Traffic Impact Study (TIS)
for Central Avenue and 98th Street Coffee Shop with Drive Thru and Retail

Draft Report

May 2022

Prepared for:

Wooten Engineering

Prepared By:

LEE ENGINEERING

EXECUTIVE SUMMARY

The following contains a Traffic Impact Study for a Coffee Shop with Drive Thru and Retail in Albuquerque, NM. Lee Engineering has completed this report for Wooten Engineering. All analyses and items contained herein conform to scoping requirements outlined in a scoping meeting held on December 21st, 2022.

BACKGROUND

The proposed development would repurpose an existing lot for a Coffee Shop with a Drive Through Window and Retail on the southeast corner of Central Ave and 98th St between 98th St and Westland Rd. Study intersections include 98th St and Driveway 1, Central Ave and 98th St, Central Ave and Driveway 2, and Central Ave and Westland Rd.

The site is anticipated to generate 149 ingress and 149 egress trips during the AM peak hour. It is expected to generate 97 ingress and 91 egress trips during the PM peak hour. The number of vehicle trips generated by the proposed development was based on the trip generation rates and equations provided in the Trip Generation Manual, 10th Edition, by the Institute of Transportation Engineers Coffee/Donut Shop with Drive-Through Window (937) and Strip Retail Plaza (<40K) (822) designations.

Proposed site access will be provided on 98th St via one right-in, right-out driveway and on Central Ave via one right-in right-out driveway, termed "Driveway 1" and "Driveway 2," for this report. Driveway 1 is an existing right-in/right-out access driveway into the development site. Driveway 2 will be a new right-in, right-out access point on Central Ave positioned east of 98th St.

Study intersections include:

1. 98th St and Site Driveway 1
2. 98th St and Central Ave
3. Central Ave and Site Driveway 2
4. Central Ave and Westland Rd

Construction is anticipated to begin in 2023, with full completion of the development in 2023. The development is to be constructed in a single phase.

Analysis scenarios for this study include:

- Existing (2023) – Field counted Existing traffic volumes
- Build-Out Year (2023) Background – Existing traffic volumes with an applied annual growth rate.
- Build-Out Year (2023) Total – Build-Out Year Background volumes plus development site-generated trips.
- Horizon Year (2033) Background – Existing traffic volumes with an applied annual growth rate.
- Horizon Year (2033) Total – Horizon Year Background volumes plus the development generated trips.

Existing turning movement counts were collected on March 27th, 2023, for the study intersections specified during the scoping meeting. Lee Engineering identified the additional intersection of Central Ave and Westland Rd for inclusion within the study, and counts at this intersection were collected on March 27th, 2023. These volumes were analyzed in the Existing portion of the Capacity Analysis section.

SUMMARY OF RECOMMENDATIONS

The following presents a summary of recommendations included in this report.

CONCLUSIONS

- Traffic generated by the site is expected to be accommodated under current geometries for opening day conditions.
- All study intersections operate at an acceptable overall LOS throughout all study scenarios except for the following intersections:
  - The intersection of Central Ave and 98th St, which show LOS F during the AM and PM peak hours under the Horizon Year Total scenario
  - The intersection of Central Ave and Westland Rd shows a LOS F during the PM peak hour under the Horizon Year Total scenario.
- 95th percentile queue lengths only exceed existing queue storage at the intersection of Central Ave and 98th St under all unoptimized scenarios.

DEVELOPMENT SPECIFIC RECOMMENDATIONS

- It is recommended that all development driveways adhere to the sight distance provisions detailed in the City of Albuquerque Development Process Manual and as outlined in this report.
- Driveway 1, on 98th St does not meet DPM requirements for spacing from the Central Ave & 98th St intersection. Additionally, queues from northbound 98th St were analyzed to frequently block exiting traffic from the site.
  - However, this driveway serves as the site's only access point to 98th st, and exiting queues will be contained within the site.
  - Auxiliary lane warrants were not analyzed because of the driveway's proximity to the northbound right turn auxiliary lane at Central Ave & 98th St
  - While the existing driveway spacing places this driveway in close proximity to the intersection of Central Ave & 98th St, exiting queues are anticipated to be held within the development site, with exiting traffic reaching up to 7 vehicles in length. It is concluded that waiting exiting vehicles are likely to divert successive exiting traffic to use Driveway 2 on Central Ave, thereby balancing delays and interactions with Central Ave & 98th St.
- Driveway 2 meets DPM requirements for spacing and DPM warrants for an auxiliary right-turn lane.
- Upon opening the development, it is recommended that the signal at Central Ave & 98th St be re-timed to accommodate shifting traffic patterns and additional trips added by the development. Signal timings should be performed by a registered Professional Traffic Operations Engineer (PTOE).

ANCILLARY RECOMMENDATIONS

- The intersection of Central Ave and Westland Rd warrants a Left/U-Turn Auxiliary lane under buildout conditions.
- Horizon-year HCS results suggest the need for future evaluation of capacity and queuing mitigation measures or street improvements unrelated to the proposed development at the intersection of Central Ave and 98th St. This intersection displays acceptable levels of

service during the Existing and Build-Out Years but shows a LOS E for the Eastbound left turn under Existing and Build-Out Years and LOS F for the following movements under Horizon Year Total conditions:

  - Eastbound left-turn during the AM peak hour
  - Northbound thru during the AM and PM peak hour
  - Southbound left turn during the PM peak hour
  - Southbound thru during the PM peak hour

- The Build-out Year total conditions were optimized to achieve a LOS D or better. Potential mitigations include signal re-timing, performed by a registered Professional Traffic Operations Engineer (PTOE), additional storage, and additional lanes.

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

LIST OF APPENDICES

INTRODUCTION

This report details the procedures and findings of a Traffic Impact Study (TIS) performed by Lee Engineering for Wooten Engineering. This report and the analyses herein were performed for a Coffee Shop with Drive Thru and Retail to be constructed on the corner of Central Ave and 98th St in Albuquerque, NM. This study examines the impacts of the proposed development on surrounding traffic conditions and discusses the potential impacts of trips generated by the development on the study intersections.

The scope of this report and the analyses performed were completed in agreement with the scoping requirements set forth by the City of Albuquerque (CABQ). Scoping meeting notes from the scoping meeting held on December 21st, 2022, are included in Appendix A. Analysis procedures, conclusions, and recommendations for this study were developed according to the *Highway Capacity Manual 6th Edition* and the *Manual on Uniform Traffic Control Devices 2009 Edition*.

Single-phase construction is anticipated to begin in 2023, with full completion of the development in 2023. The proposed development site plan displayed in Figure 1 shows that the proposed development is a Coffee Shop with Drive Thru and Retail. Traffic generated by the site is anticipated to be 149 ingress and 149 egress trips during the AM peak hour and 97 ingress and 91 egress trips during the PM peak hour. Lee Engineering conducted an HCS Capacity Analysis for the following AM and PM peak hour scenarios:

Traffic Analysis

- Existing (2023) – Field counted Existing traffic volumes
- Build-Out Year (2023) Background – Existing traffic volumes with an applied annual growth rate.
- Build-Out Year (2023) Total – Build-Out Year Background volumes plus development site-generated trips.
- Horizon Year (2033) Background – Existing traffic volumes with an applied annual growth rate.
- Horizon Year (2033) Total – Horizon Year Background volumes plus the development site-generated trips.

The HCS Capacity Analysis Reports are presented in full in the Appendix.

PROJECT LOCATION & SITE PLAN

The Coffee Shop with Drive Thru and Retail will be located on Central Ave, east of 98th St, in the southwest quadrant of Albuquerque. **Figure 1** shows the proposed site plan, and **Figure 2** shows the site location, study intersections, and the surrounding area. Nearby intersections include 98th St & Central Ave, 98th St & Site Driveway 1, Central Ave & Site Driveway 2, and Central Ave & Westland Rd.

The proposed development would repurpose an existing lot for a Coffee Shop with a Drive Through Window and Retail on the southeast corner of Central Ave and 98th St between 98th St and Westland Rd. The development would include 37 parking spaces. Study intersections include 98th St and Driveway 1, Central Ave and 98th St, Central Ave and Driveway 2, and Central Ave and Westland Rd. Proposed access points include an existing driveway that would be used for entrance-only access and a newly constructed, right-in, right-out driveway east of 98th St.

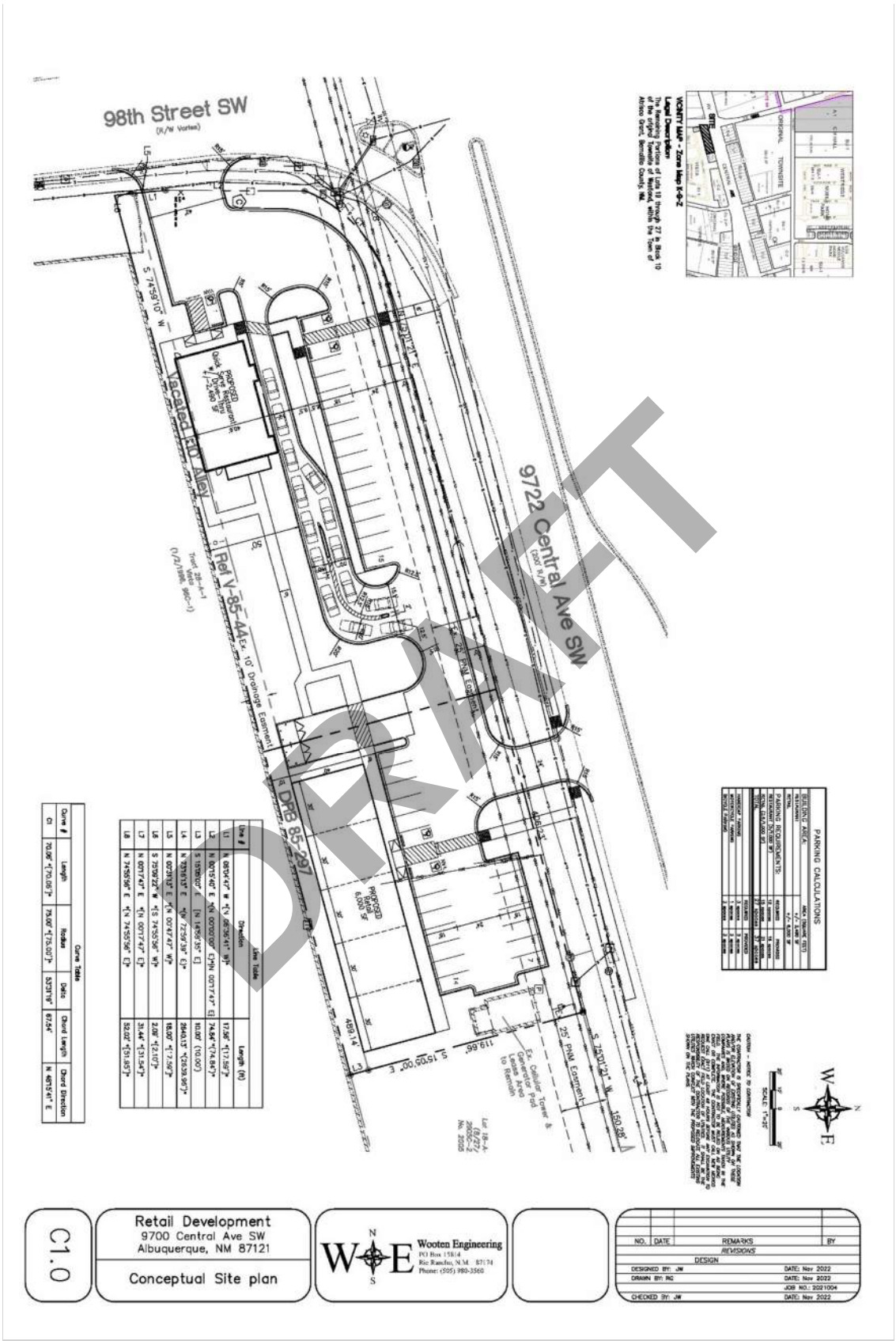


Figure 1: Site Plan

Figure 2: Vicinity Map

STUDY AREA, AREA LAND USE, AND STREETS NARRATIVE SUMMARY

STUDY AREA

The study area is Central Ave from 98th St to Westland Rd. The following five intersections fall within the scope of the study area defined during the scoping meeting held on December 21st, 2022. Intersection 4: The scoping meeting did not explicitly identify Central Ave and Westland Rd. However, Lee Engineering determined that site-generated traffic traveling eastbound on Central Ave would need to make a U-turn at this intersection. Therefore, this intersection was included as a study intersection to comprehensively assess capacity and queuing conditions along the study corridor.

1. 98th St and Site Driveway 1
2. 98th St and Central Ave
3. 98th St and Site Driveway 2
4. Central Ave and Westland Rd

AREA LAND USE

The development will be located on the south side of Central Ave, approximately 100 feet east of 98th St. Land uses adjacent to and surrounding consist of the following:

- Commercial: Existing commercial developments immediately surrounding the development site, including restaurants, banks, call centers, and employment agencies.
- Residential: No residential zones are immediately adjacent to the development site. Single-family residential developments are located approximately 0.65 miles east of the site and one-mile northwest of the development site. Townhouses and multifamily residential developments are also located within a mile radius of the development site to the east and west. Manufactured home communities are located about 0.75 miles northeast of the development.
- Undeveloped: There are no undeveloped lots near the development site.

STREETS

The following details the characteristics and features of streets included in the study area:

Central Ave is a 4-lane City of Albuquerque (COA) maintained roadway classified as an urban principal arterial, running east/west in Albuquerque, NM. The posted speed limit is 45 MPH. Travel lanes are 12 feet wide, and the roadway is divided by a 35-foot-wide raised median. The median narrows to accommodate eastbound and westbound left turn lanes at 98th St as well as a westbound left turn at Westland Rd. There is a continuous sidewalk in the westbound direction. In the eastbound, sidewalks exist at 98th St and begin again after Westland Rd. A 6-foot bike lane is present on the north side of the roadway.

98th St is a 4-lane COA-maintained roadway classified as an urban principal arterial, running north/south in Albuquerque, NM. The posted speed limit is 45 MPH. Travel lanes are 12 feet wide, and the roadway is divided by a 35-foot raised median south of Central Ave and a 20-foot-wide median north of Central Ave. The median narrows to accommodate left turn lanes throughout the study area. There is a 6-foot bike lane in the north and southbound directions. Continuous curb, gutter, and sidewalk are present on both sides of the roadway. A multi-use trail is present in the southbound direction, south of Central Ave.

Westland Dr is a 60-foot-wide, unmarked roadway that provides access to commercial developments and residential areas between 98th St and 94th St. The northbound approach is divided by an 11-foot-wide median. Stop and speed limit signs are not present in either direction. Continuous curb, gutter, and sidewalk are present on the south side of the roadway following the northbound approach. There are no bicycle facilities present.

INTERSECTIONS

The following details the traffic control and characteristics of existing intersections in the study area:

98th St and Site Driveway 1 is a three-way stop-controlled northbound approach consisting of a commercial driveway that is right-in, right out only connecting with a principal arterial, 98th St. There are two through lanes, an exclusive 12-foot-wide left turn lane, a seven-foot wide bike lane, and striped chevron offsets located on the right-hand side of the left turn lane for each approach. There is an approximately 45-foot-wide raised median separating the northbound and southbound traffic. The raised median does not provide left-turn access. There is a continuous sidewalk along the roadway's eastern side, and it continues through the commercial driveway.

98th St and Central Ave is a four-legged signalized intersection of two principal urban arterials. On the northbound and southbound approaches, there are two 10-foot-wide through lanes, a 12-foot-wide exclusive left-turn lane, a chevron-striped offset located on the right-hand side of the left turn lane on each approach, a channelized right-turn lane, and a six-foot-wide bike lane. There is a 20-foot-wide raised median separating northbound and southbound traffic. The median narrows as vehicles approach the signal to allow additional space for the exclusive left-hand turn lane. There is a crosswalk with pedestrian refugee islands and adequate pavement markings on both southbound and northbound approaches. For the eastbound and westbound approaches, there are two 12-foot through lanes, a chevron-striped offset located on the right-hand side of the left turn lane for each approach.

Central Ave and Site Driveway 2 is a three-legged intersection with a right-in, right-out only driveway that does not allow northbound left turn access due to a 40-foot-wide raised median separating eastbound and westbound traffic along Central Ave. The driveway will be aligned with a commercial driveway on the northbound approach. There is also a continuous sidewalk on the north side of the intersection. On the southern section of the intersection, there is a 30-foot wide undeveloped shoulder.

Central Ave and Westland Rd is a four-legged stop-controlled intersection of a principal arterial and a local road. The northbound approach consists of a 20-foot wide shared through right turn lane and a 10-foot wide exclusive left turn lane. There is a 20-foot-wide raised median separating northbound and southbound traffic flow. The median narrows to allow space for the left turn lane. The southbound approach consists of a 55-foot wide driveway. The westbound approach consists of two 12-foot through lanes, with the right-hand lane serving as a shared right-turn lane. There is also a 4-foot shoulder along the southern side of the intersection. The eastbound approach consists of two 12-foot wide through lanes with a 12-foot wide exclusive left turn lane. There is a four-foot shoulder on the northern side of the intersection. A 38-foot wise raised median separates the east and westbound traffic. Curb, gutter, and sidewalks are present on all approaches. No pedestrian crossing facilities are present.

DATA COLLECTION

The following section details the data collection method used in subsequent analyses of this report. The data discussed below was collected via field observations and machine/video recordings.

STUDY AREA DATA COLLECTION

ON-STREET PARKING

On-street parking facilities were assessed via satellite imagery and confirmed by a field visit. No dedicated on-street space is provided in the study area.

PEDESTRIANS AND BICYCLES

Pedestrian and bicycle volumes were collected at all study intersections with turning movement counts (see Turning Movement Counts section below). Pedestrian and bicycle hourly volumes were used in the HCS capacity analyses and are provided in Appendix B. An existing 6-foot-wide bike lane runs adjacent to the proposed development in the northbound and southbound directions on 98th St. Eastbound Central Ave adjacent to the development allows bicycles to ride on the road. An existing 5-foot-wide bike lane is present going westbound adjacent to the development and ends at 98th St.

TRANSIT

Based on the ABQ RIDE System Map (February 2022), regular route 54 and regular route 198 serve the study area on 98th Street and Central Ave. One bus stop on Central Ave is approximately 800 feet east of the proposed entrance.

SIGNAL TIMINGS

The City of Albuquerque Traffic Department provided signal timing for the signalized intersection of Central Ave and 98th St. Signal timing sheets used in the capacity analyses are supplied in Appendix C.

ADJACENT DEVELOPMENTS

There are two adjacent developments whose study reports were provided by the City of Albuquerque. The Westpointe development is located north of the study area and includes trips distributed through the Central Ave and 98th St intersection. The 98th & Bluewater development is also located north of the study area. From these developments, trips distributed through the Central Ave and 98th St intersection can be found below in Figure 3. The trips added from the developments only impact this study's Horizon Year 2033 scenario.

Figure 3: Adjacent Development Trips

Turning Movement Counts

Turning movement counts for the initially scoped study intersections were collected from 6:00 to 9:00 AM, 11:00 to 2:00 PM, and 2:00 to 6:00 PM on March 27th, 2023. Turning movement counts for Central Ave and Westland Rd intersection were collected on March 27th, 2023. Turning movement volumes collected at the study intersections show a typical commuter directionally biased distribution with observable AM and PM peak hour periods. Network peak hours were determined by summating the Turning Movement Counts from all study intersections to determine the network AM and PM peak hours. Peak hour counts are shown in **Figure 4,** and complete turning movement counts can be found in Appendix B.

Figure 4: Existing AM (PM) Peak Hour Turning Movement Counts

CAPACITY ANALYSIS: LEVEL OF SERVICE AND QUEUING

ANALYSIS SCENARIOS AND VOLUME CALCULATIONS

EXISTING YEAR (2023)

Video-collected turning movement counts (TMCs) were used for the Existing Year traffic volumes. AM and PM peak hours were analyzed for service level, capacity, and queueing.

BUILD-OUT YEAR (2023) BACKGROUND

Existing TMCs were used with an applied annual growth rate of 4% compounded annually for the Build-Out Year Background volumes in Figure 7. The growth rate was developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model and can be found in the Traffic Projections section of this report.

BUILD-OUT YEAR (2023) TOTAL

Site trips generated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, were added to the Build-Out Year Background volumes for analysis.

HORIZON YEAR (2033) BACKGROUND

Adjacent development trips were added to build-out background traffic approximations. An annual growth rate of 4% compounded annually was applied to this sum for the Horizon Year Background volumes. This growth rate was developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model.

HORIZON YEAR (2033) TOTAL

Site trips generated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, were added to the Horizon Year Background volumes for analysis.

LEVEL OF SERVICE AND 95TH PERCENTILE QUEUES

Highway Capacity Software (HCS) was used to analyze the study intersections for Level of Service (LOS) and 95th percentile queueing conditions. HCS implements methods and procedures detailed by the Highway Capacity Manual (HCM). Per the HCM, LOS is presented as a letter grade (A through F) based on the calculated average delay for an intersection or movement. Delay is calculated as a function of several variables, including signal phasing operations, cycle length, traffic volumes, and opposing traffic volumes, and is a measurement of the average wait time a driver can expect when moving through an intersection. Factors such as total cycle time (for all movements), queueing restrictions, and vehicle volumes can affect measurements of delay, especially for lower-volume movements and side streets. Generally, these factors are only realized when delays reach or exceed LOS E thresholds.

As stipulated in the City of Albuquerque Development Process Manual and the ABC Comprehensive Plan for this analysis, acceptable levels of service (LOS) are defined as a LOS D or better. However, in the case of intersections within corridors identified as Major Transit Corridors per the COA DPM Table 7.5.89 Desired LOS by Location and Corridor type, acceptable LOS may also include a LOS of E. Intersection delay and level of service for stop-controlled intersections are reported as the delay and level of service for the worst-case movement at each intersection. Detailed HCS output sheets can be found in Appendix D. **Table 1** and **Table 2** below, reproduced from the Highway Capacity Manual, show delay thresholds and the associated Level of Service assigned to delay ranges.

