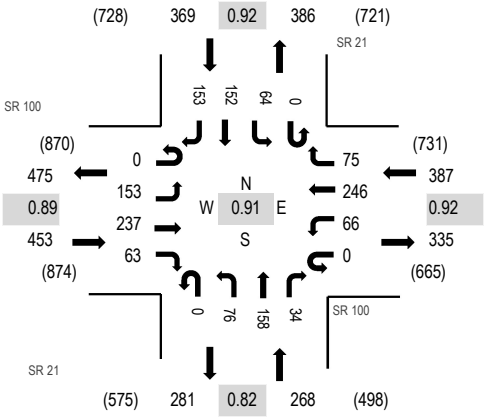
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		6.5%				5.3%				4.3%				3.6%			5.0%
Heavy Vehicle %	0.0%	3.6%	10.1%	3.2%	0.0%	2.5%	6.1%	5.9%	0.0%	6.7%	4.3%	0.0%	0.0%	8.9%	2.9%	3.0%	5.0%
Peak Hour Factor		0.90				0.79				0.87				0.86			0.95
Peak Hour Factor	0.00	0.83	0.90	0.68	0.00	0.44	0.81	0.80	0.00	0.87	0.77	0.69	0.00	0.67	0.94	0.84	0.95

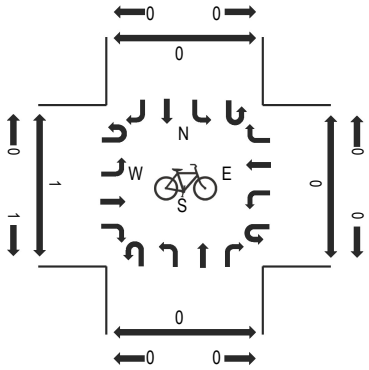
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 SR 21 & SR 100 Noon
Date: Tuesday, October 25, 2022
Peak Hour: 11:30 AM - 12:30 PM
Peak 15-Minutes: 12:00 PM - 12:15 PM

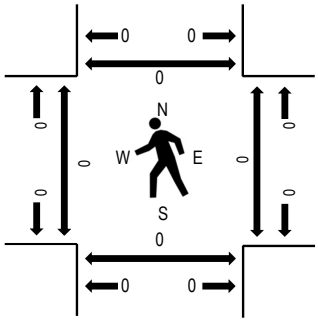
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
11:00 AM	0	27	46	14	0	13	50	15	0	15	33	6	0	17	35	29	300	1,355	0	0	0	0
11:15 AM	0	29	68	18	0	22	50	11	0	11	38	4	0	19	37	22	329	1,460	0	0	0	0
11:30 AM	0	26	66	13	0	17	66	16	0	18	46	8	0	16	39	39	370	1,477	0	0	0	0
11:45 AM	0	35	55	20	0	18	74	15	0	15	39	5	0	10	34	36	356	1,454	0	0	0	0
12:00 PM	0	49	63	17	0	17	58	31	0	24	49	9	0	16	36	36	405	1,476	0	0	0	0
12:15 PM	0	43	53	13	0	14	48	13	0	19	24	12	0	22	43	42	346		0	0	0	0
12:30 PM	0	25	61	14	0	19	62	12	0	18	32	5	0	19	44	36	347		0	0	0	0
12:45 PM	0	48	56	15	0	18	49	23	0	16	42	10	0	19	45	37	378		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	10	1	0	0	8	0	0	0	4	0	0	2	5	0	31
Lights	0	146	222	61	0	63	229	70	0	71	150	32	0	60	141	149	1,394
Mediums	0	6	5	1	0	3	9	5	0	5	4	2	0	2	6	4	52
Total	0	153	237	63	0	66	246	75	0	76	158	34	0	64	152	153	1,477

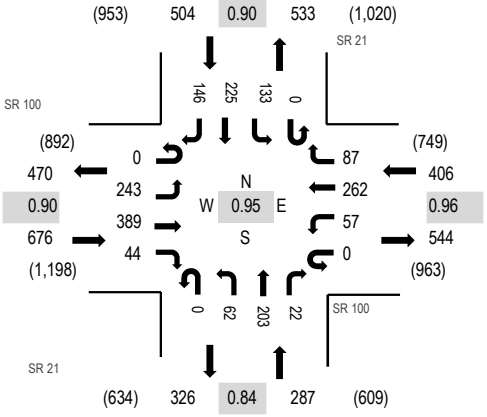
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		5.3%				6.5%				5.6%				5.1%			5.6%
Heavy Vehicle %	0.0%	4.6%	6.3%	3.2%	0.0%	4.5%	6.9%	6.7%	0.0%	6.6%	5.1%	5.9%	0.0%	6.3%	7.2%	2.6%	5.6%
Peak Hour Factor		0.89				0.92				0.82				0.92			0.91
Peak Hour Factor	0.00	0.84	0.93	0.85	0.00	0.84	0.84	0.64	0.00	0.80	0.88	0.75	0.00	0.86	0.93	0.91	0.91

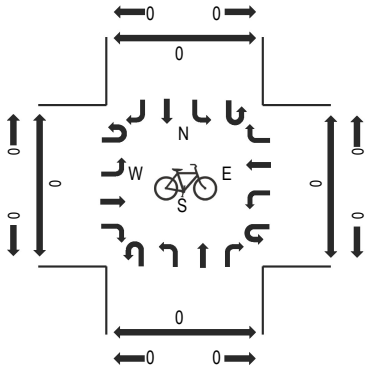
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 SR 21 & SR 100 PM
Date: Tuesday, October 25, 2022
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

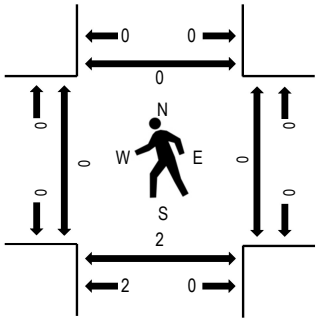
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	41	76	15	0	19	64	15	0	11	44	7	0	19	49	38	398	1,676	0	0	0	0
4:15 PM	0	47	77	11	0	11	72	17	0	10	64	4	0	21	51	37	422	1,772	0	0	0	1
4:30 PM	0	44	76	12	0	11	50	20	0	18	58	13	0	35	52	32	421	1,811	0	0	0	0
4:45 PM	0	40	97	10	0	7	73	18	0	15	48	5	0	34	61	27	435	1,873	0	0	0	0
5:00 PM	0	78	96	14	0	18	62	17	0	17	51	5	0	39	62	35	494	1,833	0	0	2	0
5:15 PM	0	67	107	10	0	13	67	25	0	12	46	8	0	33	44	29	461		0	0	0	0
5:30 PM	0	58	89	10	0	19	60	27	0	18	58	4	0	27	58	55	483		0	0	0	0
5:45 PM	0	52	54	17	0	17	36	11	0	15	74	4	0	33	43	39	395		0	0	0	2

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	1	1	0	1	1	0	0	2	2	1	14
Lights	0	240	380	44	0	57	257	86	0	59	200	22	0	129	223	142	1,839
Mediums	0	3	4	0	0	0	4	0	0	2	2	0	0	2	0	3	20
Total	0	243	389	44	0	57	262	87	0	62	203	22	0	133	225	146	1,873

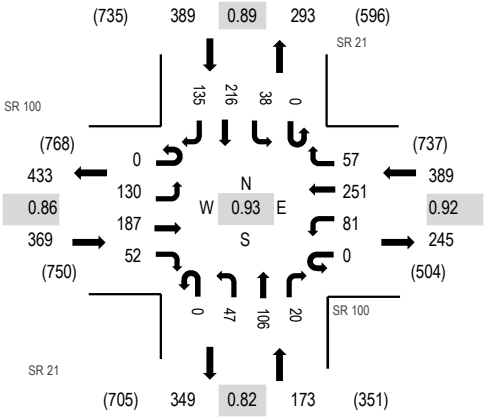
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		1.8%				1.5%				2.1%				2.0%			1.8%
Heavy Vehicle %	0.0%	1.2%	2.3%	0.0%	0.0%	0.0%	1.9%	1.1%	0.0%	4.8%	1.5%	0.0%	0.0%	3.0%	0.9%	2.7%	1.8%
Peak Hour Factor		0.90				0.96				0.84				0.90			0.95
Peak Hour Factor	0.00	0.82	0.91	0.75	0.00	0.88	0.90	0.81	0.00	0.86	0.77	0.60	0.00	0.90	0.91	0.72	0.95

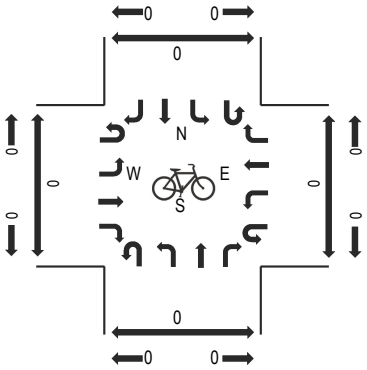
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 SR 21 & SR 100 AM
Date: Wednesday, October 26, 2022
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