Table 1: LOS Criteria and Descriptions for Signalized Intersections

Level of Service	Average Control Delay (sec/vehicle)	General Description (Signalized Intersections)
A	≤10	Free flow
B	>10 – 20	Stable flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Table 2:LOS Criteria and Descriptions for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Queue length is reported in feet for the 95th percentile queue, with a base assumption of 25 feet of queue length per vehicle. Notably, 95th percentile queues are statistically expected to occur during only 5% of the peak hour's signal cycles. The 95th percentile queue is helpful because it shows the maximum queue length likely to be present. The average queue at an intersection would statistically be much shorter than the 95th percentile queue.

EXISTING YEAR (2023) ANALYSES

Table 3 summarizes the intersection capacity and LOS analysis performed for existing conditions at the study intersections. Values in Table 3, shown in red, represent a result below the acceptable threshold. Per HCM6 procedures, intersection peak hour factors for the system peak hour are derived from the collected traffic counts and are used in the Existing conditions analysis and all other scenarios. The current signal timings for Central Ave and 98th St were provided by the City of Albuquerque and were used in each analysis scenario unless otherwise stated.

Table 3: HCS Result Summary for Existing (2022) Conditions

Existing Year 2023														
Study Intersection	Queue, Delay, V/C, and LOS										Intersection LOS			
			AM				PM				AM		PM	
	Movement	Auxiliary Lane Length (ft)	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Central Ave & 98th St	EBL	200	224.4	66.4	0.85	E	121.1	51.6	0.61	D	29.3	C	30.5	C
	EBT	---	135.3	38.8	0.25	D	103.3	30.2	0.00	C				
	WBL	180	85.1	63.0	0.69	E	170.2	53.1	0.95	D				
	WBT	---	93.3	43.4	0.21	D	124.0	29.0	0.00	C				
	NBL	250	22.1	16.2	0.07	B	31.4	27.1	0.13	C				
	NBT	---	636.6	31.6	0.80	C	337.2	31.1	0.00	C				
	SBL	100	42.7	24.4	0.38	B	74.9	22.3	0.75	C				
	SBT	---	159.9	18.2	0.23	C	541.7	38.3	0.00	D				
Central Ave & Westland Rd*	EBL	---	0.0	8.2	0.00	A	0.0	8.9	0.00	A	14.8	B	19.7	C
	WBL	115	2.5	8.8	0.02	A	0.1	8.7	0.04	A				
	NBL	100	10.0	16.4	0.13	C	0.2	16.1	0.06	C				
	NBR	---	10.0	11.0	0.12	B	0.2	10.2	0.05	B				
	SBT	---	5.0	14.8	0.05	B	0.7	19.7	0.20	C				

**Intersection LOS and delay for stop-controlled intersection, results are reported as the worst case movement*

From the above table, the following conclusions are made from the Existing Year analysis:

- For the intersection of Central Ave and 98th St
  - Capacity Analysis: The intersection operates at an overall LOS C during both the AM and PM peak hours
    - Individual approaches operate at LOS D or better, except for the east- and westbound left-turn movements, which operate at LOS E during the AM peak hour.
    - Although the westbound left-turn movement operates at LOS E during the AM peak hour, it remains under capacity.
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths except for the westbound left turn during the AM peak hour.
- For the intersection of Central Ave and Westland Rd
  - Capacity Analysis: The intersection operates at a LOS of C or better during both the AM and PM peak hours
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.

FUTURE YEAR BACKGROUND AND TOTAL METHODOLOGY

The following sections detail the methods and calculations used to obtain traffic volumes for Build-Out and Horizon Year analysis scenarios. This process used the following tools described below: Future Traffic Projections, Site Trip Generation, and Site Trip Distribution & Assignment. The Figure at the end of this section shows the resulting site-generated traffic volume routing volumes and percentages determined for Build-Out and Horizon Year Total analysis scenarios.

TRAFFIC PROJECTIONS

Development construction is anticipated to begin in the current year (2023), with full completion expected in 2023. Build-Out Year (2023) volumes were forecast from existing traffic volumes using counted values from 2016 and 2040 (updated) travel demand models provided by MRCOG. These models were then compared using AM and PM peak hour direction volumes (AMPH LOAD and PMPH LOAD) to calculate anticipated growth rates for individual roadways near the study area. Roadways calculated to have a yearly growth rate of less than 1% were analyzed with a 1% per year growth rate to facilitate a conservative analysis. Values provided by MRCOG are reproduced verbatim in addition to the calculated growth rate used in the analysis. Growth rates were then applied to the existing 2023 volumes to forecast future volumes.

Table 4: Growth Rates

Roadway			MRCOG 2016 Model "Peak Hour Load"	MRCOG 2040 Model "Peak Hour Load"	Yearly Growth Rate	Average Area Yearly Growth	Growth Rate for Analysis
Central Ave West of 98th	Eastbound	AM PH	208	288	1.37%	4.07%	4.00%
		PM PH	219	375	2.27%		
	Westbound	AM PH	152	232	1.78%		
		PM PH	221	298	1.25%		
98th St & Central Ave West of Westland Rd	Northbound	AM PH	0	602	N/A		
		PM PH	0	570	N/A		
	Southbound	AM PH	0	563	N/A		
		PM PH	0	445	N/A		
99th St & Central Ave West of Westland Rd	Eastbound	AM PH	152	232	1.78%		
		PM PH	221	298	1.25%		
	Westbound	AM PH	208	393	2.69%		
		PM PH	219	447	3.02%		
86th St & Central Ave East of 98th St	Eastbound	AM PH	152	317	3.11%		
		PM PH	221	374	2.22%		
	Westbound	AM PH	158	323	3.02%		
		PM PH	173	406	3.62%		
87th St & Central Ave East of 98th St	Northbound	AM PH	52	65	0.93%		
		PM PH	51	36	-1.44%		
	N/A	AM PH	0	0	N/A		
		PM PH	0	0	N/A		

Projected turning movement volumes based on a four percent compound annual growth rate were used for the Build-Out (2023) and Horizon (2033) Year Background scenarios. Projected turning movement volumes plus the site-generated trips were used for the Build-Out and Horizon Year Total scenarios.

Site Trip Generation

Trip generation for the development was performed using the procedures and methodologies provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The land use category Coffee/Donut Shop with Drive-Through Window (937) and Strip Retail Plaza (<40K) (822) were used to generate trips for the development. Trips were calculated using rates for AM and PM peak-hour generators. Trips generated by the proposed development are shown below in the tables. The ITE Site-generated trips were added to the background traffic volumes for the system peak hour, as stipulated during the scoping meeting, to create the Build-Out and Horizon Year traffic volumes. Please note that adding site peak hour volumes to system peak hour traffic volumes is very conservative because the site peak hour generated volumes will occur approximately an hour before the system peak hours. **Table 5** shows the trip generation and associated calculations.

Table 5: ITE Trip Generation and Egress/Ingress Proportions

Use	Units		Weekday AM Peak Hour					Weekday PM Peak Hour				
			Total	Enter	Exit	In	Out	Total	Enter	Exit	In	Out
ITE 937 - Coffee/Donut Shop with Drive-Through Window	2490	Sq. Ft.	252	50%	50%	126	126	109	50%	50%	54	55
ITE 822 - Strip Retail Plaza (<40k)	6000	Sq. Ft.	46	50%	50%	23	23	79	54%	46%	43	36
					Total AM Peak	149	149			Total PM Peak	97	91

Site-Generated Trip Distribution and Assignment

The proposed site-generated traffic distribution was assigned based on direct trip travel behavior alone based on the ITE Trip Generation Manual's available data for the Coffee/Donut Shop with Drive-Through Window (937) and Strip Retail Plaza (<40K) (822) designation. Direct trip distribution was determined based on the analysis of existing intersection demand characteristics displayed by the turning movement count data within the study area and by engineering judgment of commuter travel patterns through and around the study area. It is recognized that the nature of this development is highly dependent on the travel patterns of commuter traffic, and trip distribution was routed to reflect this.

The routing was based on logical trip attractions and destinations for residential-based trips. **Figure 5** and **Figure 7** show the assigned routing percentages and distribution of trips forecasted to be generated by the development. When the applied distribution percentages did not result in whole vehicles or did not summate equal to the Total generated trips, rounding preference was assigned to the movement with the highest existing turning movement count volumes.

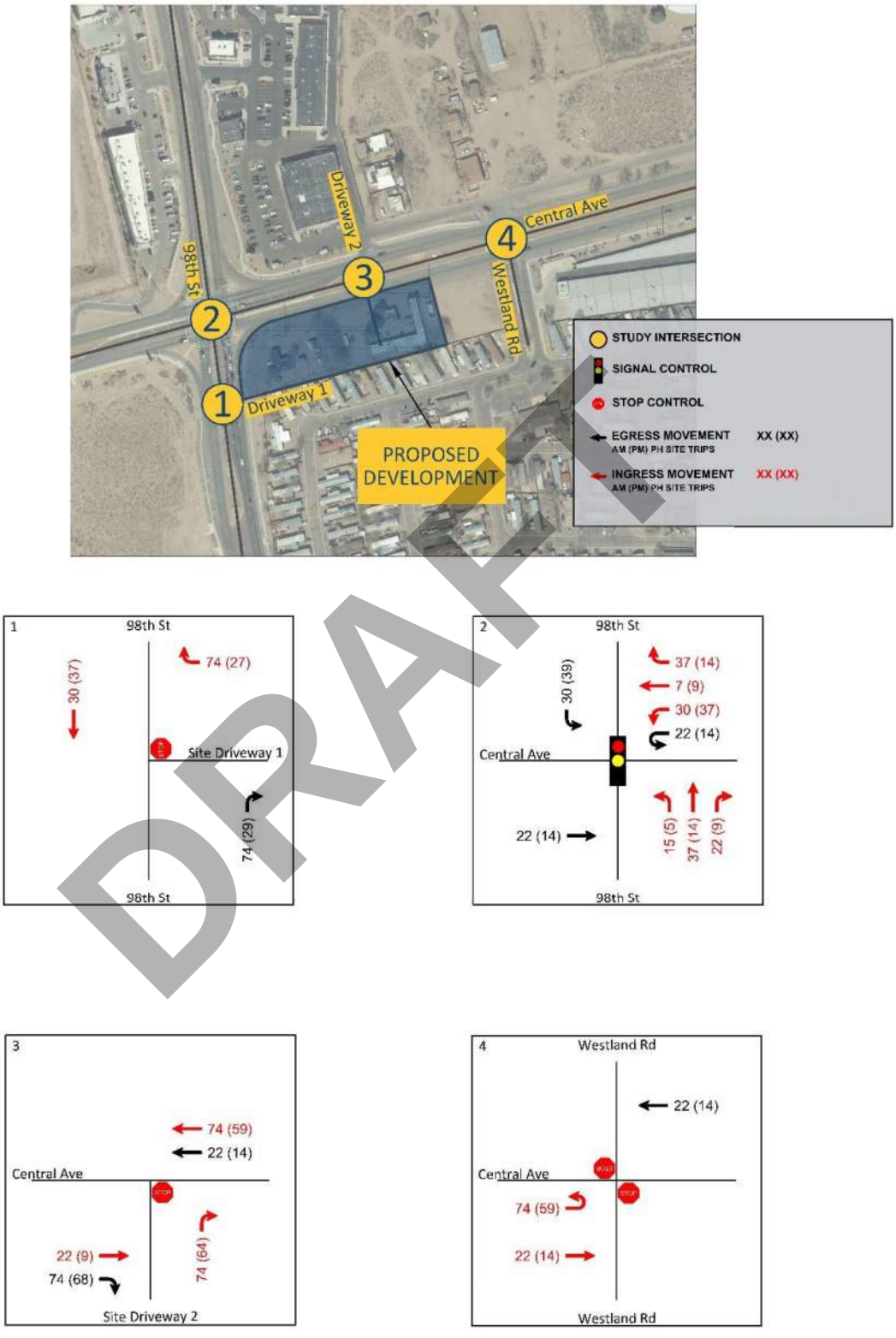


Figure 5: Site Trips

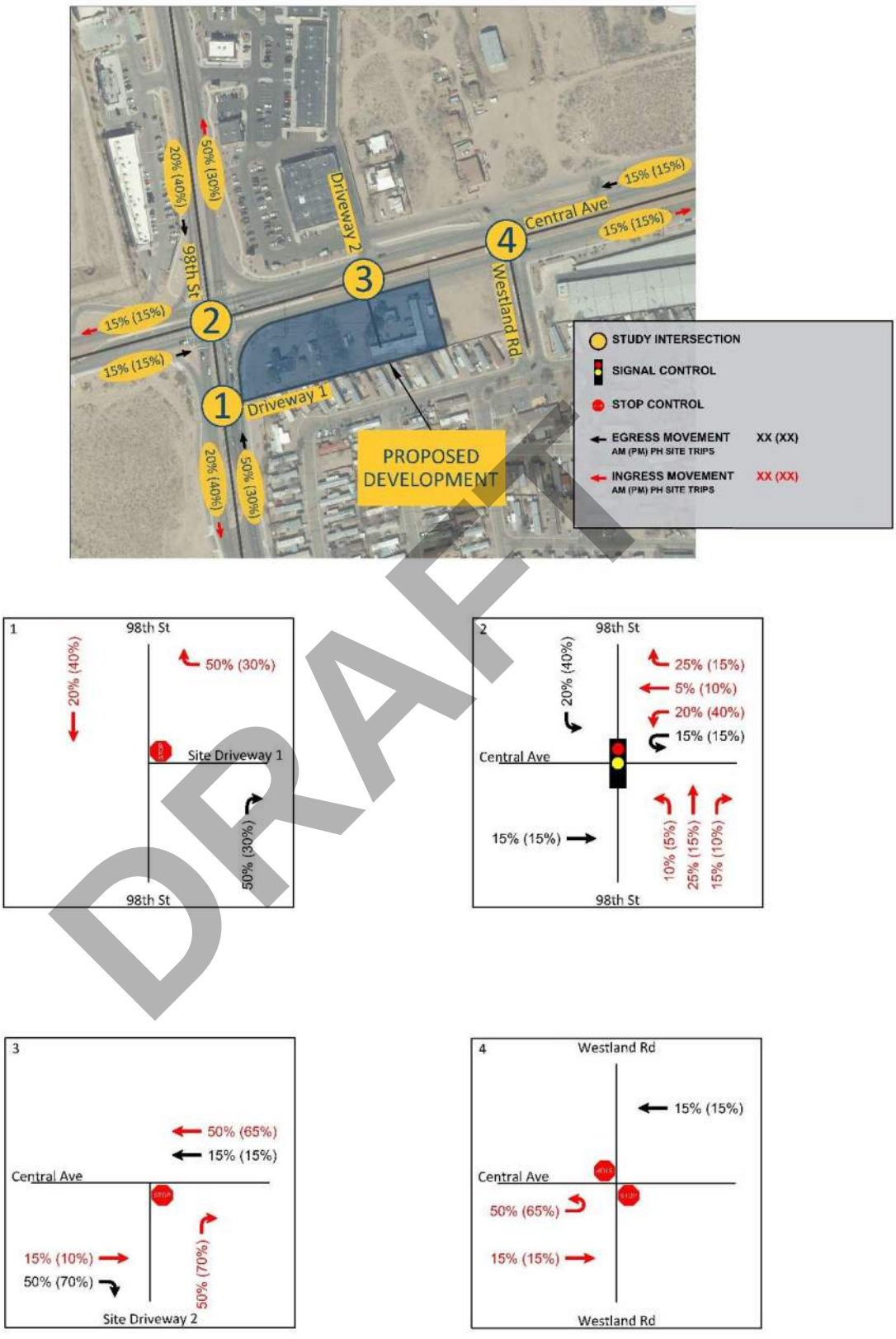


Figure 6: Site Trip Distribution Percentage

BUILD-OUT YEAR BACKGROUND AND TOTAL ANALYSES

As performed for Existing Background conditions, a Level of Service (LOS) and queueing analysis was performed for all Build-Out Year analysis scenarios using the same procedures, field data, and assumptions.

BUILD-OUT YEAR (2023) BACKGROUND CONDITIONS

As discussed in the previous Analysis Scenarios and Volume Calculations subsection, the Build-Out Year Background traffic volumes are determined by applying a 4% growth rate to the Existing traffic movement count data to analyze probable roadway conditions in the Build-Out Year in the absence of the proposed development. The turning movement volumes used for this analysis scenario are shown in **Figure 7.**

Figure 7: Build-Out Year (2023) Background Traffic Volumes

Table 6 below summarizes the intersection delay, LOS, and 95th percentile queue lengths under Build-Out Year Background conditions. Values within Table 6, shown in red, represent a result that falls below the

acceptable threshold. Detailed capacity output sheets showing all individual movements can be found in Appendix D.

Table 6: HCS Result Summary for Build-Out Background Conditions

Build Out Year 2023 Background														
Study Intersection	Queue, Delay, V/C, and LOS										Intersection LOS			
			AM				PM				AM		PM	
	Movement	Auxiliary Lane Length (ft)	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Central Ave & 98th St	EBL	200	224.4	66.4	0.85	E	121.1	51.6	0.61	D	29.3	C	30.5	C
	EBT	---	135.3	38.8	0.25	D	103.3	30.2	0.00	C				
	WBL	180	85.1	63.0	0.69	E	170.2	53.1	0.95	D				
	WBT	---	93.3	43.4	0.21	D	124.0	29.0	0.00	C				
	NBL	250	22.1	16.2	0.07	B	31.4	27.1	0.13	C				
	NBT	---	636.6	31.6	0.80	C	337.2	31.1	0.00	C				
	SBL	100	42.7	24.4	0.38	B	74.9	22.3	0.75	C				
	SBT	---	159.9	18.2	0.23	C	541.7	38.3	0.00	D				
Central Ave & Westland Rd*	EBL	---	0.0	8.2	0.00	A	0.0	8.9	0.00	A	14.8	B	19.7	C
	WBL	115	2.5	8.8	0.02	A	0.1	8.7	0.04	A				
	NBL	100	10.0	16.4	0.13	C	0.2	16.1	0.06	C				
	NBR	---	10.0	11.0	0.12	B	0.2	10.2	0.05	B				
	SBT	---	5.0	14.8	0.05	B	0.7	19.7	0.20	C				

**Intersection LOS and delay for stop-controlled intersection, results are reported as the worst case movement*

From the above table, the following conclusions are made from the Build Out Year Background analysis:

- For the intersection of Central Ave and 98th St
  - Capacity Analysis: The intersection operates at an overall LOS C during both the AM and PM peak hours
    - Individual approaches operate at LOS D or better, except for the east- and westbound left-turn movements, which operate at LOS E during the AM peak hour.
    - The east- and westbound left-turn movements do not operate with a V/C ratio greater than 1.
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths except for the westbound left turn during the AM peak hour.
- For the intersection of Central Ave and Westland Rd
  - Capacity Analysis: The intersection operates at a LOS of C or better during both the AM and PM peak hours
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.

Build-Out Year (2023) Total Conditions

As previously discussed, the Build-Out Year Total traffic volumes are determined by applying a 4% growth rate to the Existing traffic movement count data with the addition of the site-generated trips to analyze probable roadway conditions with the presence of the proposed development. The turning movement volumes used for this analysis scenario are shown in **Figure 8**.

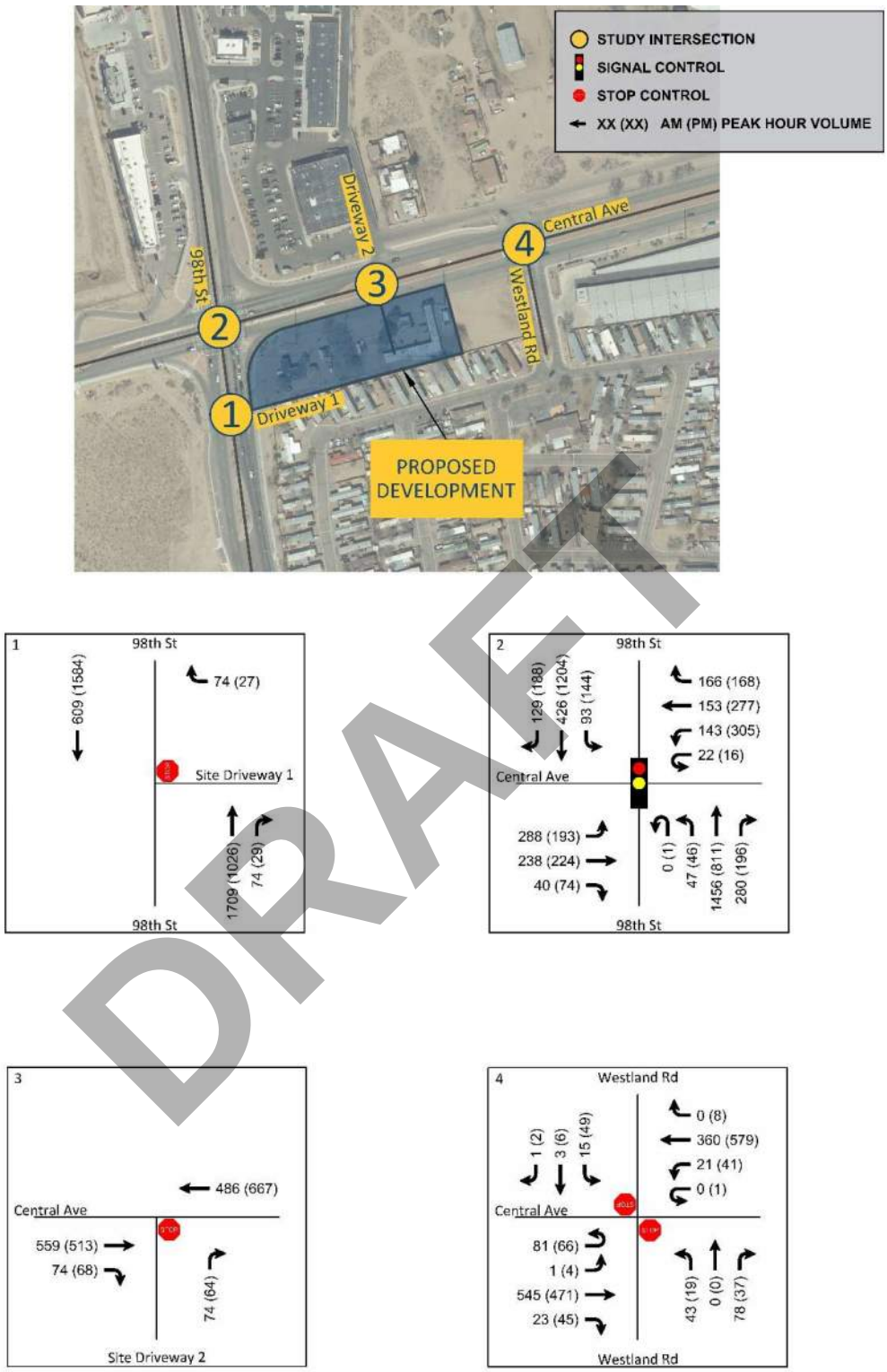


Figure 8: Build-Out Year (2023) Total Traffic Volumes

Figure 8 below summarizes the intersection delay, LOS, and 95th percentile queue lengths under Build-Out Year Total conditions. Values within Figure 8, shown in red, represent a result that falls below the acceptable threshold.