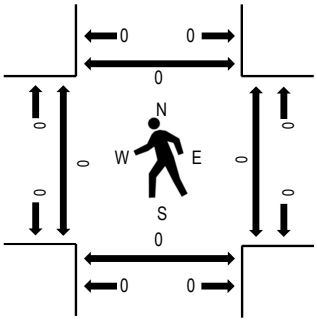
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	47	42	12	0	43	42	12	0	9	36	5	0	7	58	27	340	1,296	0	0	0	0
7:15 AM	0	30	43	11	0	19	46	11	0	7	36	6	0	13	50	31	303	1,312	0	0	0	0
7:30 AM	0	26	39	11	0	16	73	14	0	10	16	3	0	9	46	38	301	1,320	0	0	0	0
7:45 AM	0	34	59	18	0	20	66	11	0	8	21	4	0	12	59	40	352	1,302	0	0	0	0
8:00 AM	0	37	46	16	0	27	57	22	0	12	35	6	0	9	54	35	356	1,277	0	0	0	0
8:15 AM	0	33	43	7	0	18	55	10	0	17	34	7	0	8	57	22	311		0	0	0	0
8:30 AM	0	21	50	18	0	17	49	11	0	12	24	6	0	14	44	17	283		0	0	0	0
8:45 AM	0	37	57	13	0	26	55	17	0	11	21	5	0	11	45	29	327		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	8	1	0	0	7	2	0	2	1	0	0	0	1	0	23
Lights	0	119	166	50	0	78	242	52	0	45	101	19	0	32	211	133	1,248
Mediums	0	10	13	1	0	3	2	3	0	0	4	1	0	6	4	2	49
Total	0	130	187	52	0	81	251	57	0	47	106	20	0	38	216	135	1,320

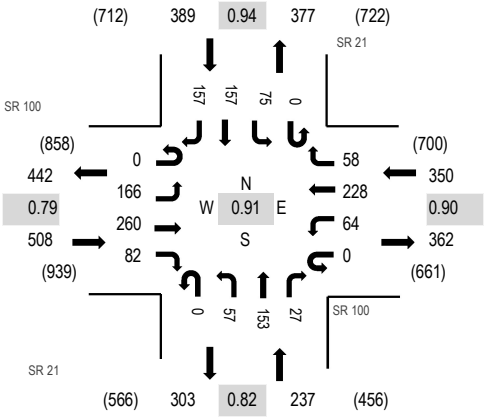
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		9.2%				4.4%				4.6%				3.3%			5.5%
Heavy Vehicle %	0.0%	8.5%	11.2%	3.8%	0.0%	3.7%	3.6%	8.8%	0.0%	4.3%	4.7%	5.0%	0.0%	15.8%	2.3%	1.5%	5.5%
Peak Hour Factor		0.86				0.92				0.82				0.89			0.93
Peak Hour Factor	0.00	0.73	0.84	0.82	0.00	0.57	0.86	0.68	0.00	0.76	0.81	0.86	0.00	0.77	0.92	0.90	0.93

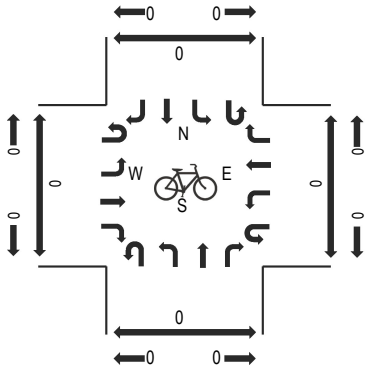
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 SR 21 & SR 100 Noon
Date: Wednesday, October 26, 2022
Peak Hour: 11:45 AM - 12:45 PM
Peak 15-Minutes: 12:00 PM - 12:15 PM

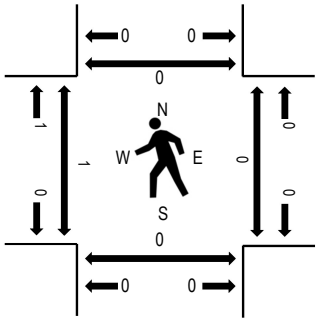
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
11:00 AM	0	29	60	13	0	15	47	11	0	12	42	7	0	16	30	24	306	1,336	0	0	0	1
11:15 AM	0	37	56	18	0	9	67	21	0	21	39	4	0	17	31	30	350	1,436	0	0	0	0
11:30 AM	0	45	61	12	0	17	48	13	0	18	28	5	0	9	43	35	334	1,458	1	0	0	0
11:45 AM	0	27	56	21	0	17	49	17	0	16	36	8	0	20	37	42	346	1,484	0	0	0	0
12:00 PM	0	61	77	24	0	15	61	13	0	14	34	6	0	17	46	38	406	1,471	0	0	0	0
12:15 PM	0	43	64	19	0	16	61	11	0	18	43	11	0	12	39	35	372		0	0	0	0
12:30 PM	0	35	63	18	0	16	57	17	0	9	40	2	0	26	35	42	360		1	0	0	0
12:45 PM	0	37	46	17	0	20	64	18	0	11	25	7	0	11	38	39	333		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	1	11	0	0	0	5	0	0	3	2	0	27
Lights	0	164	250	80	0	62	213	56	0	55	144	25	0	70	152	156	1,427
Mediums	0	2	5	2	0	1	4	2	0	2	4	2	0	2	3	1	30
Total	0	166	260	82	0	64	228	58	0	57	153	27	0	75	157	157	1,484