Table 7: HCS Result Summary for Build-Out Year (2023) Total Conditions

Build-Out Year 2023 Total														
Study Intersection	Queue, Delay, V/C, and LOS										Intersection LOS			
			AM				PM				AM		PM	
	Movement	Auxiliary Lane Length (ft)	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Central Ave & 98th St	EBL	200	224.4	66.4	0.85	E	121.1	51.6	0.76	D	31.2	C	31.5	C
	EBT	---	151.1	39.6	0.28	D	112.5	31.3	0.24	C				
	WBL	180	107.4	62.4	0.74	E	199.6	56.0	0.83	E				
	WBT	---	97.0	42.9	0.21	D	128.8	29.1	0.26	C				
	NBL	250	33.6	17.0	0.10	B	36.2	27.8	0.33	C				
	NBT	---	694.8	35.8	0.85	D	353.2	33.1	0.65	C				
	SBL	100	65.9	28.2	0.55	C	102.8	22.9	0.50	C				
	SBT	---	165.2	19.2	0.24	B	546.3	39.1	0.87	D				
Central Ave & Westland Rd*	EBL	---	0.0	8.3	0.00	A	0.0	9.0	0.00	A	16.2	C	18.8	C
	WBL	115	2.5	9.3	0.03	A	2.5	8.7	0.05	A				
	NBL	100	15.0	19.5	0.16	C	5.0	15.8	0.06	C				
	NBR	---	12.5	11.8	0.14	B	5.0	10.2	0.06	B				
	SBT	---	5.0	16.2	0.06	C	17.5	18.8	0.21	C				
Central Ave & Site Driveway 1	WBR	---	32.5	24.2	0.30	C	5.0	13.0	0.06	B	24.2	C	13.0	B
Central Ave & Site Driveway 2*	NBR	---	10.0	11.3	0.12	B	7.5	10.9	0.10	B	11.3	B	10.9	B

**Intersection LOS and delay for stop-controlled intersection, results are reported as the worst case movement*

From the above table, the following conclusions are made from the Build-Out Year Total analysis:

- For the intersection of Central Ave and 98th St
  - Capacity Analysis: The intersection operates at an overall LOS C during both the AM and PM peak hours
    - Individual approaches operate at LOS D or better, except for the east- and westbound left-turn movement, which operates at LOS E during the AM peak hour.
    - The east- and westbound left-turn movements do not operate with a V/C ratio greater than 1.
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths except for the following approaches:
      - Westbound left-turn during the AM peak hour
      - Southbound left turn during the PM peak hour
- For the intersection of Central Ave and Westland Rd
  - Capacity Analysis: The intersection operates at a LOS of C or better during both the AM and PM peak hours
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.
- For the intersection of Central Ave and Site Driveway 1

    - Capacity Analysis: At all approaches, the intersection operates at a LOS of C or better during the AM and PM peak hours.
    - Queueing Analysis
        - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.
- For the intersection of Central Ave and Site Driveway 2
    - Capacity Analysis: At all approaches, the intersection operates at a LOS of B or better during the AM and PM peak hours.
    - Queueing Analysis
        - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.

HORIZON YEAR BACKGROUND AND TOTAL ANALYSES

A Level of Service (LOS) and queueing analysis was performed for Horizon Year analysis scenarios using the same procedures, field data, and assumptions used for the previous analyses.

HORIZON YEAR (2033) BACKGROUND CONDITIONS

As discussed in the previous Analysis Scenarios and Volume Calculations subsection, the Horizon Year Background traffic volumes were determined by adding the trips from the adjacent development to the build-out background traffic approximations and applying a 4% compound growth rate to analyze probable roadway conditions in the Horizon Year in the absence of the proposed development. The turning movement volumes used for this analysis scenario are shown in **Figure 9**.

Figure 9: Horizon Year (2033) Background Traffic Volumes

Table 8 below summarizes the intersection delay, LOS, and 95th percentile queue lengths under Horizon Year Background conditions. Values within Table 8, shown in red, represent a result that falls below the acceptable threshold.

Table 8: HCS Result Summary for Horizon Year (2033) Background Conditions

Horizon Year 2033 Background														
Study Intersection	Queue, Delay, V/C, and LOS										Intersection LOS			
			AM				PM				AM		PM	
	Movement	Auxiliary Lane Length (ft)	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Central Ave & 98th St	EBL	200	433.1	119.9	0.98	F	196.3	55.6	0.83	E	318.6	F	253.7	F
	EBT	---	203.5	38.6	0.35	D	170.4	35.2	0.38	D				
	WBL	180	131.1	65.6	0.77	E	266.9	64.6	0.88	E				
	WBT	---	143.0	44.8	0.31	D	202.9	33.5	0.41	C				
	NBL	250	37.5	20.0	0.14	C	49.3	29.9	0.49	C				
	NBT	---	5867.9	692.0	1.36	F	786.4	85.4	0.99	F				
	SBL	100	125.9	54.4	0.79	D	628.7	263.8	1.09	F				
	SBT	---	266.0	23.5	0.39	C	4714.7	659.1	1.34	F				
Central Ave & Westland Rd*	EBL	---	0.0	8.2	0.00	A	0.0	8.9	0.00	A	14.8	B	19.7	C
	WBL	115	2.5	8.8	0.02	A	0.1	8.7	0.04	A				
	NBL	100	10.0	16.4	0.13	C	0.2	16.1	0.06	C				
	NBR	---	10.0	11.0	0.12	B	0.2	10.2	0.05	B				
	SBT	---	5.0	14.8	0.05	B	0.7	19.7	0.20	C				

**Intersection LOS and delay for stop-controlled intersection, results are reported as the worst case movement*

From the above table, the following conclusions are made from the Horizon Year Background analysis:

- For the intersection of Central Ave and 98th St
  - Capacity Analysis: The intersection operates at an overall LOS F during both the AM and PM peak hours
    - Individual approaches operate at LOS D or better, except for the following approaches:
      - Eastbound left-turn movement, which operates at LOS F during the AM peak hour and LOS E during the PM peak hour. This movement does not operate with a V/C ratio greater than 1.
      - Westbound left-turn movement, which operates at LOS E during the AM and PM peak hours. This movement does not operate with a V/C ratio greater than 1.
      - Northbound thru movement, which operates at LOS F during the AM and PM peak hours. This movement operates with a V/C ratio greater than 1.
      - Southbound left-turn movement, which operates at LOS F during the PM peak hour. This movement operates with a V/C ratio greater than 1.
      - Southbound thru movement, which operates at LOS F during the PM peak hour. This movement operates with a V/C ratio greater than 1.
    -
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths except for the following approaches:
      - Eastbound left-turn during the AM peak hour
      - Westbound left turn during the PM peak hour
      - Southbound left turn during the PM peak hour
- For the intersection of Central Ave and Westland Rd

- Capacity Analysis: The intersection operates at a LOS of C or better during both the AM and PM peak hours
- Queueing Analysis
  - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.

Horizon Year (2033) Total Conditions

The Horizon Year Total analysis assesses the probable roadway conditions in the Horizon Year by adding the proposed development's contribution to the study area traffic volumes. The turning movement volumes used for this analysis scenario are shown in **Figure 10**.

Figure 10: Horizon Year (2033) Total Traffic Volumes

Table 9 below summarizes the intersection delay, LOS, and 95th percentile queue lengths under Horizon Year Total conditions. Values within Table 9, shown in red, represent a result that falls below the acceptable threshold.

Table 9: HCS Result Summary for Horizon Year (2033) Total Conditions

Horizon Year 2033 Total														
Study Intersection	Queue, Delay, V/C, and LOS										Intersection LOS			
			AM				PM				AM		PM	
	Movement	Auxiliary Lane Length (ft)	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Central Ave & 98th St	EBL	200	433.1	119.9	0.98	F	196.3	55.6	0.83	E	347.1	F	272.6	F
	EBT	---	218.7	40.0	0.39	D	181.0	36.1	0.40	D				
	WBL	180	162.4	70.4	0.80	E	308.8	75.0	0.91	E				
	WBT	---	148.0	45.0	0.32	D	207.4	33.7	0.42	C				
	NBL	250	49.5	20.2	0.18	C	53.1	29.8	0.51	C				
	NBT	---	6442.5	769.9	1.41	F	842.8	95.7	1.01	F				
	SBL	100	267.9	121.3	0.94	F	1253.6	580.7	1.29	F				
	SBT	---	269.4	24.1	0.40	C	4800.4	675.7	1.35	F				
Central Ave & Westland Rd	EBL	---	0.0	9.1	0.00	A	0.0	10.4	0.01	B	23.4	C	51.8	F
	WBL	115	2.5	10.1	0.05	B	7.5	10.1	0.09	B				
	NBL	100	35.0	28.8	0.32	D	12.5	26.5	0.16	D				
	NBR	---	22.5	13.7	0.24	B	7.5	12.0	0.11	B				
	SBT	---	12.5	23.4	0.13	C	82.5	51.8	0.56	F				
Central Ave & Site Driveway 1	WBR	---	102.5	73.0	0.61	F	7.5	17.7	0.09	C	73.0	F	17.7	C
Central Ave & Site Driveway 2*	NBR	---	15.0	13.3	0.16	B	12.5	12.9	0.13	B	13.3	B	12.9	B

**Intersection LOS and delay for stop-controlled intersection, results are reported as the worst case movement*

From the above table, the following conclusions are made from the Horizon Year Total analysis:

- For the intersection of Central Ave and 98th St
  - Capacity Analysis: The intersection operates at an overall LOS F during both the AM and PM peak hours
    - Individual approaches operate at LOS D or better, except for the following approaches:
      - Eastbound left-turn movement, which operates at LOS F during the AM peak hour and LOS E during the PM peak hour. This movement does not operate with a V/C ratio greater than 1.
      - Westbound left-turn movement, which operates at LOS E during the AM and PM peak hours. This movement does not operate with a V/C ratio greater than 1.
      - Northbound thru movement, which operates at LOS F during the AM and PM peak hours. This movement operates with a V/C ratio greater than 1.
      - Southbound left-turn movement, which operates at LOS F during the AM and PM peak hours. This movement operates with a V/C ratio greater than 1.
      - Southbound thru movement, which operates at LOS F during the PM peak hour. This movement operates with a V/C ratio greater than 1.
  - Queueing Analysis
    - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths except for the following approaches:
      - Eastbound left-turn during the AM peak hour

        - Westbound left turn during the PM peak hour
        - Southbound left turn during the PM peak hour
- For the intersection of Central Ave and Westland Rd
    - Capacity Analysis: The intersection operates at a LOS of D or better during both the AM and PM peak hours except for the southbound thru movement during the PM peak hour, which operates at a LOS F.
    - Queueing Analysis
        - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.
- For the intersection of Central Ave and Site Driveway 1
    - Capacity Analysis: The intersection operates at a LOS F in the AM peak hour and a LOS C in the PM peak hour.
        - The westbound right turn movement operates at a LOS F in the AM peak hour and a LOS C in the PM peak hour.
    - Queueing Analysis
        - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.
- For the intersection of Central Ave and Site Driveway 2
    - Capacity Analysis: At all approaches, the intersection operates at a LOS of B or better during the AM and PM peak hours.
    - Queueing Analysis
        - Where HCS results for queue lengths are present, existing auxiliary lane lengths are sufficient to accommodate 95th percentile queue lengths.

Build-Out Year (2023) Optimized Conditions

Under Existing conditions, the Central Ave and 98th St intersection display spillover 95th percentile queues in the eastbound left turn lane during the AM. The intersection also demonstrates a LOS of E for the eastbound and westbound left movement during the AM peak hour. These conditions worsen with the 4% growth factor application under Build-Out and Horizon conditions. Under Build-Out Total conditions, the intersection displays spillover 95th percentile queues during the AM peak hour in the eastbound left turn lane and the PM peak hour in the southbound left turn lane. To mitigate the spillover and operations below the LOS E threshold at Central Ave and 98th St, the following roadway geometry and timing changes were modeled for the Optimized scenario using the Build-Out Total volumes as a basis.

The AM peak hour signal timing was optimized in HCS for a balanced delay. This was achieved by optimizing the cycle lengths and splits. The HCS results of this Optimized Build-Out scenario at Central Ave and 98th St are presented in Table 10, along with the Build-Out Total scenario results for comparison.

Table 10: HCS Result Summary for Build-Out Year (2023) Optimized Conditions

Build Out Year 2023 Total Optimized														
Study Intersection	Queue, Delay, V/C, and LOS										Intersection LOS			
			AM				PM				AM		PM	
	Movement	Auxiliary Lane Length (ft)	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	95th Percentile Queue (ft)	Delay (sec)	V/C	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Central Ave & 98th St	EBL	200	224.4	66.4	0.85	E	121.1	51.6	0.61	D	30.2	C	30.9	C
	EBT	---	150.2	39.3	0.28	D	110.5	30.4	0.00	C				
	WBL	180	87.3	62.9	0.70	E	171.0	53.2	0.95	D				
	WBT	---	95.4	43.5	0.21	D	125.1	29.0	0.00	C				
	NBL	250	22.7	16.8	0.07	B	32.2	27.6	0.13	C				
	NBT	---	653.8	33.3	0.82	C	346.3	32.8	0.00	C				
	SBL	100	63.9	26.3	0.52	B	102.7	22.7	0.50	C				
	SBT	---	159.9	18.3	0.23	C	541.9	38.4	0.00	D				
Central Ave & 98th St Optimized	EBL	250	160.4	45.2	0.80	D	108.4	46.7	0.74	D	26.0	C	29.5	C
	EBT	---	117.2	33.0	0.31	C	101.3	28.8	0.25	C				
	WBL	180	64.7	48.1	0.66	D	147.6	45.6	0.79	D				
	WBT	---	75.0	36.6	0.25	D	114.4	27.4	0.26	C				
	NBL	250	17.5	14.5	0.07	B	29.5	26.1	0.30	C				
	NBT	---	546.6	31.9	0.89	C	323.5	31.5	0.67	C				
	SBL	150	49.2	22.5	0.50	C	92.8	21.3	0.49	C				
	SBT	---	122.9	15.6	0.25	B	512.1	38.2	0.88	D				

From the above table, the following conclusions are made from the Optimized Build-Out Year analysis:

- For the intersection of Central Ave and 98th St
  - Capacity Analysis: The intersection operates at an overall LOS C during the AM and PM peak hours. There is no change in overall intersection delay but no significant change in overall intersection LOS between the Build-Out Total and the Optimized Build-Out scenarios.
    - With the aforementioned signal timing changes, the intersection operates at a LOS C and all individual approaches operate at a LOS D or better during the AM and PM peak hours.
  - Queueing Analysis
    - With the aforementioned timing changes, all auxiliary lane lengths can accommodate 95th-percentile queue lengths.
    - These queue results improve those seen in the analysis of the Existing conditions.

Summary of Capacity Improvement Recommendations

Upon opening the development, it is recommended that the signal at Central Ave & 98th St be re-timed to accommodate shifting traffic patterns and additional trips added by the development. Signal timings should be performed by a registered Professional Traffic Operations Engineer (PTOE).

DEVELOPMENT SITE-RELATED ASSESSMENT OF ACCESS CONDITIONS

The following sections assess the relevant site access and internal traffic conditions. The site conditions analyzed include the intersection sight distance based on the American Association of State Highway and Transportation Officials (AASHTO) "Green Book," an auxiliary lane warrant, and deceleration lane length analyses based on the COA DPM.

SITE ACCESS ANALYSIS

Site access is to be provided via two driveways: One on the west side of the site accessing 98th St and one on the north side of the site accessing Central Ave. CABQ DPM requirements were reviewed for the two access driveways. DPM Table 7.4.45 provides a minimum distance between commercial site access points and intersections, and DPM Table 7.4.46 provides the maximum number of commercial site access points per site. The results of this analysis are shown in **Error! Reference source not found.** below.

Table 11: Access Spacing Analysis

City of Albuquerque Development Process Manual Recommended Access Spacing							
Site Access	Major Street	Cross Street	Design Speed	DPM Tables 7.4.45 Minimum Distance Between Commercial Site Access and Intersection		DPM Tables 7.4.46 Maximum Number of Commercial Site Access Points per Site	Distance Between Site Access Point and Intersection
	Central Ave	98th St	MPH	Approach Distance	Departure Distance		Approach Distance
Site Driveway 1	Principal Arterial	Principal Arterial	45	300 ft.	200 ft.	1-2 access points per 300 ft. frontage	120 ft.
Site Driveway 2	Principal Arterial	Principal Arterial	45	300 ft.	200 ft.	1-2 access points per 300 ft. frontage	350 ft.

Per the information above, the Central Ave driveway meets CABQ DPM requirements, whereas the 98th St driveway falls short of thresholds outlined in the CABQ DPM. Additionally, 95th percentile queues for the northbound approach at the Central Ave and 98th St intersection are greater than the spacing between the driveway and the traffic signal at 98th St and Central Ave. However, Driveway 1 provides the site's only possible access to 98th St and exiting queues awaiting gaps in traffic will be contained within the site.

SITE DRIVEWAY INTERACTIONS (WEAVING)

As discussed in the scoping meeting, Driveway 1 on 98th St is position in close proximity to the intersection of Central Ave & 98th St. From the capacity and queueing analysis performed for this driveway, it is anticipated that queues from the northbound approach Central Ave & 98th St will regularly block entering and exiting vehicles at Driveway 1.

To estimate delays associated with this blockage, VISSIM simulation software was used to model the driveway under AM Peak Hour conditions. The analysis shows significant delays for exiting traffic; however, delays are anticipated to be held within the development thus minimizing effects on 98th St. Additionally, queues for exiting traffic were observed to reach approximately 7 vehicles in length, contained on the development site.

It is concluded that waiting exiting-vehicles are likely to divert successive exiting-traffic to use Driveway 2 on Central Ave, thereby balancing delays and interactions with Central Ave & 98th St.

Excerpts and screenshots from the VISSIM model are included in Appendix F.

INTERNAL QUEUEING AND QUEUE MANAGEMENT

As discussed in the scoping meeting, drive-through queueing is not analyzed in this report as the development provides drive-through storage that meets city requirements. Additionally, the development intends to implement an "active queue management system" to accommodate queue conditions on-site.

SITE ACCESS SIGHT DISTANCE

The following presents recommended intersection sight distance requirements for the Exit only driveway serving the development. Intersection sight distance requirements were calculated based on the COA DPM Section 7-4(I)(5)(iii) and the 2018 AASHTO "Green Book" chapter 9.5. A passenger vehicle was used as the design vehicle.

Intersection sight distances, per the COA DPM for major roadways, divided by a 20 feet or greater width median, for passenger vehicles, required sight distance can be based upon a two-stage left turn with each stage considered individually. Based on this provision (7-4(I)(5)(iii)(5)), the recommended sight distance for the first stage of the left-turn movement from the Site Exit was considered and evaluated as a three-lane undivided crossing. The right-turn maneuver was evaluated as a two-lane undivided crossing. Intersection sight distances were determined from COA DPM Table 7.4.65.

The AASHTO "Green Book" intersection sight distances were determined based on the following turning conditions.

- Case B1 – A stopped vehicle turning left from a minor street approach onto a major road.
- Case B2 – A stopped vehicle turning right from a minor street approach onto a major road.

Intersection sight distances were calculated based on the following assumptions:

- The required intersection sight distance for Case B2 was calculated based on the design vehicle crossing into the first lane of the roadway.

Values shown below in **Table 12** were rounded to the nearest 5-foot increment for AASHTO "Green Book" calculated intersection sight distances. Formulas, values, and calculations used in the sight distance analysis can be found in the Appendix.

Table 12: Sight Distance Requirements

Roadway Characteristics at Site Exit Location	Turning Movement Condition	Sight Distance
98th Street **Four-Lane Median Divided Roadway with SBL Auxiliary Turn Lane** **Approximate Median Width - 15 FT** **Posted Speed Limit - 45 MPH**	COA DPM - Right-Turn: Two-Lane Undivided	430 FT
	AASTO "Green Book" Case B2 - Turning Right from Site Exit	335 FT
Central Avenue **Four-Lane Median Divided Roadway with SBL Auxiliary Turn Lane** **Approximate Median Width - 40 FT** **Posted Speed Limit - 55 MPH**	COA DPM - Right-Turn: Two-Lane Undivided	480 FT
	AASTO "Green Book" Case B2 - Turning Right from Site Exit	335 FT

It is recommended that all development driveways adhere to the sight distance provisions detailed in the COA DPM Section 7-4(I)(5)(iii). An area bounded by the above sight distances with the decision point placed 15 feet back from the edge of the shoulder midway between the outbound driving lane should be clear of any obstructions.