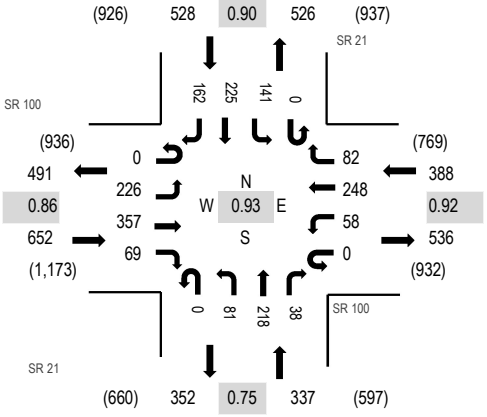
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		2.8%				5.4%				5.5%				2.8%			3.8%
Heavy Vehicle %	0.0%	1.2%	3.8%	2.4%	0.0%	3.1%	6.6%	3.4%	0.0%	3.5%	5.9%	7.4%	0.0%	6.7%	3.2%	0.6%	3.8%
Peak Hour Factor		0.79				0.90				0.82				0.94			0.91
Peak Hour Factor	0.00	0.72	0.84	0.85	0.00	0.84	0.95	0.76	0.00	0.82	0.89	0.68	0.00	0.72	0.90	0.93	0.91

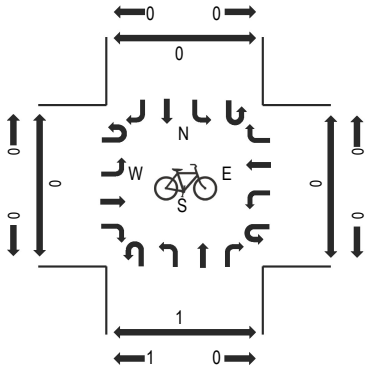
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 SR 21 & SR 100 PM
Date: Wednesday, October 26, 2022
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

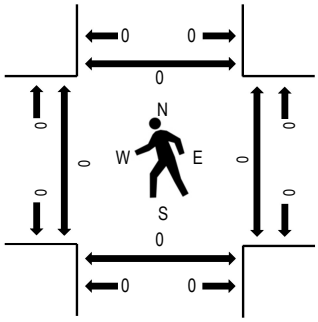
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SR 100 Eastbound				SR 100 Westbound				SR 21 Northbound				SR 21 Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	47	71	19	0	18	68	19	0	20	50	3	0	30	36	35	416	1,604	4	0	0	0
4:15 PM	0	35	75	20	0	12	61	14	0	17	42	10	0	19	45	37	387	1,698	0	0	0	0
4:30 PM	0	44	75	21	0	14	62	19	0	21	31	4	0	19	35	28	373	1,810	1	0	0	0
4:45 PM	0	45	81	15	0	9	71	14	0	17	44	9	0	39	40	44	428	1,905	0	0	0	0
5:00 PM	0	68	107	15	0	19	58	18	0	13	68	11	0	37	61	35	510	1,861	0	0	0	0
5:15 PM	0	59	84	24	0	15	52	27	0	35	67	10	0	34	59	33	499		0	0	0	0
5:30 PM	0	54	85	15	0	15	67	23	0	16	39	8	0	31	65	50	468		0	0	0	0
5:45 PM	0	41	61	12	0	19	50	25	0	12	44	6	0	23	57	34	384		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	8	0	0	0	7	0	0	0	0	0	0	1	1	0	17
Lights	0	225	345	69	0	57	237	78	0	81	213	37	0	135	223	159	1,859
Mediums	0	1	4	0	0	1	4	4	0	0	5	1	0	5	1	3	29
Total	0	226	357	69	0	58	248	82	0	81	218	38	0	141	225	162	1,905

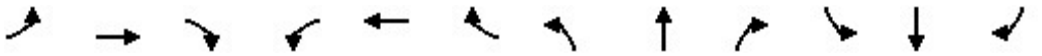
Heavy Vehicle Percentage and Peak Hour Factor

	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Heavy Vehicle %		2.0%				4.1%				1.8%				2.1%			2.4%
Heavy Vehicle %	0.0%	0.4%	3.4%	0.0%	0.0%	1.7%	4.4%	4.9%	0.0%	0.0%	2.3%	2.6%	0.0%	4.3%	0.9%	1.9%	2.4%
Peak Hour Factor		0.86				0.92				0.75				0.90			0.93
Peak Hour Factor	0.00	0.83	0.83	0.78	0.00	0.89	0.92	0.86	0.00	0.61	0.80	0.86	0.00	0.90	0.93	0.81	0.93


BORS
BARRICADES
SR 100
DUNKIN'
DUNKIN'
DUNKIN'
ONLY

Appendix B: Synchro Analysis

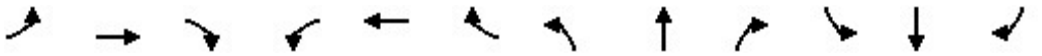
HCM Signalized Intersection Capacity Analysis
2: SR 21 & SR 100