Auxiliary Lane Analysis

CABQ DPM auxiliary lane analysis warrants were reviewed for the site access driveways. DMP Table 7.4.67 was used to determine if right or left-turn auxiliary lanes would be warranted for the site access points. DPM Tables 7.4.68 and 7.4.70 were used to assess deceleration and taper length, if applicable. It is important to note that 2023 Build-Out traffic volumes were used in the analysis. The results of this analysis are shown in Table 12.

Table 13: Auxiliary Lane Requirements

Location	Access/Turn Type	Speed	DPM Table 7.4.67 Turning Volume per Hour	Turning Volume per Hour (Build-Out Year Total)	Warrant Result	DPM Tables 7.4.68 Minimum Storage Length (ft)	DPM Tables 7.4.68/70 Lane Transition Length (ft)
Site Driveway 1	Right-In Right-Out (RIRO)	45	45	74	Required	350 - 405	600-300 Reverse Curve
Site Driveway 2	Right-In Right-Out (RIRO)	45	45	74	Required	350 - 405	600-300 Reverse Curve
Central Ave and Westland Rd	U-Turn	45	30	81	Required	---	600-300 Reverse Curve

It is recommended that all development driveways adhere to the auxiliary lane provisions detailed in the COA DPM Section 7-4(I)(7)(iii(d)). Site Driveway 1 and 2 warrant the consideration of a right-turn auxiliary lane. However, an auxiliary lane is not recommended for Driveway 1 because of its proximity to the Central Ave & 98th St intersection and its northbound right turn. The intersection of Central Ave and Westland Rd warrants the consideration of a left-turn auxiliary lane. Site Driveway 2 warrants the consideration of a right-turn auxiliary lane.

FIVE-YEAR CRASH DATA SUMMARY

At the request of the NMDOT, a crash summary for the intersections within the study area has been completed. This summary aims to highlight trends and observations from summarized crash data. Crash data was provided by NMDOT for 2016 to 2020 in aggregate form and is summarized in the table below.

Table 14: Crash Summary

Crash Summary		98th St & Central Ave	Central Ave & Westland Rd
Total Crashes		296	14
By Year	2016	73	2
	2017	58	2
	2018	74	4
	2019	43	5
	2020	48	1
By Type	Fixed Object	8	1
	Other Vehicle - Both Going Straight/Entering At Angle	26	1
	Other Vehicle - From Opposite Direction	23	2
	Other Vehicle - From Opposite Direction/Both Going	8	0
	Other Vehicle - From Same Direction/Both Going Straight	33	2
	Other Vehicle - From Same Direction/Rear End Collision	27	0
	Other Vehicle - One Left Turn/Entering At Angle	23	2
	Pedestrian	4	0
	%Other Vehicle - From Same Direction/Both Going Straight	*11%*	*14%*
	% Other Vehicle - From Same Direction/Rear End Collision	*9%*	*0%*
	% Other Vehicle - Both Going Straight/Entering At Angle	*9%*	*7%*
By Lighting Conditions	Daylight	138	6
	Dawn/Dusk	0	0
	Dark	60	6
	Left Blank	83	2
	% Day	*47%*	*43%*
By Severity	Property Damage Only	206	8
	Injury	90	6
	Fatality	0	0
	% Property Damage Only	*70%*	*57%*
	% Injury	*30%*	*43%*
By Cause	Alcohol/Drug Involved	9	1
	Collision with Motor Vehicle	41	1
	Collision with Person	1	0
	Disregarded Traffic Signal	14	1
	Driver Inattention	53	3
	Failed to Yield Right of Way	40	5
	Following Too Closely	17	0
	Pedestrian Error	1	0
	% Driver Inattention	*18%*	*21%*
	% Collision With Motor Vehicle	*14%*	*7%*
	% Failed to Yield Right of Way	*14%*	*36%*
	% Collision with Person/ Pedestrian Error	*1%*	*0%*

From the above table, the following observations are made:

- For the intersection of 98th St & Central Ave:
  - Within the years 2016 to 2020, 296 crashes were reported.

- The most common crash classification was Other Vehicle – From Same Direction/Both Going Straight.
- The majority of collisions at this intersection occurred during daylight hours.
- No fatal crashes were reported from 2016 to 2020. Injuries were reported in 30% of crashes.
- The most common cause of crashes was Driver Inattention.
- **Of the 296 crashes, four pedestrian crashes were reported.**
- **Pedestrian crashes are classified as Alcohol/ Drug Involved, Collision with Person, Improper Backing, and Pedestrian Error.**
- **Three of the four pedestrian crashes occurred in the Dark, while one occurred during the day**.

- For the intersection of Central Ave & Westland Rd:
  - Within the years 2016 to 2020, 14 crashes were reported.
  - The most common crash classification was Other Vehicle – From Same Direction/Both Going Straight.
  - The majority of collisions at this intersection occurred during daylight and dark hours.
  - No fatal crashes were reported from 2016 to 2020. Injuries were reported in 43% of crashes.
  - The most common cause of crashes was Failure to Yield Right of Way.

SUMMARY OF RECOMMENDATIONS

The following presents a summary of recommendations included in this report.

CONCLUSIONS

- Traffic generated by the site is expected to be accommodated under current geometries for opening day conditions.
- All study intersections operate at an acceptable overall LOS throughout all study scenarios except for the following intersections and conditions:
  - The intersection of Central Ave and 98th St, which show LOS F during the AM and PM peak hours under the Horizon Year Total scenario.
  - The intersection of Central Ave and Westland Rd shows a LOS F during the PM peak hour under the Horizon Year Total scenario.
- 95th percentile queue lengths only exceed existing queue storage at the intersection of Central Ave and 98th St under all unoptimized scenarios.

DEVELOPMENT SPECIFIC RECOMMENDATIONS

- It is recommended that all development driveways adhere to the sight distance provisions detailed in the City of Albuquerque Development Process Manual and as outlined in this report.
- Driveway 1, on 98th St does not meet DPM requirements for spacing from the Central Ave & 98th St intersection. Additionally, queues from northbound 98th St were analyzed to frequently block exiting traffic from the site.
  - However, this driveway serves as the site's only access point to 98th St and exiting queues will be contained within the site.
  - Auxiliary lane warrants were not analyzed because of the driveway's proximity to the northbound right turn auxiliary lane at Central Ave & 98th St
  - While the existing driveway spacing places this driveway in close proximity to the intersection of Central Ave & 98th St, exiting queues are anticipated to be held within the development site with exiting traffic reaching up to 7 vehicles in length. It is concluded that waiting exiting vehicles are likely to divert successive exiting traffic to use Driveway 2 on Central Ave, thereby balancing delays and interactions with Central Ave & 98th St.
- Driveway 2 meets DPM requirements for spacing and DPM warrants for an auxiliary right-turn lane.
- Upon opening the development, it is recommended that the signal at Central Ave & 98th St be re-timed to accommodate shifting traffic patterns and additional trips added by the development. Signal timings should be performed by a registered Professional Traffic Operations Engineer (PTOE).

ANCILLARY RECOMMENDATIONS

- The intersection of Central Ave and Westland Rd warrants a Left/U-Turn Auxiliary lane under buildout conditions.
- Horizon-year HCS results suggest the need for future evaluation of capacity and queuing mitigation measures or street improvements unrelated to the proposed development at the intersection of Central Ave and 98th St. This intersection displays acceptable levels of

service during the Existing and Build-Out Years but shows a LOS E for the Eastbound left turn under Existing and Build-Out Years and LOS F for the following movements under Horizon Year Total conditions:

  - Eastbound left-turn during the AM peak hour
  - Northbound thru during the AM and PM peak hour
  - Southbound left turn during the PM peak hour
  - Southbound thru during the PM peak hour

- The Build-out Year total conditions were optimized to achieve a LOS D or better. Potential mitigations include signal re-timing, performed by a registered Professional Traffic Operations Engineer (PTOE), additional storage, and additional lanes.

Appendix A: Scoping meeting minutes

8220 SAN PEDRO DR NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988
www.lee-eng.com
LEE ENGINEERING

Agenda for 98th Central TIA
December 21, 2022
-Meeting Notes in Red-

Attendees:
Matt Grush – City of Albuquerque
Jonathon Kruse – Lee Engineering
Jeff Wooten – Wooten Engineering

1. Introductions
2. Review of Site Plan
    a. Site Plan & land Uses
3. Discussion of Scope for TIS
    a. Study Intersections
        i. 98th & Central
        ii. Site Driveways
    b. Data Collection
    c. Trip Generation, Pass By, & Internal Capture
        i. Trip Generation Manual (11th Edition) Land Use – See attachments for details.
        ii. Pass-by trips
        iii. No Internal Capture
        iv. Trips distributed based on existing traffic patterns
    d. Known Developments or Pending Improvements in Area:
        i. Westpoint
        ii. DutchBros/Wataburger (Check what is built)
    e. Build-out Year and Growth Rate
        i. Build-Out Year (2023)
            1. Will look at MRCOG Model Projections and calculate growth rate (if any), otherwise will assume 1% growth per year.
    f. Analysis scenarios
        i. Existing Conditions Background (No Build)
        ii. Opening Year Background (No Build)
        iii. Opening Year Buildout (Full Build)
        iv. Opening Year Buildout Optimized (if required)
            1. All scenarios with existing signal timings except opening year buildout optimized.
        v. Horizon Year +10
    g. Required Analysis & Methodology
        i. LOS Capacity analysis based on HCM 6th Edition (HCS)
        ii. 95th Percentile Queue demands (HCS)

8220 SAN PEDRO DR NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988
www.lee-eng.com
LEE ENGINEERING

1. Capacity & Queueing for network peak rather than individual intersection peaks

iii. Auxiliary Lane Analysis
iv. Sight Distance Analysis at Proposed Driveways
v. Crash Summary 5 years
vi. Weaving at west driveway
vii. Internal Queueing forgoe for additional cars on site plan.

1. Mention active queue management and discussion.

4. Agency Input (Comments & Issues)
5. Meeting Notes (distributed by Lee Engineering)

Appendix B: Turning Movement Count Sheets

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

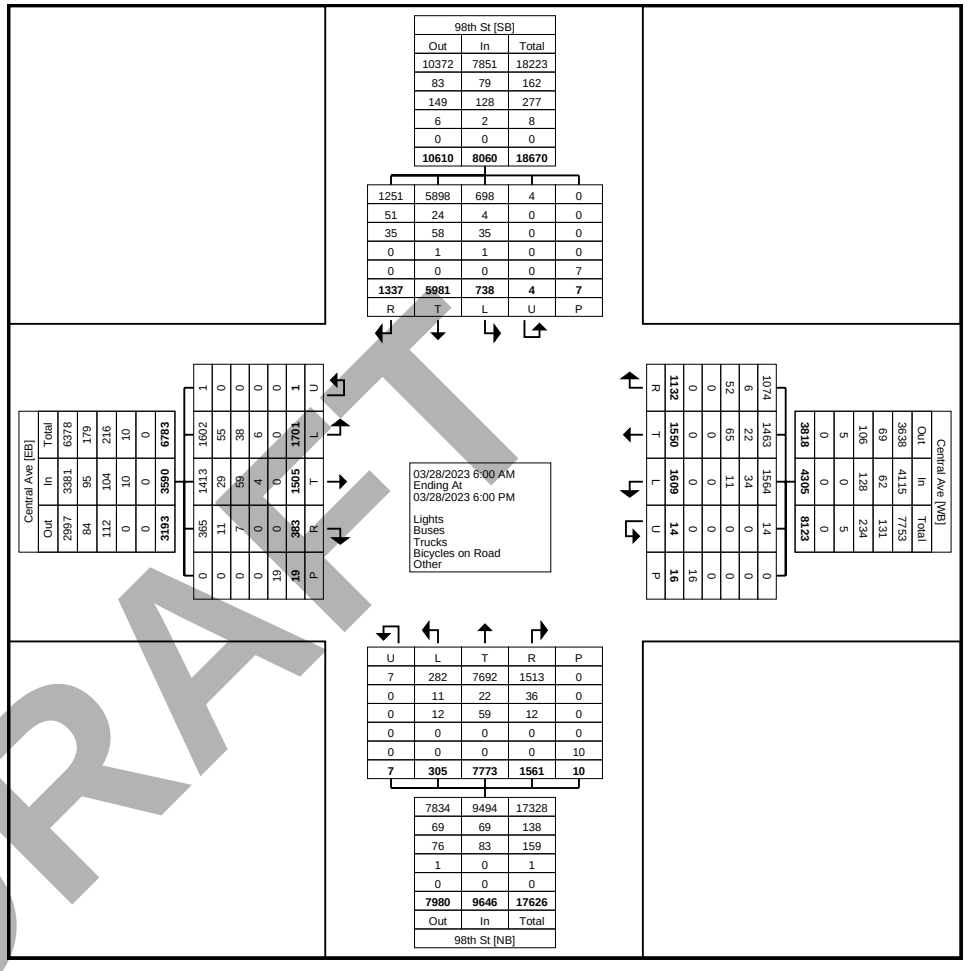
Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Data

Start Time	Central Ave Eastbound							Central Ave Westbound							98th St Northbound							98th St Southbound							Int. Total
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	
6:00 AM	0	42	21	2	3	0	68	0	6	23	6	5	2	40	0	7	204	20	7	0	238	0	4	25	22	7	0	58	404
6:15 AM	0	45	26	4	0	0	75	0	10	25	6	9	0	50	0	6	282	24	2	0	314	0	7	41	9	3	1	60	499
6:30 AM	0	49	35	4	6	0	94	0	12	36	12	8	0	68	0	9	320	25	11	0	365	0	11	43	16	16	0	86	613
6:45 AM	0	56	56	2	5	0	119	0	10	27	12	9	0	58	0	11	322	32	18	0	383	0	9	70	14	15	0	108	668
Hourly Total	0	192	138	12	14	0	356	0	38	111	36	31	2	216	0	33	1128	101	38	0	1300	0	31	179	61	41	1	312	2184
7:00 AM	0	78	53	10	3	3	144	0	15	30	15	12	1	72	0	8	359	26	28	3	421	0	16	75	17	10	0	118	755
7:15 AM	0	74	49	3	7	1	133	0	38	43	19	12	2	112	0	13	360	36	31	0	440	0	13	115	14	20	0	162	847
7:30 AM	0	68	66	3	7	0	144	0	28	45	25	17	0	115	0	5	360	29	38	0	432	0	19	109	15	19	0	162	853
7:45 AM	0	68	48	1	6	0	123	0	32	28	17	12	1	89	0	6	340	33	37	0	416	0	15	127	15	19	1	176	804
Hourly Total	0	288	216	17	23	4	544	0	113	146	76	53	4	388	0	32	1419	124	134	3	1709	0	63	426	61	68	1	618	3259
8:00 AM	0	50	41	4	3	1	98	0	24	27	16	11	0	78	0	4	262	38	17	0	321	0	9	115	17	27	0	168	665
8:15 AM	0	49	32	3	2	0	86	0	23	32	15	28	0	98	1	11	283	26	22	0	343	0	10	95	11	14	0	130	657
8:30 AM	0	56	30	1	3	0	90	0	26	30	13	12	0	81	0	6	274	31	18	0	329	0	17	99	23	27	0	166	666
8:45 AM	0	45	34	3	2	0	84	0	37	22	12	8	0	79	0	11	209	31	14	0	265	0	21	109	7	13	0	150	578
Hourly Total	0	200	137	11	10	1	358	0	110	111	56	59	0	336	1	32	1028	126	71	0	1258	0	57	418	58	81	0	614	2566
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	37	33	3	3	1	76	1	36	34	12	16	0	99	0	1	137	18	15	0	171	0	23	85	18	12	0	138	484
11:15 AM	0	27	32	5	3	0	67	2	47	32	7	14	0	102	1	4	161	17	11	0	194	0	11	118	14	8	0	151	514
11:30 AM	0	32	32	6	3	1	73	2	53	26	18	21	0	120	0	5	148	24	8	0	185	0	24	106	15	10	0	155	533
11:45 AM	0	45	39	3	2	0	89	0	44	25	14	13	1	96	0	6	136	25	15	0	182	0	23	106	18	14	0	161	528
Hourly Total	0	141	136	17	11	2	305	5	180	117	51	64	1	417	1	16	582	84	49	0	732	0	81	415	65	44	0	605	2059
12:00 PM	1	30	33	3	3	0	70	0	42	34	14	18	1	108	0	2	144	17	15	1	178	0	27	134	18	15	1	194	550
12:15 PM	0	33	23	3	5	0	64	1	48	46	15	14	1	124	0	6	150	23	13	0	192	1	25	128	21	16	1	191	571
12:30 PM	0	40	30	2	2	0	74	0	38	43	27	19	0	127	0	7	151	26	11	0	195	0	30	159	25	19	0	233	629
12:45 PM	0	32	30	1	7	1	70	0	39	39	14	19	0	111	0	8	167	26	21	0	222	1	29	140	21	15	0	206	609
Hourly Total	1	135	116	9	17	1	278	1	167	162	70	70	2	470	0	23	612	92	60	1	787	2	111	561	85	65	2	824	2359
1:00 PM	0	39	34	2	7	2	82	0	50	37	14	17	0	118	0	7	141	22	20	0	190	0	28	153	21	17	0	219	609
1:15 PM	0	36	42	3	5	3	86	1	53	45	16	15	0	130	0	9	161	32	15	2	217	0	36	149	12	15	0	212	645
1:30 PM	0	42	51	2	2	0	97	0	44	40	17	17	0	118	0	10	176	22	13	0	221	0	21	141	17	18	0	197	633
1:45 PM	0	30	44	8	4	0	86	0	45	40	11	15	4	111	0	8	174	23	11	0	216	0	20	166	17	10	0	213	626
Hourly Total	0	147	171	15	18	5	351	1	192	162	58	64	4	477	0	34	652	99	59	2	844	0	105	609	67	60	0	841	2513
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	49	43	15	11	0	118	0	69	54	11	22	2	156	0	9	163	43	18	0	233	0	24	231	30	16	0	301	808
3:15 PM	0	54	46	1	6	1	107	0	59	49	18	21	0	147	1	13	211	31	12	1	268	0	29	276	32	20	1	357	879
3:30 PM	0	56	48	6	5	3	115	0	64	61	25	11	1	161	0	12	236	20	14	3	282	0	21	262	49	20	0	352	910

3:45 PM	0	48	42	5	10	0	105	1	60	42	21	18	0	142	0	14	186	27	8	0	235	0	20	281	39	9	0	349	831
Hourly Total	0	207	179	27	32	4	445	1	252	206	75	72	3	606	1	48	796	121	52	4	1018	0	94	1050	150	65	1	1359	3428
4:00 PM	0	46	56	16	14	0	132	0	85	52	23	14	0	174	0	6	193	23	12	0	234	0	24	275	29	9	0	337	877
4:15 PM	0	43	66	11	9	0	129	0	71	64	14	14	0	163	0	12	224	28	21	0	285	0	26	265	32	18	0	341	918
4:30 PM	0	52	48	7	12	0	119	0	80	82	22	17	0	201	1	13	197	32	20	0	263	0	28	294	22	20	0	364	947
4:45 PM	0	45	45	5	13	1	108	1	61	60	14	27	0	163	0	9	199	33	11	0	252	0	23	322	34	13	1	392	915
Hourly Total	0	186	215	39	48	1	488	1	297	258	73	72	0	701	1	40	813	116	64	0	1034	0	101	1156	117	60	1	1434	3657
5:00 PM	0	53	51	11	6	0	121	1	56	62	25	21	0	165	0	7	177	24	18	0	226	0	28	323	40	9	0	400	912
5:15 PM	0	53	43	7	4	0	107	1	75	64	18	13	0	171	2	12	200	31	10	0	255	0	28	290	31	14	1	363	896
5:30 PM	0	55	63	16	9	1	143	1	65	77	21	19	0	183	0	14	192	32	9	0	247	1	22	270	34	6	0	333	906
5:45 PM	0	44	40	4	6	0	94	2	64	74	18	17	0	175	1	14	174	38	9	0	236	1	17	284	40	15	0	357	862
Hourly Total	0	205	197	38	25	1	465	5	260	277	82	70	0	694	3	47	743	125	46	0	964	2	95	1167	145	44	1	1453	3576
Grand Total	1	1701	1505	185	198	19	3590	14	1609	1550	577	555	16	4305	7	305	7773	988	573	10	9646	4	738	5981	809	528	7	8060	25601
Approach %	0.0	47.4	41.9	5.2	5.5	-	-	0.3	37.4	36.0	13.4	12.9	-	-	0.1	3.2	80.6	10.2	5.9	-	-	0.0	9.2	74.2	10.0	6.6	-	-	-
Total %	0.0	6.6	5.9	0.7	0.8	-	14.0	0.1	6.3	6.1	2.3	2.2	-	16.8	0.0	1.2	30.4	3.9	2.2	-	37.7	0.0	2.9	23.4	3.2	2.1	-	31.5	-
Lights	1	1602	1413	176	189	-	3381	14	1564	1463	536	538	-	4115	7	282	7692	956	557	-	9494	4	698	5898	768	483	-	7851	24841
% Lights	100.0	94.2	93.9	95.1	95.5	-	94.2	100.0	97.2	94.4	92.9	96.9	-	95.6	100.0	92.5	99.0	96.8	97.2	-	98.4	100.0	94.6	98.6	94.9	91.5	-	97.4	97.0
Buses	0	55	29	4	7	-	95	0	34	22	4	2	-	62	0	11	22	23	13	-	69	0	4	24	26	25	-	79	305
% Buses	0.0	3.2	1.9	2.2	3.5	-	2.6	0.0	2.1	1.4	0.7	0.4	-	1.4	0.0	3.6	0.3	2.3	2.3	-	0.7	0.0	0.5	0.4	3.2	4.7	-	1.0	1.2
Trucks	0	38	59	5	2	-	104	0	11	65	37	15	-	128	0	12	59	9	3	-	83	0	35	58	15	20	-	128	443
% Trucks	0.0	2.2	3.9	2.7	1.0	-	2.9	0.0	0.7	4.2	6.4	2.7	-	3.0	0.0	3.9	0.8	0.9	0.5	-	0.9	0.0	4.7	1.0	1.9	3.8	-	1.6	1.7
Bicycles on Road	0	6	4	0	0	-	10	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	1	1	0	0	-	2	12
% Bicycles on Road	0.0	0.4	0.3	0.0	0.0	-	0.3	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	5.3	-	-	-	-	-	-	18.8	-	-	-	-	-	-	0.0	-	-	-	-	-	-	28.6	-	-
Pedestrians	-	-	-	-	-	18	-	-	-	-	-	-	13	-	-	-	-	-	-	10	-	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	94.7	-	-	-	-	-	-	81.3	-	-	-	-	-	-	100.0	-	-	-	-	-	-	71.4	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Data Plot