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	182	75	94	222	46	46	134	21	59	204	127
Future Volume (vph)	143	182	75	94	222	46	46	134	21	59	204	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1793		1787	1830		1651	1718		1768	1900	1753
Flt Permitted	0.53	1.00		0.57	1.00		0.34	1.00		0.47	1.00	1.00
Satd. Flow (perm)	1015	1793		1074	1830		588	1718		884	1900	1753
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	146	186	77	96	227	47	47	137	21	60	208	130
RTOR Reduction (vph)	0	7	0	0	4	0	0	4	0	0	0	111
Lane Group Flow (vph)	146	256	0	96	270	0	47	154	0	60	208	19
Confl. Peds. (#/hr)			1			1	1		1	1		1
Heavy Vehicles (%)	0%	4%	4%	1%	5%	0%	2%	1%	0%	2%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	86.4	76.4		83.2	74.8		27.7	20.4		28.3	20.6	20.6
Effective Green, g (s)	86.4	76.4		83.2	74.8		27.7	20.4		28.3	20.6	20.6
Actuated g/C Ratio	0.62	0.55		0.59	0.53		0.20	0.15		0.20	0.15	0.15
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	682	978		681	977		171	250		227	279	257
v/s Ratio Prot	c0.02	0.14		0.01	c0.15		0.01	0.09		c0.01	c0.11	
v/s Ratio Perm	0.12			0.08			0.04			0.04		0.01
v/c Ratio	0.21	0.26		0.14	0.28		0.27	0.61		0.26	0.75	0.07
Uniform Delay, d1	11.4	16.9		12.2	17.8		46.7	56.1		46.2	57.2	51.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.7		0.1	0.7		0.9	4.4		0.6	10.3	0.1
Delay (s)	11.5	17.5		12.3	18.5		47.6	60.6		46.9	67.5	51.6
Level of Service	B	B		B	B		D	E		D	E	D
Approach Delay (s)		15.4			16.9			57.6			59.2	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: SR 21 & SR 100



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	370	60	57	257	92	56	226	25	146	201	142
Future Volume (vph)	251	370	60	57	257	92	56	226	25	146	201	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1910		1805	1819		1682	1731		1787	1845	1764
Flt Permitted	0.39	1.00		0.44	1.00		0.43	1.00		0.34	1.00	1.00
Satd. Flow (perm)	749	1910		828	1819		768	1731		639	1845	1764
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	259	381	62	59	265	95	58	233	26	151	207	146
RTOR Reduction (vph)	0	3	0	0	8	0	0	3	0	0	0	116
Lane Group Flow (vph)	259	440	0	59	352	0	58	256	0	151	207	30
Confl. Peds. (#/hr)			2				2					2
Heavy Vehicles (%)	0%	0%	2%	0%	5%	0%	0%	1%	0%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	83.2	70.9		69.4	63.1		36.2	28.8		38.4	28.4	28.4
Effective Green, g (s)	83.2	70.9		69.4	63.1		36.2	28.8		38.4	28.4	28.4
Actuated g/C Ratio	0.59	0.51		0.50	0.45		0.26	0.21		0.27	0.20	0.20
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	551	967		454	819		246	356		257	374	357
v/s Ratio Prot	c0.05	0.23		0.01	0.19		0.01	c0.15		c0.04	0.11	
v/s Ratio Perm	c0.23			0.06			0.05			0.12		0.02
v/c Ratio	0.47	0.45		0.13	0.43		0.24	0.72		0.59	0.55	0.08
Uniform Delay, d1	15.2	22.2		18.7	26.2		40.2	51.8		40.9	50.1	45.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	1.5		0.1	1.6		0.5	6.8		3.4	1.8	0.1
Delay (s)	15.8	23.7		18.8	27.8		40.6	58.6		44.3	51.9	45.3
Level of Service	B	C		B	C		D	E		D	D	D
Approach Delay (s)		20.8			26.6			55.3			47.7	
Approach LOS		C			C			E			D	

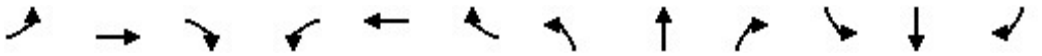
Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	263	108	137	321	66	66	194	30	85	296	184
Future Volume (vph)	206	263	108	137	321	66	66	194	30	85	296	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1793		1787	1830		1651	1717		1769	1900	1753
Flt Permitted	0.38	1.00		0.45	1.00		0.26	1.00		0.36	1.00	1.00
Satd. Flow (perm)	730	1793		847	1830		457	1717		662	1900	1753
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	210	268	110	140	328	67	67	198	31	87	302	188
RTOR Reduction (vph)	0	8	0	0	4	0	0	4	0	0	0	149
Lane Group Flow (vph)	210	370	0	140	391	0	67	225	0	87	302	39
Confl. Peds. (#/hr)			1			1	1		1	1		1
Heavy Vehicles (%)	0%	4%	4%	1%	5%	0%	2%	1%	0%	2%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	79.6	67.1		73.6	64.1		34.7	27.1		38.1	28.8	28.8
Effective Green, g (s)	79.6	67.1		73.6	64.1		34.7	27.1		38.1	28.8	28.8
Actuated g/C Ratio	0.57	0.48		0.53	0.46		0.25	0.19		0.27	0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	511	859		509	837		178	332		253	390	360
v/s Ratio Prot	c0.04	c0.21		0.02	c0.21		0.02	0.13		c0.02	c0.16	
v/s Ratio Perm	0.20			0.13			0.07			0.07		0.02
v/c Ratio	0.41	0.43		0.28	0.47		0.38	0.68		0.34	0.77	0.11
Uniform Delay, d1	16.3	23.9		17.5	26.2		42.1	52.4		39.6	52.5	45.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	1.6		0.3	1.9		1.3	5.4		0.8	9.3	0.1
Delay (s)	16.8	25.5		17.8	28.0		43.4	57.8		40.4	61.8	45.3
Level of Service	B	C		B	C		D	E		D	E	D
Approach Delay (s)		22.4			25.4			54.6			53.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	536	86	83	372	133	81	327	36	211	291	205
Future Volume (vph)	363	536	86	83	372	133	81	327	36	211	291	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1910		1805	1819		1683	1731		1787	1845	1764
Flt Permitted	0.10	1.00		0.19	1.00		0.34	1.00		0.23	1.00	1.00
Satd. Flow (perm)	182	1910		367	1819		609	1731		430	1845	1764
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	374	553	89	86	384	137	84	337	37	218	300	211
RTOR Reduction (vph)	0	4	0	0	9	0	0	3	0	0	0	156
Lane Group Flow (vph)	374	638	0	86	512	0	84	371	0	218	300	55
Confl. Peds. (#/hr)			2				2					2
Heavy Vehicles (%)	0%	0%	2%	0%	5%	0%	0%	1%	0%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	73.4	58.9		51.9	43.4		45.7	36.6		48.5	36.5	36.5
Effective Green, g (s)	73.4	58.9		51.9	43.4		45.7	36.6		48.5	36.5	36.5
Actuated g/C Ratio	0.52	0.42		0.37	0.31		0.33	0.26		0.35	0.26	0.26
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	373	803		223	563		268	452		265	481	459
v/s Ratio Prot	c0.17	0.33		0.02	0.28		0.02	c0.21		c0.07	0.16	
v/s Ratio Perm	c0.35			0.12			0.08			0.21		0.03
v/c Ratio	1.00	0.79		0.39	0.91		0.31	0.82		0.82	0.62	0.12
Uniform Delay, d1	43.6	35.3		31.3	46.4		34.3	48.6		37.1	45.7	39.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	47.3	8.0		1.1	21.1		0.7	11.4		18.3	2.5	0.1
Delay (s)	90.8	43.3		32.4	67.6		35.0	60.0		55.3	48.2	39.6
Level of Service	F	D		C	E		C	E		E	D	D
Approach Delay (s)		60.8			62.6			55.4			47.8	
Approach LOS		E			E			E			D	

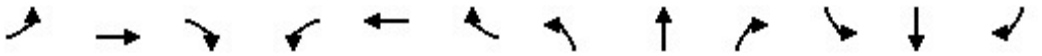
Intersection Summary			
HCM 2000 Control Delay	56.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	182	75	94	222	46	46	134	21	59	204	127
Future Volume (vph)	143	182	75	94	222	46	46	134	21	59	204	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1793		1787	1830		1651	1756	1472	1767	1900	1753
Flt Permitted	0.53	1.00		0.57	1.00		0.34	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	1015	1793		1074	1830		588	1756	1472	1000	1900	1753
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	146	186	77	96	227	47	47	137	21	60	208	130
RTOR Reduction (vph)	0	7	0	0	4	0	0	0	18	0	0	111
Lane Group Flow (vph)	146	256	0	96	270	0	47	137	3	60	208	19
Confl. Peds. (#/hr)			1			1	1		1	1		1
Heavy Vehicles (%)	0%	4%	4%	1%	5%	0%	2%	1%	0%	2%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	86.4	76.4		83.2	74.8		27.7	20.4	20.4	28.3	20.6	20.6
Effective Green, g (s)	86.4	76.4		83.2	74.8		27.7	20.4	20.4	28.3	20.6	20.6
Actuated g/C Ratio	0.62	0.55		0.59	0.53		0.20	0.15	0.15	0.20	0.15	0.15
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	682	978		681	977		171	255	214	244	279	257
v/s Ratio Prot	c0.02	0.14		0.01	c0.15		c0.01	0.08		0.01	c0.11	
v/s Ratio Perm	0.12			0.08			0.04		0.00	0.04		0.01
v/c Ratio	0.21	0.26		0.14	0.28		0.27	0.54	0.01	0.25	0.75	0.07
Uniform Delay, d1	11.4	16.9		12.2	17.8		46.7	55.4	51.2	46.2	57.2	51.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.7		0.1	0.7		0.9	2.2	0.0	0.5	10.3	0.1
Delay (s)	11.5	17.5		12.3	18.5		47.6	57.6	51.2	46.7	67.5	51.6
Level of Service	B	B		B	B		D	E	D	D	E	D
Approach Delay (s)		15.4			16.9			54.6			59.2	
Approach LOS		B			B			D			E	