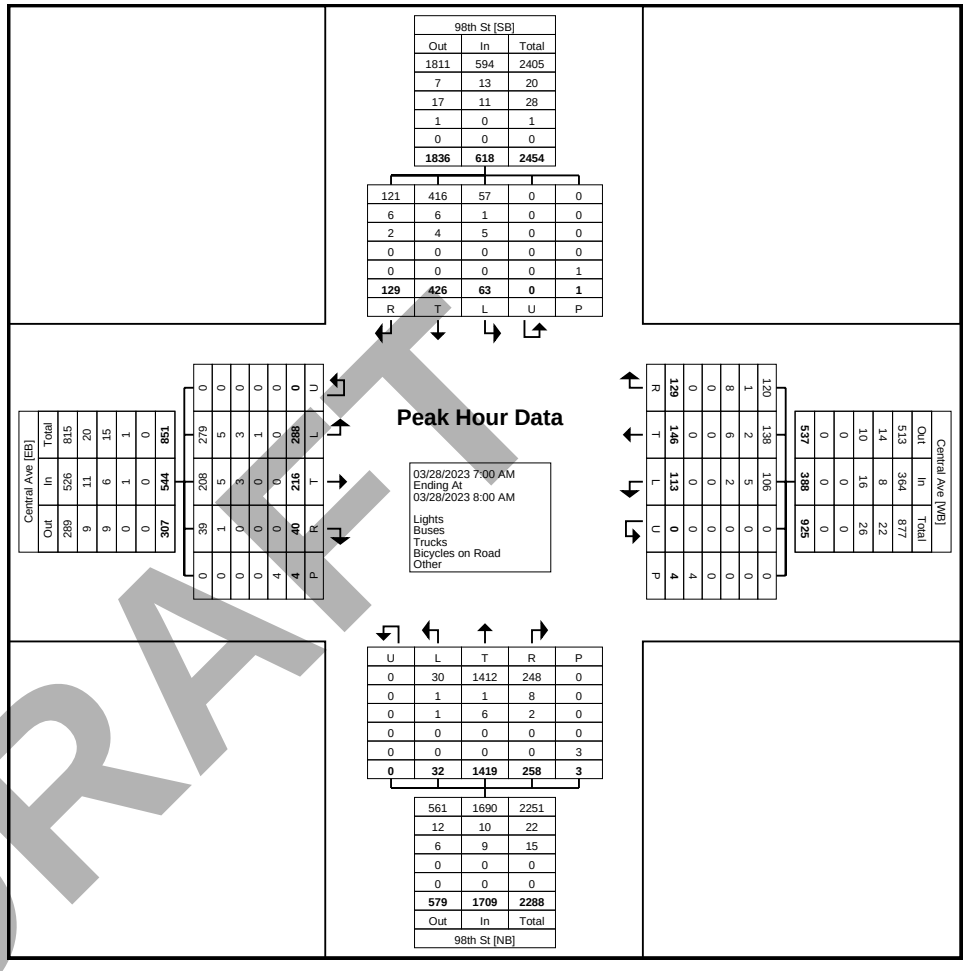
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Central Ave Eastbound							Central Ave Westbound							98th St Northbound							98th St Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
7:00 AM	0	78	53	10	3	3	144	0	15	30	15	12	1	72	0	8	359	26	28	3	421	0	16	75	17	10	0	118	755
7:15 AM	0	74	49	3	7	1	133	0	38	43	19	12	2	112	0	13	360	36	31	0	440	0	13	115	14	20	0	162	847
7:30 AM	0	68	66	3	7	0	144	0	28	45	25	17	0	115	0	5	360	29	38	0	432	0	19	109	15	19	0	162	853
7:45 AM	0	68	48	1	6	0	123	0	32	28	17	12	1	89	0	6	340	33	37	0	416	0	15	127	15	19	1	176	804
Total	0	288	216	17	23	4	544	0	113	146	76	53	4	388	0	32	1419	124	134	3	1709	0	63	426	61	68	1	618	3259
Approach %	0.0	52.9	39.7	3.1	4.2	-	-	0.0	29.1	37.6	19.6	13.7	-	-	0.0	1.9	83.0	7.3	7.8	-	-	0.0	10.2	68.9	9.9	11.0	-	-	-
Total %	0.0	8.8	6.6	0.5	0.7	-	16.7	0.0	3.5	4.5	2.3	1.6	-	11.9	0.0	1.0	43.5	3.8	4.1	-	52.4	0.0	1.9	13.1	1.9	2.1	-	19.0	-
PHF	0.000	0.923	0.818	0.425	0.821	-	0.944	0.000	0.743	0.811	0.760	0.779	-	0.843	0.000	0.615	0.985	0.861	0.882	-	0.971	0.000	0.829	0.839	0.897	0.850	-	0.878	0.955
Lights	0	279	208	17	22	-	526	0	106	138	69	51	-	364	0	30	1412	119	129	-	1690	0	57	416	59	62	-	594	3174
% Lights	-	96.9	96.3	100.0	95.7	-	96.7	-	93.8	94.5	90.8	96.2	-	93.8	-	93.8	99.5	96.0	96.3	-	98.9	-	90.5	97.7	96.7	91.2	-	96.1	97.4
Buses	0	5	5	0	1	-	11	0	5	2	1	0	-	8	0	1	1	3	5	-	10	0	1	6	2	4	-	13	42
% Buses	-	1.7	2.3	0.0	4.3	-	2.0	-	4.4	1.4	1.3	0.0	-	2.1	-	3.1	0.1	2.4	3.7	-	0.6	-	1.6	1.4	3.3	5.9	-	2.1	1.3
Trucks	0	3	3	0	0	-	6	0	2	6	6	2	-	16	0	1	6	2	0	-	9	0	5	4	0	2	-	11	42
% Trucks	-	1.0	1.4	0.0	0.0	-	1.1	-	1.8	4.1	7.9	3.8	-	4.1	-	3.1	0.4	1.6	0.0	-	0.5	-	7.9	0.9	0.0	2.9	-	1.8	1.3
Bicycles on Road	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.3	0.0	0.0	0.0	-	0.2	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	25.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	75.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (7:00 AM)

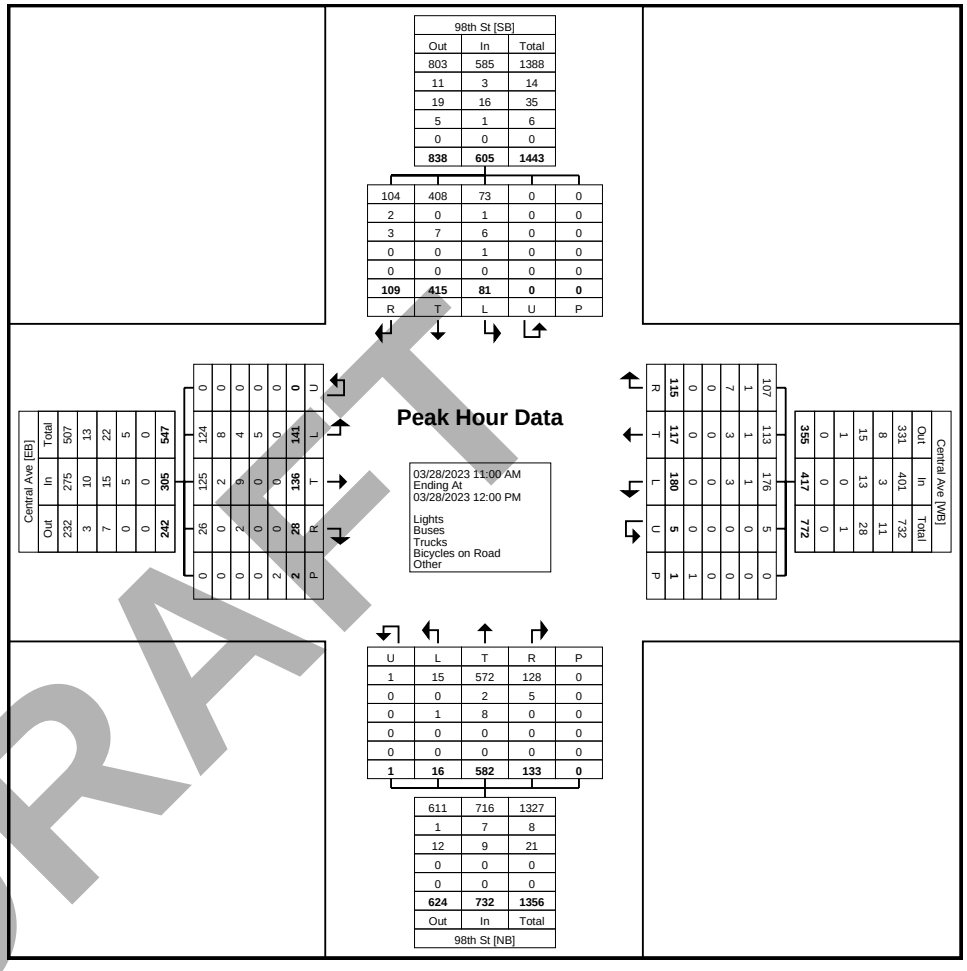
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Central Ave Eastbound							Central Ave Westbound							98th St Northbound							98th St Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
11:00 AM	0	37	33	3	3	1	76	1	36	34	12	16	0	99	0	1	137	18	15	0	171	0	23	85	18	12	0	138	484
11:15 AM	0	27	32	5	3	0	67	2	47	32	7	14	0	102	1	4	161	17	11	0	194	0	11	118	14	8	0	151	514
11:30 AM	0	32	32	6	3	1	73	2	53	26	18	21	0	120	0	5	148	24	8	0	185	0	24	106	15	10	0	155	533
11:45 AM	0	45	39	3	2	0	89	0	44	25	14	13	1	96	0	6	136	25	15	0	182	0	23	106	18	14	0	161	528
Total	0	141	136	17	11	2	305	5	180	117	51	64	1	417	1	16	582	84	49	0	732	0	81	415	65	44	0	605	2059
Approach %	0.0	46.2	44.6	5.6	3.6	-	-	1.2	43.2	28.1	12.2	15.3	-	-	0.1	2.2	79.5	11.5	6.7	-	-	0.0	13.4	68.6	10.7	7.3	-	-	-
Total %	0.0	6.8	6.6	0.8	0.5	-	14.8	0.2	8.7	5.7	2.5	3.1	-	20.3	0.0	0.8	28.3	4.1	2.4	-	35.6	0.0	3.9	20.2	3.2	2.1	-	29.4	-
PHF	0.000	0.783	0.872	0.708	0.917	-	0.857	0.625	0.849	0.860	0.708	0.762	-	0.869	0.250	0.667	0.904	0.840	0.817	-	0.943	0.000	0.844	0.879	0.903	0.786	-	0.939	0.966
Lights	0	124	125	16	10	-	275	5	176	113	45	62	-	401	1	15	572	80	48	-	716	0	73	408	62	42	-	585	1977
% Lights	-	87.9	91.9	94.1	90.9	-	90.2	100.0	97.8	96.6	88.2	96.9	-	96.2	100.0	93.8	98.3	95.2	98.0	-	97.8	-	90.1	98.3	95.4	95.5	-	96.7	96.0
Buses	0	8	2	0	0	-	10	0	1	1	0	1	-	3	0	0	2	4	1	-	7	0	1	0	1	1	-	3	23
% Buses	-	5.7	1.5	0.0	0.0	-	3.3	0.0	0.6	0.9	0.0	1.6	-	0.7	0.0	0.0	0.3	4.8	2.0	-	1.0	-	1.2	0.0	1.5	2.3	-	0.5	1.1
Trucks	0	4	9	1	1	-	15	0	3	3	6	1	-	13	0	1	8	0	0	-	9	0	6	7	2	1	-	16	53
% Trucks	-	2.8	6.6	5.9	9.1	-	4.9	0.0	1.7	2.6	11.8	1.6	-	3.1	0.0	6.3	1.4	0.0	0.0	-	1.2	-	7.4	1.7	3.1	2.3	-	2.6	2.6
Bicycles on Road	0	5	0	0	0	-	5	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	1	0	0	0	-	1	6
% Bicycles on Road	-	3.5	0.0	0.0	0.0	-	1.6	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	-	1.2	0.0	0.0	0.0	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (11:00 AM)

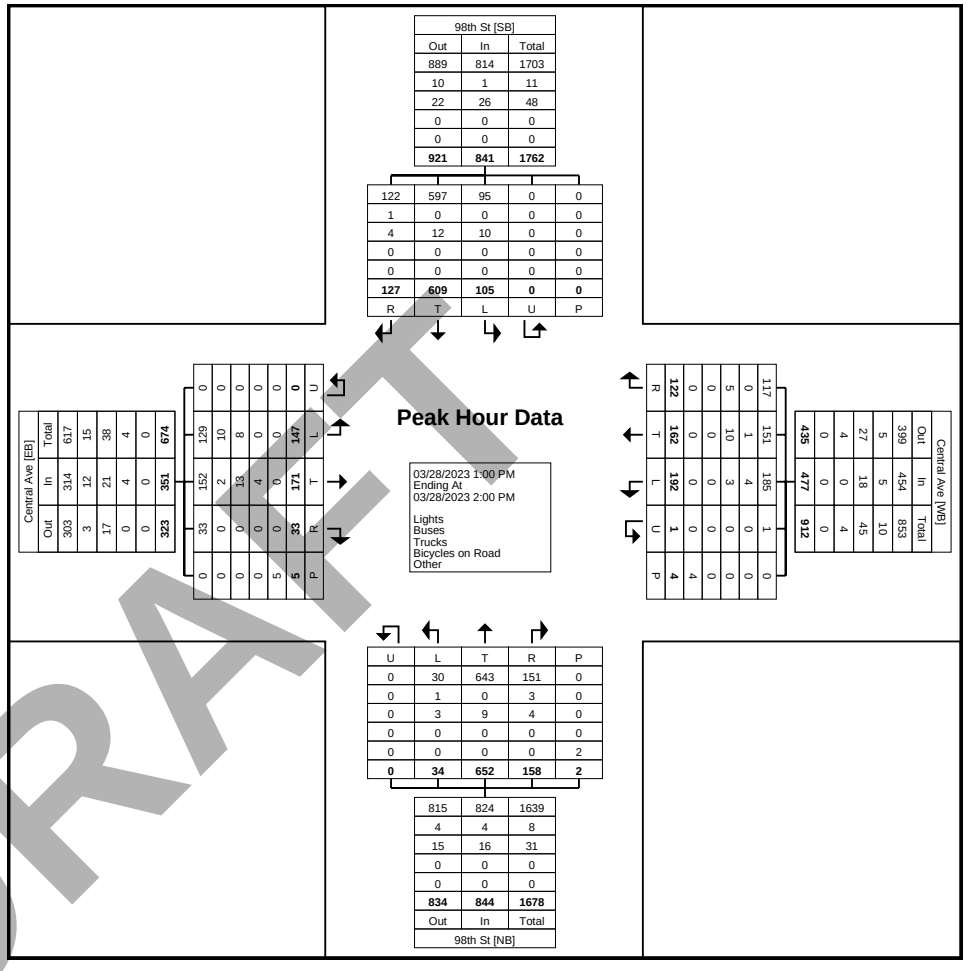
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (1:00 PM)

Start Time	Central Ave Eastbound							Central Ave Westbound							98th St Northbound							98th St Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
1:00 PM	0	39	34	2	7	2	82	0	50	37	14	17	0	118	0	7	141	22	20	0	190	0	28	153	21	17	0	219	609
1:15 PM	0	36	42	3	5	3	86	1	53	45	16	15	0	130	0	9	161	32	15	2	217	0	36	149	12	15	0	212	645
1:30 PM	0	42	51	2	2	0	97	0	44	40	17	17	0	118	0	10	176	22	13	0	221	0	21	141	17	18	0	197	633
1:45 PM	0	30	44	8	4	0	86	0	45	40	11	15	4	111	0	8	174	23	11	0	216	0	20	166	17	10	0	213	626
Total	0	147	171	15	18	5	351	1	192	162	58	64	4	477	0	34	652	99	59	2	844	0	105	609	67	60	0	841	2513
Approach %	0.0	41.9	48.7	4.3	5.1	-	-	0.2	40.3	34.0	12.2	13.4	-	-	0.0	4.0	77.3	11.7	7.0	-	-	0.0	12.5	72.4	8.0	7.1	-	-	-
Total %	0.0	5.8	6.8	0.6	0.7	-	14.0	0.0	7.6	6.4	2.3	2.5	-	19.0	0.0	1.4	25.9	3.9	2.3	-	33.6	0.0	4.2	24.2	2.7	2.4	-	33.5	-
PHF	0.000	0.875	0.838	0.469	0.643	-	0.905	0.250	0.906	0.900	0.853	0.941	-	0.917	0.000	0.850	0.926	0.773	0.738	-	0.955	0.000	0.729	0.917	0.798	0.833	-	0.960	0.974
Lights	0	129	152	15	18	-	314	1	185	151	54	63	-	454	0	30	643	94	57	-	824	0	95	597	66	56	-	814	2406
% Lights	-	87.8	88.9	100.0	100.0	-	89.5	100.0	96.4	93.2	93.1	98.4	-	95.2	-	88.2	98.6	94.9	96.6	-	97.6	-	90.5	98.0	98.5	93.3	-	96.8	95.7
Buses	0	10	2	0	0	-	12	0	4	1	0	0	-	5	0	1	0	2	1	-	4	0	0	0	0	1	-	1	22
% Buses	-	6.8	1.2	0.0	0.0	-	3.4	0.0	2.1	0.6	0.0	0.0	-	1.0	-	2.9	0.0	2.0	1.7	-	0.5	-	0.0	0.0	0.0	1.7	-	0.1	0.9
Trucks	0	8	13	0	0	-	21	0	3	10	4	1	-	18	0	3	9	3	1	-	16	0	10	12	1	3	-	26	81
% Trucks	-	5.4	7.6	0.0	0.0	-	6.0	0.0	1.6	6.2	6.9	1.6	-	3.8	-	8.8	1.4	3.0	1.7	-	1.9	-	9.5	2.0	1.5	5.0	-	3.1	3.2
Bicycles on Road	0	0	4	0	0	-	4	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	4
% Bicycles on Road	-	0.0	2.3	0.0	0.0	-	1.1	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	25.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	5	-	-	-	-	-	-	3	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	75.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (1:00 PM)