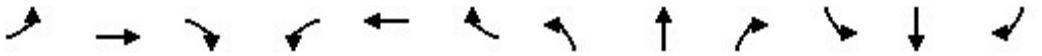
Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: SR 21 & SR 100



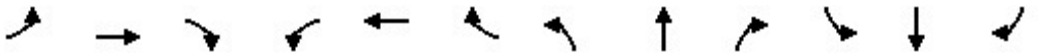
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	370	60	57	257	92	56	226	25	146	201	142
Future Volume (vph)	251	370	60	57	257	92	56	226	25	146	201	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1910		1805	1819		1682	1756	1507	1787	1845	1764
Flt Permitted	0.40	1.00		0.44	1.00		0.42	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	762	1910		838	1819		742	1756	1507	710	1845	1764
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	259	381	62	59	265	95	58	233	26	151	207	146
RTOR Reduction (vph)	0	3	0	0	8	0	0	0	21	0	0	118
Lane Group Flow (vph)	259	440	0	59	352	0	58	233	5	151	207	28
Confl. Peds. (#/hr)			2				2					2
Heavy Vehicles (%)	0%	0%	2%	0%	5%	0%	0%	1%	0%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	84.7	72.5		71.0	64.8		34.7	27.3	27.3	36.9	26.9	26.9
Effective Green, g (s)	84.7	72.5		71.0	64.8		34.7	27.3	27.3	36.9	26.9	26.9
Actuated g/C Ratio	0.61	0.52		0.51	0.46		0.25	0.20	0.20	0.26	0.19	0.19
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	564	989		467	841		233	342	293	264	354	338
v/s Ratio Prot	c0.05	0.23		0.01	0.19		0.01	c0.13		c0.04	0.11	
v/s Ratio Perm	c0.23			0.06			0.05		0.00	0.11		0.02
v/c Ratio	0.46	0.44		0.13	0.42		0.25	0.68	0.02	0.57	0.58	0.08
Uniform Delay, d1	14.4	21.1		17.8	25.1		41.3	52.3	45.5	41.9	51.5	46.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.4		0.1	1.5		0.6	5.5	0.0	3.0	2.5	0.1
Delay (s)	15.0	22.6		18.0	26.6		41.9	57.8	45.5	44.9	53.9	46.5
Level of Service	B	C		B	C		D	E	D	D	D	D
Approach Delay (s)		19.8			25.4			53.9			49.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	263	108	137	321	66	66	194	30	85	296	184
Future Volume (vph)	206	263	108	137	321	66	66	194	30	85	296	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1793		1787	1830		1651	1756	1472	1768	1900	1753
Flt Permitted	0.39	1.00		0.45	1.00		0.26	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	733	1793		849	1830		449	1756	1472	778	1900	1753
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	210	268	110	140	328	67	67	198	31	87	302	188
RTOR Reduction (vph)	0	8	0	0	4	0	0	0	25	0	0	150
Lane Group Flow (vph)	210	370	0	140	391	0	67	198	6	87	302	38
Confl. Peds. (#/hr)			1			1	1		1	1		1
Heavy Vehicles (%)	0%	4%	4%	1%	5%	0%	2%	1%	0%	2%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	79.9	67.4		73.9	64.4		34.4	26.8	26.8	37.8	28.5	28.5
Effective Green, g (s)	79.9	67.4		73.9	64.4		34.4	26.8	26.8	37.8	28.5	28.5
Actuated g/C Ratio	0.57	0.48		0.53	0.46		0.25	0.19	0.19	0.27	0.20	0.20
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	514	863		511	841		175	336	281	275	386	356
v/s Ratio Prot	c0.04	c0.21		0.02	c0.21		0.02	0.11		c0.02	c0.16	
v/s Ratio Perm	0.20			0.13			0.07		0.00	0.06		0.02
v/c Ratio	0.41	0.43		0.27	0.46		0.38	0.59	0.02	0.32	0.78	0.11
Uniform Delay, d1	16.1	23.7		17.4	26.0		42.3	51.6	46.0	39.6	52.8	45.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	1.6		0.3	1.8		1.4	2.6	0.0	0.7	9.9	0.1
Delay (s)	16.6	25.3		17.7	27.8		43.7	54.2	46.0	40.3	62.7	45.5
Level of Service	B	C		B	C		D	D	D	D	E	D
Approach Delay (s)		22.2			25.1			51.0			53.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	363	536	86	83	372	133	81	327	36	211	291	205
Future Volume (vph)	363	536	86	83	372	133	81	327	36	211	291	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	13	12	13	13	10	10	10	12	12	16
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	1910		1805	1819		1683	1756	1507	1787	1845	1764
Flt Permitted	0.11	1.00		0.20	1.00		0.32	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	203	1910		387	1819		575	1756	1507	555	1845	1764
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	374	553	89	86	384	137	84	337	37	218	300	211
RTOR Reduction (vph)	0	4	0	0	9	0	0	0	27	0	0	157
Lane Group Flow (vph)	374	638	0	86	512	0	84	337	10	218	300	54
Confl. Peds. (#/hr)			2				2					2
Heavy Vehicles (%)	0%	0%	2%	0%	5%	0%	0%	1%	0%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	11	2		9	6		10	8		12	4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	74.4	59.9		52.9	44.4		45.7	36.6	36.6	46.5	35.5	35.5
Effective Green, g (s)	74.4	59.9		52.9	44.4		45.7	36.6	36.6	46.5	35.5	35.5
Actuated g/C Ratio	0.53	0.43		0.38	0.32		0.33	0.26	0.26	0.33	0.25	0.25
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	382	817		232	576		259	459	393	281	467	447
v/s Ratio Prot	c0.17	0.33		0.02	0.28		0.02	0.19		c0.06	0.16	
v/s Ratio Perm	c0.35			0.12			0.08		0.01	c0.20		0.03
v/c Ratio	0.98	0.78		0.37	0.89		0.32	0.73	0.02	0.78	0.64	0.12
Uniform Delay, d1	41.4	34.4		30.5	45.5		34.4	47.3	38.4	39.1	46.6	40.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.0	7.3		1.0	18.3		0.7	6.0	0.0	12.6	3.0	0.1
Delay (s)	81.4	41.7		31.6	63.8		35.2	53.3	38.5	51.6	49.6	40.3
Level of Service	F	D		C	E		D	D	D	D	D	D
Approach Delay (s)		56.3			59.2			48.7			47.5	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			


LEFT TURN
YIELD
ON GREEN
R. 100
ROAD
WORK
AHEAD
NORTH
21

Appendix C: Autoturn Evaluation

WALKER DR

SR 21

GREEN WY

SR 21

N

Sidewalk Encroachment as the WB-62FL Truck make RT turn movements

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

WB-62FL Vehicle (Existing Conditions)

WALKER DR

SR 21

GREEN WY

SR 21

N

Sidewalk Encroachment as the WB-62FL Truck make LT turn movements

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

WB-62FL Vehicle (Existing Conditions)

WALKER DR

SR 21

GREEN WY

SR 21

N

Sidewalk Encroachment as the WB-62FL Truck make RT/LT turn movements

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

WB-62FL Vehicle (Existing Conditions)

WALKER DR

SR 21

Sidewalk Encroachment and Width from curb to median too small for Truck movement

Curbed Traffic Island/Pedestrian Refuge

N

0 10 50

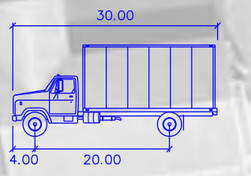
Feet

Median Encroachment and Width from curb to median too small for Truck movement

NB Turn Lane

GREEN WY

SR 21



SU-30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

SU-30 Vehicle

WALKER DR

SR 21

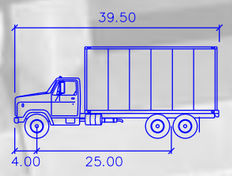
Sidewalk Encroachment and Width from curb to median too small for Truck movement

Curbed Traffic Island/Pedestrian Refuge

N

0 10 50

Feet



SU-40

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

Sidewalk Encroachment and Width from curb to median too small for Truck movement

NB Turn Lane

GREEN WY

SR 21

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

SU-40 Vehicle

WALKER DR

SR 21

Sidewalk Encroachment and Width from curb to median too small for Truck movement

Curbed Traffic Island/Pedestrian Refuge

N

0 10 50

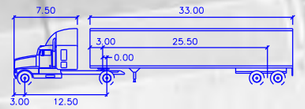
Feet

Sidewalk Encroachment and Width from curb to median too small for Truck movement

NB Turn Lane

GREEN WY

SR 21



WB-40

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.00	Steering Angle	: 20.3
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.00		

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

WB-40 Vehicle

WALKER DR

SR 21

Sidewalk Encroachment and Width from curb to median too small for Truck movement

Curbed Traffic Island/Pedestrian Refuge

Sidewalk and Median Encroachment. Width from curb to median too small for Truck movement, as well as SB Truck movement encroaches into the left turn lane.

NB Turn Lane

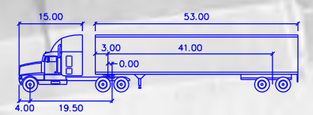
GREEN WY

SR 21

N

0 10 50

Feet



WB-62FL

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

FDOT DISTRICT 2

SR 21 and SR 100 (Walker Dr/Green Way)

Keystone Heights, FL (Clay County)

AutoTurn Analysis

WB-62FL Vehicle

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