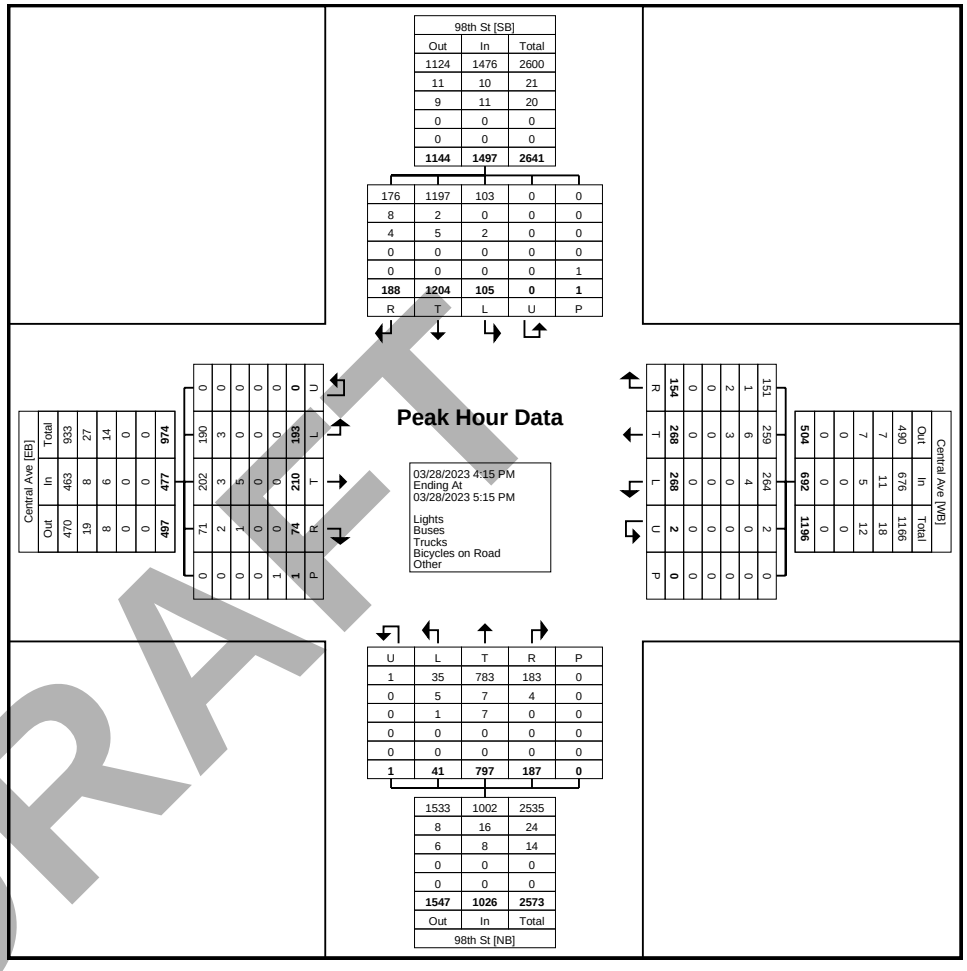
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Central Ave Eastbound							Central Ave Westbound							98th St Northbound							98th St Southbound							
	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
4:15 PM	0	43	66	11	9	0	129	0	71	64	14	14	0	163	0	12	224	28	21	0	285	0	26	265	32	18	0	341	918
4:30 PM	0	52	48	7	12	0	119	0	80	82	22	17	0	201	1	13	197	32	20	0	263	0	28	294	22	20	0	364	947
4:45 PM	0	45	45	5	13	1	108	1	61	60	14	27	0	163	0	9	199	33	11	0	252	0	23	322	34	13	1	392	915
5:00 PM	0	53	51	11	6	0	121	1	56	62	25	21	0	165	0	7	177	24	18	0	226	0	28	323	40	9	0	400	912
Total	0	193	210	34	40	1	477	2	268	268	75	79	0	692	1	41	797	117	70	0	1026	0	105	1204	128	60	1	1497	3692
Approach %	0.0	40.5	44.0	7.1	8.4	-	-	0.3	38.7	38.7	10.8	11.4	-	-	0.1	4.0	77.7	11.4	6.8	-	-	0.0	7.0	80.4	8.6	4.0	-	-	-
Total %	0.0	5.2	5.7	0.9	1.1	-	12.9	0.1	7.3	7.3	2.0	2.1	-	18.7	0.0	1.1	21.6	3.2	1.9	-	27.8	0.0	2.8	32.6	3.5	1.6	-	40.5	-
PHF	0.000	0.910	0.795	0.773	0.769	-	0.924	0.500	0.838	0.817	0.750	0.731	-	0.861	0.250	0.788	0.890	0.886	0.833	-	0.900	0.000	0.938	0.932	0.800	0.750	-	0.936	0.975
Lights	0	190	202	32	39	-	463	2	264	259	72	79	-	676	1	35	783	115	68	-	1002	0	103	1197	121	55	-	1476	3617
% Lights	-	98.4	96.2	94.1	97.5	-	97.1	100.0	98.5	96.6	96.0	100.0	-	97.7	100.0	85.4	98.2	98.3	97.1	-	97.7	-	98.1	99.4	94.5	91.7	-	98.6	98.0
Buses	0	3	3	1	1	-	8	0	4	6	1	0	-	11	0	5	7	2	2	-	16	0	0	2	4	4	-	10	45
% Buses	-	1.6	1.4	2.9	2.5	-	1.7	0.0	1.5	2.2	1.3	0.0	-	1.6	0.0	12.2	0.9	1.7	2.9	-	1.6	-	0.0	0.2	3.1	6.7	-	0.7	1.2
Trucks	0	0	5	1	0	-	6	0	0	3	2	0	-	5	0	1	7	0	0	-	8	0	2	5	3	1	-	11	30
% Trucks	-	0.0	2.4	2.9	0.0	-	1.3	0.0	0.0	1.1	2.7	0.0	-	0.7	0.0	2.4	0.9	0.0	0.0	-	0.8	-	1.9	0.4	2.3	1.7	-	0.7	0.8
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (4:15 PM)

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

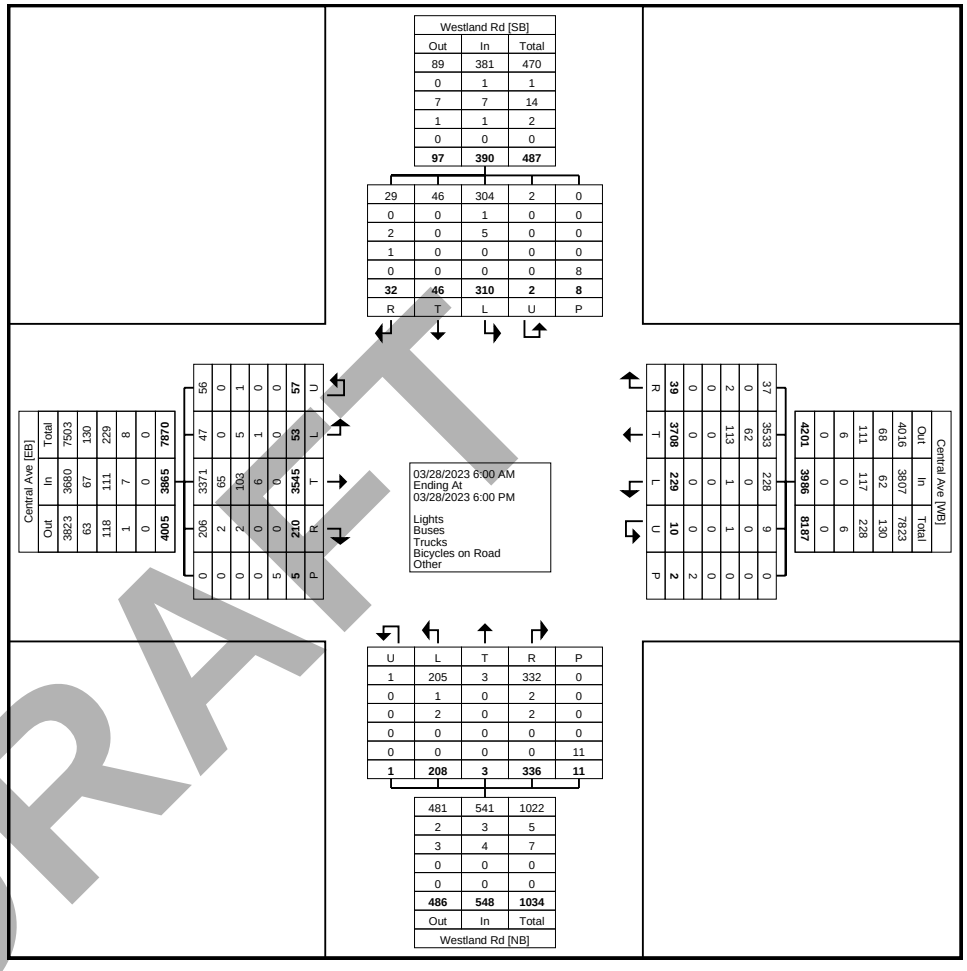
Turning Movement Data

Start Time	Central Ave Eastbound						Central Ave Westbound						Westland Rd Northbound						Westland Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
6:00 AM	0	0	55	2	0	57	0	1	38	0	0	39	0	6	0	6	0	12	0	1	0	0	0	1	109
6:15 AM	0	0	54	0	0	54	1	2	37	0	0	40	0	7	0	7	0	14	0	3	0	0	0	3	111
6:30 AM	1	1	77	1	0	80	0	2	57	2	0	61	0	8	0	17	0	25	0	1	0	0	0	1	167
6:45 AM	3	2	114	5	0	124	0	3	52	0	0	55	0	8	0	8	1	16	0	4	1	0	0	5	200
Hourly Total	4	3	300	8	0	315	1	8	184	2	0	195	0	29	0	38	1	67	0	9	1	0	0	10	587
7:00 AM	0	0	121	3	0	124	0	2	64	0	0	66	0	9	0	16	0	25	0	2	2	0	2	4	219
7:15 AM	2	0	124	5	1	131	0	2	98	0	0	100	0	10	0	29	1	39	0	1	0	1	0	2	272
7:30 AM	3	0	139	8	0	150	0	9	94	0	0	103	0	15	0	13	0	28	0	7	1	0	0	8	289
7:45 AM	2	1	139	7	0	149	0	8	82	0	0	90	0	9	0	20	0	29	0	5	0	0	0	5	273
Hourly Total	7	1	523	23	1	554	0	21	338	0	0	359	0	43	0	78	1	121	0	15	3	1	2	19	1053
8:00 AM	2	2	99	2	0	105	0	5	68	0	0	73	0	6	0	14	0	20	0	3	0	1	0	4	202
8:15 AM	1	1	84	3	0	89	0	8	93	2	0	103	0	5	0	11	0	16	0	2	0	0	0	2	210
8:30 AM	0	0	87	4	0	91	0	5	81	1	0	87	0	3	0	4	0	7	0	4	1	1	0	6	191
8:45 AM	1	1	100	4	0	106	2	7	61	1	0	71	0	8	0	11	0	19	0	6	0	1	1	7	203
Hourly Total	4	4	370	13	0	391	2	25	303	4	0	334	0	22	0	40	0	62	0	15	1	3	1	19	806
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	2	93	5	0	100	1	4	87	1	0	93	0	2	0	3	0	5	0	8	2	1	0	11	209
11:15 AM	2	2	60	3	1	67	0	5	84	4	0	93	0	5	0	8	0	13	2	8	1	0	0	11	184
11:30 AM	0	3	83	1	0	87	0	5	114	0	0	119	0	3	0	5	0	8	0	8	4	2	0	14	228
11:45 AM	3	3	99	2	0	107	2	1	77	0	0	80	0	4	1	2	0	7	0	11	0	3	0	14	208
Hourly Total	5	10	335	11	1	361	3	15	362	5	0	385	0	14	1	18	0	33	2	35	7	6	0	50	829
12:00 PM	4	0	83	6	0	93	1	2	97	1	0	101	0	1	0	4	2	5	0	11	0	0	1	11	210
12:15 PM	1	1	79	3	1	84	0	6	95	1	0	102	0	6	0	2	0	8	0	8	0	1	0	9	203
12:30 PM	3	1	90	5	0	99	0	7	124	1	0	132	0	6	0	3	1	9	0	10	0	2	0	12	252
12:45 PM	3	4	89	10	0	106	0	4	107	2	0	113	0	5	0	11	0	16	0	14	1	1	0	16	251
Hourly Total	11	6	341	24	1	382	1	19	423	5	0	448	0	18	0	20	3	38	0	43	1	4	1	48	916
1:00 PM	1	2	95	10	0	108	0	4	107	4	0	115	0	2	0	6	1	8	0	6	1	1	0	8	239
1:15 PM	0	0	112	5	0	117	0	2	108	2	0	112	0	3	1	6	0	10	0	9	0	2	0	11	250
1:30 PM	1	5	114	2	0	122	0	7	106	1	2	114	0	7	0	7	2	14	0	11	1	2	0	14	264
1:45 PM	0	4	86	6	1	96	1	5	98	2	0	106	0	6	0	10	0	16	0	11	0	1	0	12	230
Hourly Total	2	11	407	23	1	443	1	18	419	9	2	447	0	18	1	29	3	48	0	37	2	6	0	45	983
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	2	5	113	8	0	128	1	9	140	0	0	150	1	6	0	9	1	16	0	10	4	3	0	17	311
3:15 PM	3	3	111	5	0	122	0	11	126	2	0	139	0	6	0	5	0	11	0	18	5	0	1	23	295
3:30 PM	0	1	92	8	0	101	0	9	135	0	0	144	0	7	0	11	1	18	0	8	1	1	0	10	273

3:45 PM	0	1	98	5	0	104	0	12	138	1	0	151	0	5	1	9	0	15	0	11	4	0	0	15	285
Hourly Total	5	10	414	26	0	455	1	41	539	3	0	584	1	24	1	34	2	60	0	47	14	4	1	65	1164
4:00 PM	5	0	102	10	0	117	0	10	143	2	0	155	0	2	0	9	0	11	0	12	2	3	0	17	300
4:15 PM	2	3	121	11	0	137	0	11	131	3	0	145	0	2	0	13	0	15	0	16	0	1	0	17	314
4:30 PM	1	0	117	10	0	128	0	12	159	0	0	171	0	5	0	7	1	12	0	11	4	1	0	16	327
4:45 PM	1	1	109	11	0	122	1	8	133	2	0	144	0	7	0	8	0	15	0	9	0	0	0	9	290
Hourly Total	9	4	449	42	0	504	1	41	566	7	0	615	0	16	0	37	1	53	0	48	6	5	0	59	1231
5:00 PM	3	0	110	13	0	126	0	10	142	3	0	155	0	5	0	9	0	14	0	13	2	0	1	15	310
5:15 PM	4	3	89	12	0	108	0	13	130	0	0	143	0	7	0	11	0	18	0	15	2	2	0	19	288
5:30 PM	3	1	115	10	1	129	0	11	149	0	0	160	0	5	0	6	0	11	0	19	2	1	1	22	322
5:45 PM	0	0	92	5	0	97	0	7	153	1	0	161	0	7	0	16	0	23	0	14	5	0	1	19	300
Hourly Total	10	4	406	40	1	460	0	41	574	4	0	619	0	24	0	42	0	66	0	61	11	3	3	75	1220
Grand Total	57	53	3545	210	5	3865	10	229	3708	39	2	3986	1	208	3	336	11	548	2	310	46	32	8	390	8789
Approach %	1.5	1.4	91.7	5.4	-	-	0.3	5.7	93.0	1.0	-	-	0.2	38.0	0.5	61.3	-	-	0.5	79.5	11.8	8.2	-	-	-
Total %	0.6	0.6	40.3	2.4	-	44.0	0.1	2.6	42.2	0.4	-	45.4	0.0	2.4	0.0	3.8	-	6.2	0.0	3.5	0.5	0.4	-	4.4	-
Lights	56	47	3371	206	-	3680	9	228	3533	37	-	3807	1	205	3	332	-	541	2	304	46	29	-	381	8409
% Lights	98.2	88.7	95.1	98.1	-	95.2	90.0	99.6	95.3	94.9	-	95.5	100.0	98.6	100.0	98.8	-	98.7	100.0	98.1	100.0	90.6	-	97.7	95.7
Buses	0	0	65	2	-	67	0	0	62	0	-	62	0	1	0	2	-	3	0	1	0	0	-	1	133
% Buses	0.0	0.0	1.8	1.0	-	1.7	0.0	0.0	1.7	0.0	-	1.6	0.0	0.5	0.0	0.6	-	0.5	0.0	0.3	0.0	0.0	-	0.3	1.5
Trucks	1	5	103	2	-	111	1	1	113	2	-	117	0	2	0	2	-	4	0	5	0	2	-	7	239
% Trucks	1.8	9.4	2.9	1.0	-	2.9	10.0	0.4	3.0	5.1	-	2.9	0.0	1.0	0.0	0.6	-	0.7	0.0	1.6	0.0	6.3	-	1.8	2.7
Bicycles on Road	0	1	6	0	-	7	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	1	-	1	8
% Bicycles on Road	0.0	1.9	0.2	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	3.1	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	11	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	87.5	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023



Turning Movement Data Plot

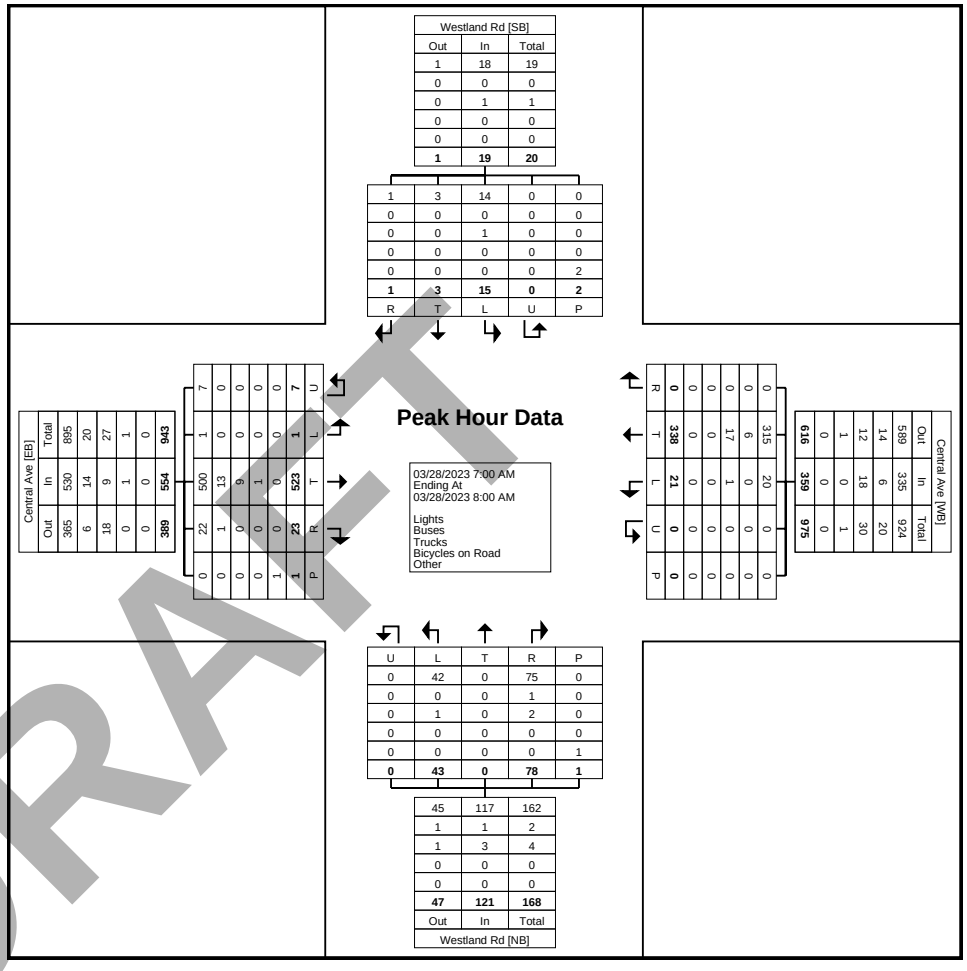
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Central Ave Eastbound						Central Ave Westbound						Westland Rd Northbound						Westland Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	0	121	3	0	124	0	2	64	0	0	66	0	9	0	16	0	25	0	2	2	0	2	4	219
7:15 AM	2	0	124	5	1	131	0	2	98	0	0	100	0	10	0	29	1	39	0	1	0	1	0	2	272
7:30 AM	3	0	139	8	0	150	0	9	94	0	0	103	0	15	0	13	0	28	0	7	1	0	0	8	289
7:45 AM	2	1	139	7	0	149	0	8	82	0	0	90	0	9	0	20	0	29	0	5	0	0	0	5	273
Total	7	1	523	23	1	554	0	21	338	0	0	359	0	43	0	78	1	121	0	15	3	1	2	19	1053
Approach %	1.3	0.2	94.4	4.2	-	-	0.0	5.8	94.2	0.0	-	-	0.0	35.5	0.0	64.5	-	-	0.0	78.9	15.8	5.3	-	-	-
Total %	0.7	0.1	49.7	2.2	-	52.6	0.0	2.0	32.1	0.0	-	34.1	0.0	4.1	0.0	7.4	-	11.5	0.0	1.4	0.3	0.1	-	1.8	-
PHF	0.583	0.250	0.941	0.719	-	0.923	0.000	0.583	0.862	0.000	-	0.871	0.000	0.717	0.000	0.672	-	0.776	0.000	0.536	0.375	0.250	-	0.594	0.911
Lights	7	1	500	22	-	530	0	20	315	0	-	335	0	42	0	75	-	117	0	14	3	1	-	18	1000
% Lights	100.0	100.0	95.6	95.7	-	95.7	-	95.2	93.2	-	-	93.3	-	97.7	-	96.2	-	96.7	-	93.3	100.0	100.0	-	94.7	95.0
Buses	0	0	13	1	-	14	0	0	6	0	-	6	0	0	0	1	-	1	0	0	0	0	-	0	21
% Buses	0.0	0.0	2.5	4.3	-	2.5	-	0.0	1.8	-	-	1.7	-	0.0	-	1.3	-	0.8	-	0.0	0.0	0.0	-	0.0	2.0
Trucks	0	0	9	0	-	9	0	1	17	0	-	18	0	1	0	2	-	3	0	1	0	0	-	1	31
% Trucks	0.0	0.0	1.7	0.0	-	1.6	-	4.8	5.0	-	-	5.0	-	2.3	-	2.6	-	2.5	-	6.7	0.0	0.0	-	5.3	2.9
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.2	0.0	-	0.2	-	0.0	0.0	-	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (7:00 AM)

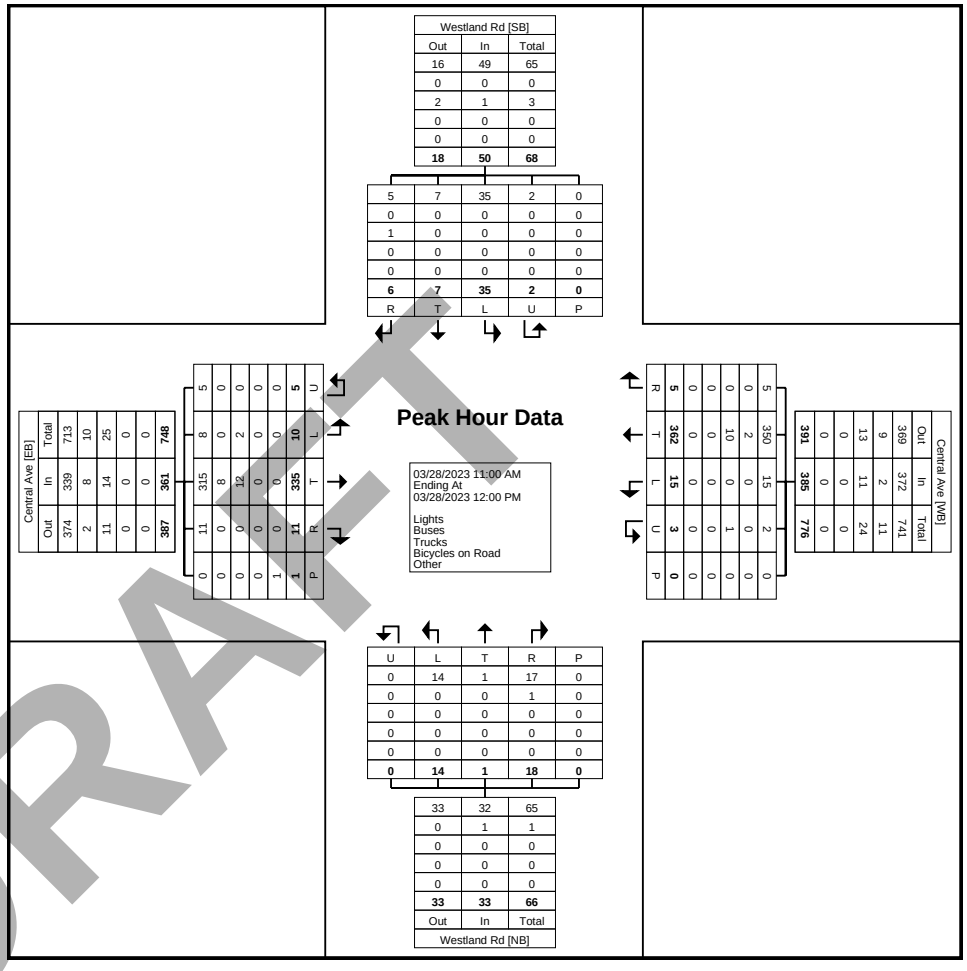
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Central Ave Eastbound						Central Ave Westbound						Westland Rd Northbound						Westland Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	2	93	5	0	100	1	4	87	1	0	93	0	2	0	3	0	5	0	8	2	1	0	11	209
11:15 AM	2	2	60	3	1	67	0	5	84	4	0	93	0	5	0	8	0	13	2	8	1	0	0	11	184
11:30 AM	0	3	83	1	0	87	0	5	114	0	0	119	0	3	0	5	0	8	0	8	4	2	0	14	228
11:45 AM	3	3	99	2	0	107	2	1	77	0	0	80	0	4	1	2	0	7	0	11	0	3	0	14	208
Total	5	10	335	11	1	361	3	15	362	5	0	385	0	14	1	18	0	33	2	35	7	6	0	50	829
Approach %	1.4	2.8	92.8	3.0	-	-	0.8	3.9	94.0	1.3	-	-	0.0	42.4	3.0	54.5	-	-	4.0	70.0	14.0	12.0	-	-	-
Total %	0.6	1.2	40.4	1.3	-	43.5	0.4	1.8	43.7	0.6	-	46.4	0.0	1.7	0.1	2.2	-	4.0	0.2	4.2	0.8	0.7	-	6.0	-
PHF	0.417	0.833	0.846	0.550	-	0.843	0.375	0.750	0.794	0.313	-	0.809	0.000	0.700	0.250	0.563	-	0.635	0.250	0.795	0.438	0.500	-	0.893	0.909
Lights	5	8	315	11	-	339	2	15	350	5	-	372	0	14	1	17	-	32	2	35	7	5	-	49	792
% Lights	100.0	80.0	94.0	100.0	-	93.9	66.7	100.0	96.7	100.0	-	96.6	-	100.0	100.0	94.4	-	97.0	100.0	100.0	100.0	83.3	-	98.0	95.5
Buses	0	0	8	0	-	8	0	0	2	0	-	2	0	0	0	1	-	1	0	0	0	0	-	0	11
% Buses	0.0	0.0	2.4	0.0	-	2.2	0.0	0.0	0.6	0.0	-	0.5	-	0.0	0.0	5.6	-	3.0	0.0	0.0	0.0	0.0	-	0.0	1.3
Trucks	0	2	12	0	-	14	1	0	10	0	-	11	0	0	0	0	-	0	0	0	0	1	-	1	26
% Trucks	0.0	20.0	3.6	0.0	-	3.9	33.3	0.0	2.8	0.0	-	2.9	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	16.7	-	2.0	3.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (11:00 AM)

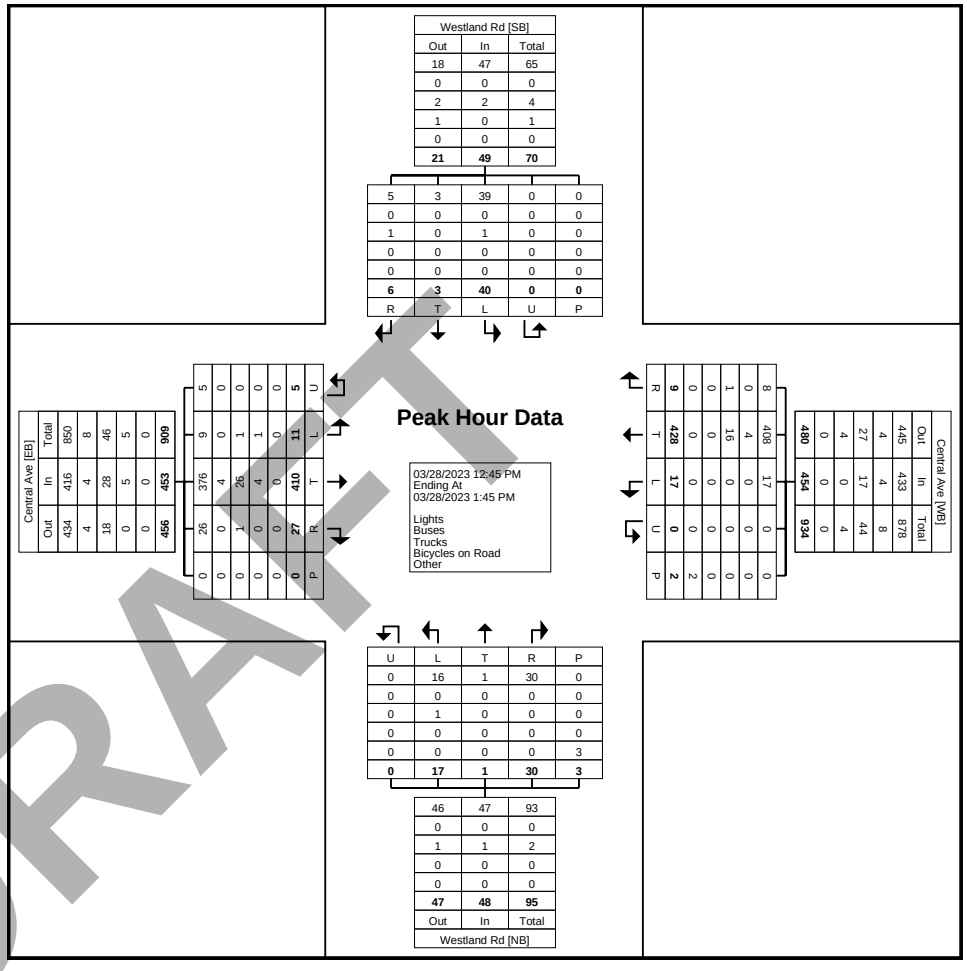
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (12:45 PM)

Start Time	Central Ave Eastbound						Central Ave Westbound						Westland Rd Northbound						Westland Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
12:45 PM	3	4	89	10	0	106	0	4	107	2	0	113	0	5	0	11	0	16	0	14	1	1	0	16	251
1:00 PM	1	2	95	10	0	108	0	4	107	4	0	115	0	2	0	6	1	8	0	6	1	1	0	8	239
1:15 PM	0	0	112	5	0	117	0	2	108	2	0	112	0	3	1	6	0	10	0	9	0	2	0	11	250
1:30 PM	1	5	114	2	0	122	0	7	106	1	2	114	0	7	0	7	2	14	0	11	1	2	0	14	264
Total	5	11	410	27	0	453	0	17	428	9	2	454	0	17	1	30	3	48	0	40	3	6	0	49	1004
Approach %	1.1	2.4	90.5	6.0	-	-	0.0	3.7	94.3	2.0	-	-	0.0	35.4	2.1	62.5	-	-	0.0	81.6	6.1	12.2	-	-	-
Total %	0.5	1.1	40.8	2.7	-	45.1	0.0	1.7	42.6	0.9	-	45.2	0.0	1.7	0.1	3.0	-	4.8	0.0	4.0	0.3	0.6	-	4.9	-
PHF	0.417	0.550	0.899	0.675	-	0.928	0.000	0.607	0.991	0.563	-	0.987	0.000	0.607	0.250	0.682	-	0.750	0.000	0.714	0.750	0.750	-	0.766	0.951
Lights	5	9	376	26	-	416	0	17	408	8	-	433	0	16	1	30	-	47	0	39	3	5	-	47	943
% Lights	100.0	81.8	91.7	96.3	-	91.8	-	100.0	95.3	88.9	-	95.4	-	94.1	100.0	100.0	-	97.9	-	97.5	100.0	83.3	-	95.9	93.9
Buses	0	0	4	0	-	4	0	0	4	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	8
% Buses	0.0	0.0	1.0	0.0	-	0.9	-	0.0	0.9	0.0	-	0.9	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.8
Trucks	0	1	26	1	-	28	0	0	16	1	-	17	0	1	0	0	-	1	0	1	0	1	-	2	48
% Trucks	0.0	9.1	6.3	3.7	-	6.2	-	0.0	3.7	11.1	-	3.7	-	5.9	0.0	0.0	-	2.1	-	2.5	0.0	16.7	-	4.1	4.8
Bicycles on Road	0	1	4	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	5
% Bicycles on Road	0.0	9.1	1.0	0.0	-	1.1	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (12:45 PM)

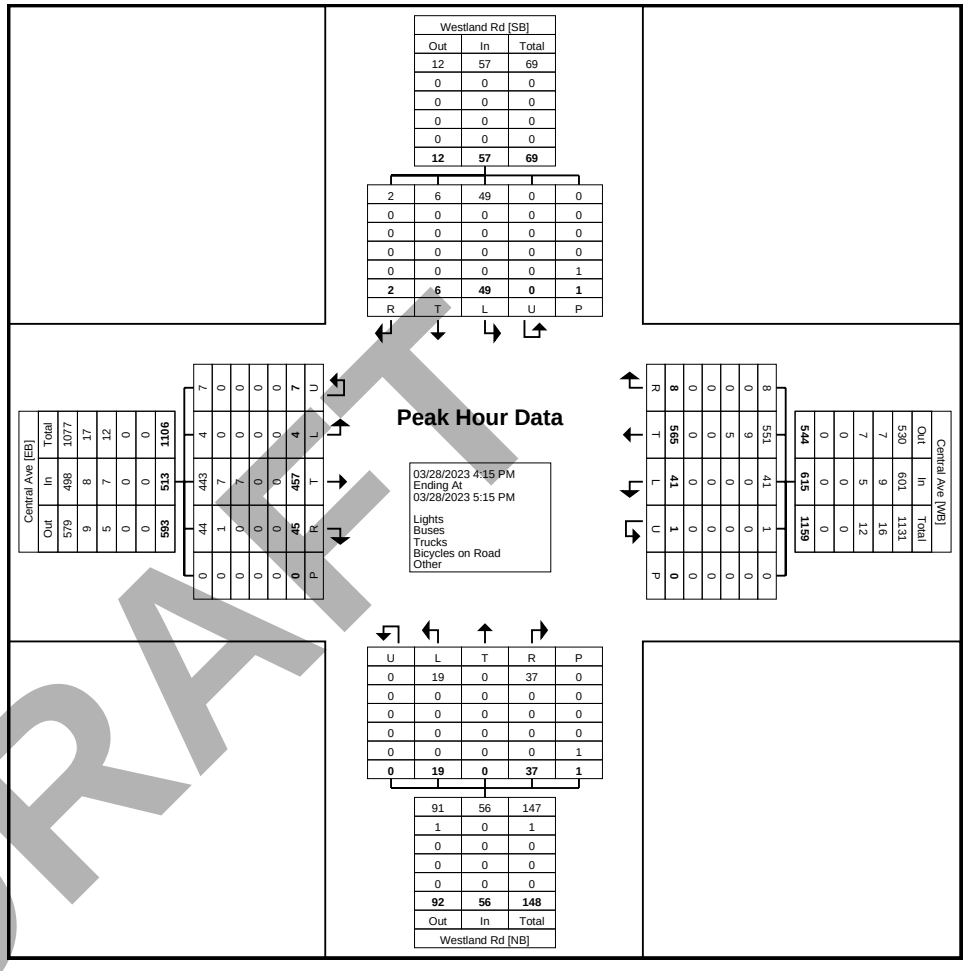
Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com

Count Name: NM309.04 Central 98th Fast Food TIS
Site Code:
Start Date: 03/28/2023

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Central Ave Eastbound						Central Ave Westbound						Westland Rd Northbound						Westland Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:15 PM	2	3	121	11	0	137	0	11	131	3	0	145	0	2	0	13	0	15	0	16	0	1	0	17	314
4:30 PM	1	0	117	10	0	128	0	12	159	0	0	171	0	5	0	7	1	12	0	11	4	1	0	16	327
4:45 PM	1	1	109	11	0	122	1	8	133	2	0	144	0	7	0	8	0	15	0	9	0	0	0	9	290
5:00 PM	3	0	110	13	0	126	0	10	142	3	0	155	0	5	0	9	0	14	0	13	2	0	1	15	310
Total	7	4	457	45	0	513	1	41	565	8	0	615	0	19	0	37	1	56	0	49	6	2	1	57	1241
Approach %	1.4	0.8	89.1	8.8	-	-	0.2	6.7	91.9	1.3	-	-	0.0	33.9	0.0	66.1	-	-	0.0	86.0	10.5	3.5	-	-	-
Total %	0.6	0.3	36.8	3.6	-	41.3	0.1	3.3	45.5	0.6	-	49.6	0.0	1.5	0.0	3.0	-	4.5	0.0	3.9	0.5	0.2	-	4.6	-
PHF	0.583	0.333	0.944	0.865	-	0.936	0.250	0.854	0.888	0.667	-	0.899	0.000	0.679	0.000	0.712	-	0.933	0.000	0.766	0.375	0.500	-	0.838	0.949
Lights	7	4	443	44	-	498	1	41	551	8	-	601	0	19	0	37	-	56	0	49	6	2	-	57	1212
% Lights	100.0	100.0	96.9	97.8	-	97.1	100.0	100.0	97.5	100.0	-	97.7	-	100.0	-	100.0	-	100.0	-	100.0	100.0	100.0	-	100.0	97.7
Buses	0	0	7	1	-	8	0	0	9	0	-	9	0	0	0	0	-	0	0	0	0	0	-	0	17
% Buses	0.0	0.0	1.5	2.2	-	1.6	0.0	0.0	1.6	0.0	-	1.5	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	1.4
Trucks	0	0	7	0	-	7	0	0	5	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	12
% Trucks	0.0	0.0	1.5	0.0	-	1.4	0.0	0.0	0.9	0.0	-	0.8	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	1.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 zbaiamonte@lee-eng.com



Turning Movement Peak Hour Data Plot (4:15 PM)

Appendix C: Signal Timing Sheets

Intersection No.:	369
Intersection Name:	CENTRAL - 98TH
Revision Date	3/21/2018

Centrac
1

Timing Data

Phase I.D.:	1	2	3	4	5	6	7	8
Phase Dir.:	W-S	EB	S-E	NB	E-N	WB	N-W	SB
Min Grn	3	16	3	16	3	16	3	16
Walk:	0	7	0	7	0	7	0	7
Ped Clr:	0	20	0	23	0	20	0	22
Veh Ext:	1.5	3.0	1.5	2.0	1.5	3.0	1.5	2.0
Veh Ext2:	1.5	3.0	1.5	2.0	1.5	3.0	1.5	2.0
Max 1:	18	28	16	42	16	28	16	42
Max 2:	28	24	16	48	25	24	16	48
Max 3:								
Yellow:	3.5	6.0	3.5	4.5	3.5	6.0	3.5	4.5
Red Clr	1.0	1.0	1.0	1.5	1.0	1.0	1.0	1.5

Recall Data

Locking Memory:								
Vehicle Recall:								
Ped Recall:								
Recall To Max:		X		X		X		X

Flash Mode:	ALL RED
Start Up Mode:	ALL RED
Time:	8 SEC.
First Phases:	4 & 8
Start In:	GREEN
Overlap Phases:	

Overlap	Par Ph	Grn	Yel	Red
A				
B				
C				
D				

NOTES:	
	1. Timings copied from controller, 12/27/89.
	2. At this time ther is no detection.
	3. Controller to P cab and Eagle EPAC 300 Controller, 3/14/89.
	4. Wiring problem with Ped Buttons repaired, 12/28/89.
	5. Added 1 sec. all red for both phases, 12/28/89, lowered phase 4 max green to 24 sec. ., 12/28/89.
	6. Revised clearance intervals, 12/28/90.
	7. Changed from a 2 phase to 4 phase intersection. Changed flash mode start up to

ALL RED, and start in green, 4/3/98.
8. Phases 3 and 7 were added due to upgrades on 98th from Central to Sage, 9/6/02.
9. Phases 1 and 5 were added in order to make intersection 8 phase, 11/5/02.
10. Timing sheet updated, MAX II time start at 6:30 - 8:30 am Phase 2 & 6 changed to to 24 sec.Phases 4 & 8 changed to 42 sec., 11/12/03.
11. TOD Step 1 start at 6:30 am MAX II 2,4,6,8. Step 2 start 8:45 am off Step 3 start at 3:00 pm MAX II 1,2,4,6,8 Step 4 start at 6:30 pm MAX II off 12/9/08.
12. Clearance intervals updated to NMDOT standard by BB, 10/3/13.
13. No longer need step 11. No TOD needed.
14. Timing sheet revised to new version of timing sheet, 8/29/16.
15. New Coordination Patterns implemented 10-2016, Lee Engineering.
16. New Day Plan and MAX2 implemented 12-27-2016, Lee Engineering.
17. Changed start up phases to North and South. 3/21/18 A.F.
18. Found typo. A.F. 9/14/20

ASC3 COORDINATION PLAN DATA

4/18/2023 11:39 AM

369 - Central Ave & 98th St

COORDINATOR OPTIONS (MM 3-1)

MANUAL PATTERN	AUTO	ECPI COORD	YES
SYSTEM SOURCE	SYS	SYSTEM FORMAT	PTN
SPLITS IN	PERCENT	OFFSET IN	PERCENT
TRANSITION	SMOOTH	MAX SELECT	MAXINH
DWELL/ADD TIME	0	ENABLE MAN SYNC	NO
DLY COORD WK-LZ	NO	FORCE OFF	FLOAT
OFFSET REF	LEAD	CAL USE PED TM	NO
PED RECALL	NO	PED RESERVE	YES
LOCAL ZERO OVRD	NO	FO ADD INI GRN	NO
RE-SYNC COUNT	0	MULTISYNC	NO

COORDINATION PATTERN 21 (MM 3-2)

USE SPLIT PATTERN	21	SPLIT SUM	100%
TS2 (PAT-OFF)	0-1		
CYCLE	130s	STD (COS)	111
OFFSET VAL	30%		
ACTUATED COORD	YES	TIMING PLAN	0
ACT WALK REST	NO	SEQUENCE	0
PHASE RESRVCE	NO	ACTION PLAN	0
MAX SELECT	MAX2	FORCE OFF	FLOAT

PHASE	1	2	3	4	5	6	7	8
DIRECTION	W-S	EB	S-E	NB	E-N	WB	N-W	SB
SPLITS	12	31	9	48	17	26	9	48
s	15.6	40.3	11.7	62.4	22.1	33.8	11.7	62.4

PHASE	1	2	3	4	5	6	7	8
COORD PHASE				X				X
VEH RECALL								
MAX RECALL		X		X		X		X

COORDINATION PATTERN 23

USE SPLIT PATTERN	23	SPLIT SUM	100%
TS2 (PAT-OFF)	0-3		
CYCLE	110s	STD (COS)	131
OFFSET VAL	22%		
ACTUATED COORD	YES	TIMING PLAN	0
ACT WALK REST	NO	SEQUENCE	0
PHASE RESRVCE	NO	ACTION PLAN	0

PHASE	1	2	3	4	5	6	7	8
DIRECTION	W-S	EB	S-E	NB	E-N	WB	N-W	SB
SPLITS	21	31	12	36	15	37	12	36
s	23.1	34.1	13.2	39.6	16.5	40.7	13.2	39.6

PHASE	1	2	3	4	5	6	7	8
COORD PHASE				X				X
VEH RECALL								
MAX RECALL		X		X		X		X

ASC3 COORDINATION PLAN DATA

4/18/2023 11:39 AM

COORDINATION PATTERN 25

USE SPLIT PATTERN	25	SPLIT SUM	100%
TS2 (PAT-OFF)	0-5		
CYCLE	110s	STD (COS)	151
OFFSET VAL	18%		
ACTUATED COORD	YES	TIMING PLAN	0
ACT WALK REST	NO	SEQUENCE	0
PHASE RESRVCE	NO	ACTION PLAN	0

PHASE	1	2	3	4	5	6	7	8
DIRECTION	W-S	EB	S-E	NB	E-N	WB	N-W	SB
SPLITS	18	31	12	39	18	31	12	39
s	19.8	34.1	13.2	42.9	19.8	34.1	13.2	42.9

PHASE	1	2	3	4	5	6	7	8
COORD PHASE				X				X
VEH RECALL								
MAX RECALL		X		X		X		X

CLOCK / CALENDAR DATA (MM 5-1)

CURRENT DATE	CURRENT DOW		CURRENT TOD
ENA ACTION PLAN	0		
SYNC REF TIME	03:30	SYNC REF	REF TIME
TIME FROM GMT	+00	DAY LIGHT SAVE	NO
TIME RESET INPUT SET TIME		3:30:00	

ACTION PLAN 21 (MM 5-2)

PATTERN	21	SYS OVERRIDE	NO
TIMING PLAN	0	SEQUENCE	0
VEHICLE DETECTOR PLAN	0.00	DET LOG	NONE
FLASH	--	RED REST	NO
VEH DET DIAG PLN	0	PED DET DIAG PLN	0
DIMMING ENABLE	NO		

ACTION PLAN 23

PATTERN	23	SYS OVERRIDE	NO
TIMING PLAN	0	SEQUENCE	0
VEHICLE DETECTOR PLAN	0.00	DET LOG	NONE
FLASH	--	RED REST	NO
VEH DET DIAG PLN	0	PED DET DIAG PLN	0
DIMMING ENABLE	NO		

ACTION PLAN 25

PATTERN	25	SYS OVERRIDE	NO
TIMING PLAN	0	SEQUENCE	0
VEHICLE DETECTOR PLAN	0.00	DET LOG	NONE
FLASH	--	RED REST	NO

ASC3 COORDINATION PLAN DATA

VEH DET DIAG PLN	0	PED DET DIAG PLN	0
DIMMING ENABLE	NO		

ACTION PLAN 100

PATTERN	254	SYS OVERRIDE	NO
TIMING PLAN	0	SEQUENCE	0
VEHICLE DETECTOR PLAN	0.00	DET LOG	NONE
FLASH	--	RED REST	NO
VEH DET DIAG PLN	0	PED DET DIAG PLN	0
DIMMING ENABLE	NO		

DAY PLAN/EVENT 1 (MM 5-3)

EVENT	ACTION PLAN	START TIME
1	23	10:00
2	100	19:00
3	0	00:00

DAY PLAN/EVENT 2

EVENT	ACTION PLAN	START TIME
1	21	6:00
2	23	9:00
3	25	14:30
4	23	19:00
5	100	22:00
6	0	00:00
7	0	00:00

DAY PLAN/EVENT 3

EVENT	ACTION PLAN	START TIME
1	23	8:00
2	100	21:00
3	0	00:00

SCHEDULE NUMBER 1 (MM 5-4)

SCHEDULE NUMBER	1	
DAY PLAN NO	1	CLEAR ALL FIELDS

SELECT ALL MONTHS DOW DOM

MONTH	J	F	M	A	M	J	J	A	S	O	N	D
	X	X	X	X	X	X	X	X	X	X	X	X

DAY(DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
	X	.	.	.	.	.	.

DAY(DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	13	14	15	16	17	18	19	20	21	22
	X	X	X	X	X	X	X	X	X	X	X
	23	24	25	26	27	28	29	30	31		
	X	X	X	X	X	X	X	X	X		

ASC3 COORDINATION PLAN DATA

4/18/2023 11:39 AM

SCHEDULE NUMBER 2

SCHEDULE NUMBER	2											
DAY PLAN NO	2	CLEAR ALL FIELDS										
SELECT ALL MONTHS					DOW		DOM					
MONTH	J	F	M	A	M	J	J	A	S	O	N	D
	X	X	X	X	X	X	X	X	X	X	X	X
DAY(DOW)	SUN	MON	TUE	WED	THU	FRI	SAT					
	.	X	X	X	X	X	.					
DAY(DOM)	1	2	3	4	5	6	7	8	9	10	11	
	X	X	X	X	X	X	X	X	X	X	X	
	12	13	14	15	16	17	18	19	20	21	22	
	X	X	X	X	X	X	X	X	X	X	X	
	23	24	25	26	27	28	29	30	31			
	X	X	X	X	X	X	X	X	X			

SCHEDULE NUMBER 3

SCHEDULE NUMBER	3											
DAY PLAN NO	3	CLEAR ALL FIELDS										
SELECT ALL MONTHS					DOW		DOM					
MONTH	J	F	M	A	M	J	J	A	S	O	N	D
	X	X	X	X	X	X	X	X	X	X	X	X
DAY(DOW)	SUN	MON	TUE	WED	THU	FRI	SAT					
	.	.	.	.	.	.	X					
DAY(DOM)	1	2	3	4	5	6	7	8	9	10	11	
	X	X	X	X	X	X	X	X	X	X	X	
	12	13	14	15	16	17	18	19	20	21	22	
	X	X	X	X	X	X	X	X	X	X	X	
	23	24	25	26	27	28	29	30	31			
	X	X	X	X	X	X	X	X	X			

NOTES:

1. Coord sheet created for ASC3 by BB, 11/1/13.
2. Coordination sheet updated to ASC3 form 11/4/2013.
3. New Coordination Patterns implemented 10-2016, Lee Engineering.
4. New Day Plan and Pattern 21 (Max Select - Max2 & Float) implemented 12-27-2016, Lee Engineering.
5. 2% moved from Ph4&8 to Ph 1&5 Lee Engineering 07/05/2022

Appendix D: Level of Service and Capacity Output Sheets

HCS7 Two-Way Stop-Control Report

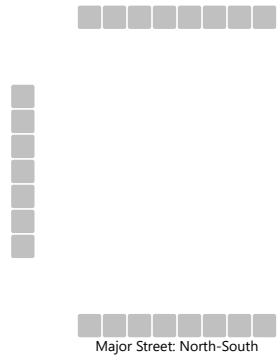
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	98th St & Driveway 1
Jurisdiction	CABQ
East/West Street	Driveway 1
North/South Street	98th St
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	1	0	0	2	0
Configuration								R			T	R			T	
Volume (veh/h)								74			1709	74			609	
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No					No					
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								80								
Capacity, c (veh/h)								267								
v/c Ratio								0.30								
95% Queue Length, Q_{95} (veh)								1.3								
Control Delay (s/veh)								24.2								
Level of Service (LOS)								C								
Approach Delay (s/veh)						24.2										
Approach LOS						C										

HCS7 Two-Way Stop-Control Report

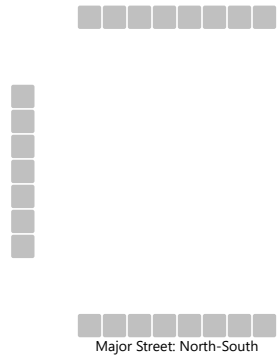
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	98th St & Driveway 1
Jurisdiction	CABQ
East/West Street	Driveway 1
North/South Street	98th St
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	1	0	0	2	0
Configuration								R			T	R			T	
Volume (veh/h)								27			1026	29			1584	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No					No					
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.90								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								29								
Capacity, c (veh/h)								479								
v/c Ratio								0.06								
95% Queue Length, Q_{95} (veh)								0.2								
Control Delay (s/veh)								13.0								
Level of Service (LOS)								B								
Approach Delay (s/veh)						13.0										
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

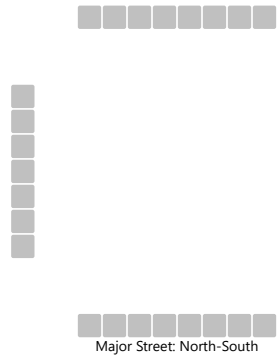
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2033
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	98th St & Driveway 1
Jurisdiction	CABQ
East/West Street	Driveway 1
North/South Street	98th St
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	1	0	0	2	0
Configuration								R			T	R			T	
Volume (veh/h)								74			2583	74			905	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No					No					
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.90								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								80								
Capacity, c (veh/h)								132								
v/c Ratio								0.61								
95% Queue Length, Q_{95} (veh)								4.1								
Control Delay (s/veh)								73.0								
Level of Service (LOS)								F								
Approach Delay (s/veh)						73.0										
Approach LOS						F										

HCS7 Two-Way Stop-Control Report

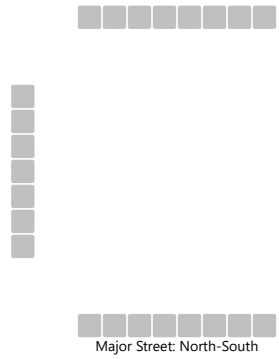
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2033
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	98th St & Driveway 1
Jurisdiction	CABQ
East/West Street	Driveway 1
North/South Street	98th St
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	1	0	0	2	0
Configuration								R			T	R			T	
Volume (veh/h)								27			1541	29			2378	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No					No					
Median Type | Storage			Undivided													

Critical and Follow-up Headways

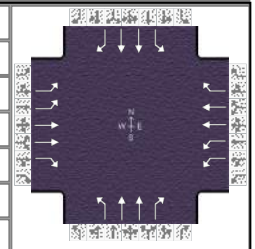
Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.90								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								29								
Capacity, c (veh/h)								314								
v/c Ratio								0.09								
95% Queue Length, Q_{95} (veh)								0.3								
Control Delay (s/veh)								17.7								
Level of Service (LOS)								C								
Approach Delay (s/veh)						17.7										
Approach LOS						C										

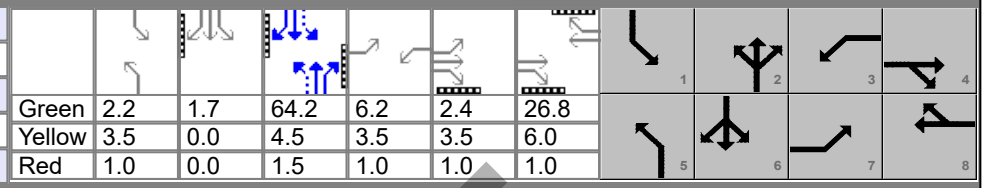
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	Apr 5, 2023	Area Type	Other
Jurisdiction	CABQ	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	98th St	File Name	1 AM Existing 2023.xus		
Project Description	AM Existing 2023 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	288	216	40	113	146	129	32	1419	258	63	426	129

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On



Green	2.2	1.7	64.2	6.2	2.4	26.8						
Yellow	3.5	0.0	4.5	3.5	3.5	6.0						
Red	1.0	0.0	1.5	1.0	1.0	1.0						

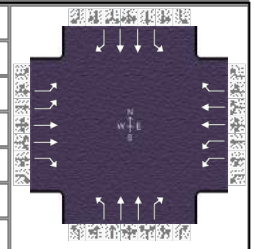
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	17.6	40.7	10.7	33.8	6.7	70.2	8.4	71.9
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	12.9	8.7	6.2	11.0	3.2		4.3	
Green Extension Time (g_e), s	0.2	2.0	0.1	1.8	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	0.98	1.00	0.69		0.90	
Max Out Probability	0.06	0.00	0.01	0.01	0.03		0.51	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	288	216	40	113	146	129	32	1419	258	63	426	129
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	10.9	6.7		4.2	4.6		1.2	43.0		2.3	8.6	
Cycle Queue Clearance Time (g_c), s	10.9	6.7		4.2	4.6		1.2	43.0		2.3	8.6	
Green Ratio (*g/C*)	0.10	0.26		0.05	0.21		0.51	0.49		0.52	0.51	
Capacity (*c*), veh/h	340	858		163	711		473	1773		168	1819	
Volume-to-Capacity Ratio (*X*)	0.846	0.252		0.694	0.205		0.068	0.801		0.376	0.234	
Back of Queue (*Q*), ft/ln (95 th percentile)	224.4	135.3		85.1	93.3		22.1	636.6		42.7	159.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.6	5.0		3.3	3.6		0.8	25.3		1.6	6.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.12	0.00		0.47	0.00		0.09	0.00		0.43	0.00	
Uniform Delay (d_1), s/veh	57.5	38.1		61.0	42.8		16.2	27.5		23.9	17.9	
Incremental Delay (d_2), s/veh	9.0	0.7		2.0	0.7		0.0	4.0		0.5	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	66.4	38.8	0.0	63.0	43.4	0.0	16.2	31.6	0.0	24.4	18.2	0.0
Level of Service (LOS)	E	D	A	E	D	A	B	C	A	C	B	A
Approach Delay, s/veh / LOS	50.6	D		34.7	C		26.5	C		15.1	B	
Intersection Delay, s/veh / LOS	29.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.46	B	2.56	C	2.56	C
Bicycle LOS Score / LOS	0.94	A	0.81	A	1.90	B	1.00	A

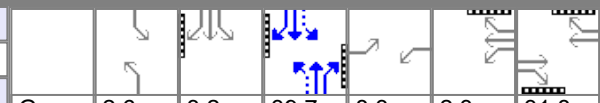
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	4/5/2023	Area Type	Other
Jurisdiction	CABQ	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	98th St	File Name	2 PM Existing 2023.xus		
Project Description	PM Existing 2023 Analysis				

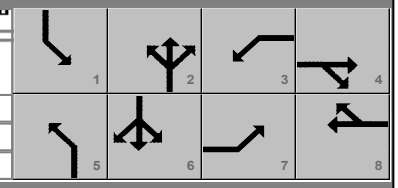


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	193	210	74	268	268	154	41	797	187	105	1204	188

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.6	3.2		39.7	8.3	2.3	31.8					
Yellow	3.5	0.0		4.5	3.5	0.0	6.0					
Red	1.0	0.0		1.5	1.0	0.0	1.0					



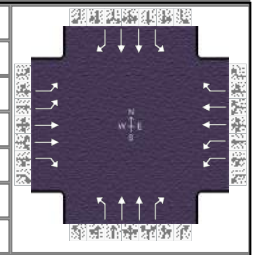
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.8	38.8	15.1	41.1	7.1	45.7	10.4	49.0
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	8.2	7.3	10.4	10.0	3.7		6.1	
Green Extension Time (g_e), s	0.2	2.7	0.2	2.7	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.71		0.96	
Max Out Probability	0.00	0.00	0.04	0.00	0.00		0.86	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	193	210	74	268	268	154	41	797	187	105	1204	188
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	6.2	5.3		8.4	6.4		1.7	20.1		4.1	33.8	
Cycle Queue Clearance Time (g_c), s	6.2	5.3		8.4	6.4		1.7	20.1		4.1	33.8	
Green Ratio (*g/C*)	0.08	0.29		0.10	0.31		0.39	0.36		0.42	0.39	
Capacity (*c*), veh/h	255	956		331	1069		135	1297		277	1402	
Volume-to-Capacity Ratio (*X*)	0.757	0.220		0.810	0.251		0.304	0.615		0.379	0.859	
Back of Queue (*Q*), ft/ln (95 th percentile)	121.1	103.3		170.2	124		31.4	337.2		74.9	541.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	3.8		6.6	4.7		1.2	13.4		2.9	21.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.61	0.00		0.95	0.00		0.13	0.00		0.75	0.00	
Uniform Delay (d_1), s/veh	49.9	29.7		48.7	28.4		26.6	28.8		21.9	30.7	
Incremental Delay (d_2), s/veh	1.8	0.5		4.4	0.6		0.5	2.2		0.3	7.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	51.6	30.2	0.0	53.1	29.0	0.0	27.1	31.1	0.0	22.3	38.3	0.0
Level of Service (LOS)	D	C	A	D	C	A	C	C	A	C	D	A
Approach Delay, s/veh / LOS	34.2	C		31.9	C		25.2	C		32.4	C	
Intersection Delay, s/veh / LOS	30.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.44	B	2.58	C	2.57	C
Bicycle LOS Score / LOS	0.88	A	1.06	A	1.33	A	1.72	B

HCS7 Signalized Intersection Results Summary

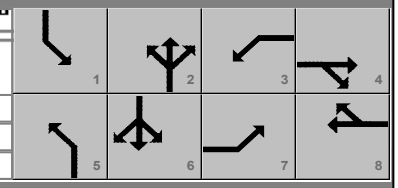
General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	Apr 5, 2023	Area Type	Other
Jurisdiction	CABQ	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	98th St	File Name	3 AM Build Out Background 2023.xus		
Project Description	AM Build Out Background 2023 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	288	216	40	113	146	129	32	1419	258	63	426	129

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On

Green	2.2	1.7	64.2	6.2	2.4	26.8						
Yellow	3.5	0.0	4.5	3.5	3.5	6.0						
Red	1.0	0.0	1.5	1.0	1.0	1.0						



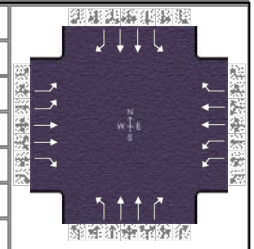
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	17.6	40.7	10.7	33.8	6.7	70.2	8.4	71.9
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	12.9	8.7	6.2	11.0	3.2		4.3	
Green Extension Time (g_e), s	0.2	2.0	0.1	1.8	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	0.98	1.00	0.69		0.90	
Max Out Probability	0.06	0.00	0.01	0.01	0.03		0.51	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	288	216	40	113	146	129	32	1419	258	63	426	129
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	10.9	6.7		4.2	4.6		1.2	43.0		2.3	8.6	
Cycle Queue Clearance Time (g_c), s	10.9	6.7		4.2	4.6		1.2	43.0		2.3	8.6	
Green Ratio (*g/C*)	0.10	0.26		0.05	0.21		0.51	0.49		0.52	0.51	
Capacity (*c*), veh/h	340	858		163	711		473	1773		168	1819	
Volume-to-Capacity Ratio (*X*)	0.846	0.252		0.694	0.205		0.068	0.801		0.376	0.234	
Back of Queue (*Q*), ft/ln (95 th percentile)	224.4	135.3		85.1	93.3		22.1	636.6		42.7	159.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.6	5.0		3.3	3.6		0.8	25.3		1.6	6.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.12	0.00		0.47	0.00		0.09	0.00		0.43	0.00	
Uniform Delay (d_1), s/veh	57.5	38.1		61.0	42.8		16.2	27.5		23.9	17.9	
Incremental Delay (d_2), s/veh	9.0	0.7		2.0	0.7		0.0	4.0		0.5	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	66.4	38.8	0.0	63.0	43.4	0.0	16.2	31.6	0.0	24.4	18.2	0.0
Level of Service (LOS)	E	D	A	E	D	A	B	C	A	C	B	A
Approach Delay, s/veh / LOS	50.6	D		34.7	C		26.5	C		15.1	B	
Intersection Delay, s/veh / LOS	29.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.46	B	2.56	C	2.56	C
Bicycle LOS Score / LOS	0.94	A	0.81	A	1.90	B	1.00	A

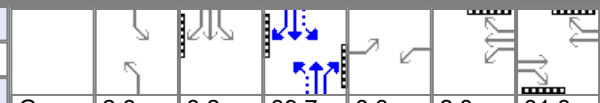
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	4/5/2023	Area Type	Other
Jurisdiction	CABQ	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	98th St	File Name	4 PM Build Out Background 2023.xus		
Project Description	PM Build Out Background 2023 Analysis				

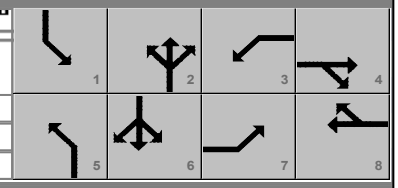


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	193	210	74	268	268	154	41	797	187	105	1204	188

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.6	3.2		39.7	8.3	2.3	31.8					
Yellow	3.5	0.0		4.5	3.5	0.0	6.0					
Red	1.0	0.0		1.5	1.0	0.0	1.0					



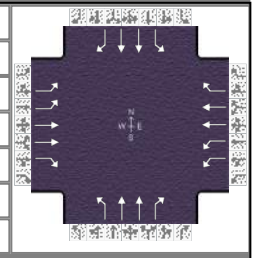
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.8	38.8	15.1	41.1	7.1	45.7	10.4	49.0
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	8.2	7.3	10.4	10.0	3.7		6.1	
Green Extension Time (g_e), s	0.2	2.7	0.2	2.7	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.71		0.96	
Max Out Probability	0.00	0.00	0.04	0.00	0.00		0.86	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	193	210	74	268	268	154	41	797	187	105	1204	188
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	6.2	5.3		8.4	6.4		1.7	20.1		4.1	33.8	
Cycle Queue Clearance Time (g_c), s	6.2	5.3		8.4	6.4		1.7	20.1		4.1	33.8	
Green Ratio (*g/C*)	0.08	0.29		0.10	0.31		0.39	0.36		0.42	0.39	
Capacity (*c*), veh/h	255	956		331	1069		135	1297		277	1402	
Volume-to-Capacity Ratio (*X*)	0.757	0.220		0.810	0.251		0.304	0.615		0.379	0.859	
Back of Queue (*Q*), ft/ln (95 th percentile)	121.1	103.3		170.2	124		31.4	337.2		74.9	541.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	3.8		6.6	4.7		1.2	13.4		2.9	21.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.61	0.00		0.95	0.00		0.13	0.00		0.75	0.00	
Uniform Delay (d_1), s/veh	49.9	29.7		48.7	28.4		26.6	28.8		21.9	30.7	
Incremental Delay (d_2), s/veh	1.8	0.5		4.4	0.6		0.5	2.2		0.3	7.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	51.6	30.2	0.0	53.1	29.0	0.0	27.1	31.1	0.0	22.3	38.3	0.0
Level of Service (LOS)	D	C	A	D	C	A	C	C	A	C	D	A
Approach Delay, s/veh / LOS	34.2	C		31.9	C		25.2	C		32.4	C	
Intersection Delay, s/veh / LOS	30.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.44	B	2.58	C	2.57	C
Bicycle LOS Score / LOS	0.88	A	1.06	A	1.33	A	1.72	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	Apr 5, 2023	Area Type	Other
Jurisdiction	CABQ	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	98th St	File Name	5 AM Build Out Total 2023.xus		
Project Description	AM Build Out Total 2023 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	288	238	40	143	153	166	47	1456	280	93	426	129

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On

Green	3.1	2.2		62.0	7.4	1.3	27.5					
Yellow	3.5	0.0		4.5	3.5	3.5	6.0					
Red	1.0	0.0		1.5	1.0	1.0	1.0					

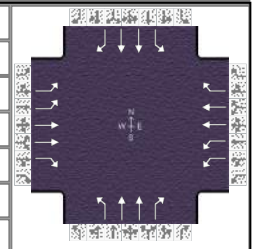
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	17.6	40.3	11.9	34.5	7.6	68.0	9.9	70.2
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	12.9	9.5	7.3	13.9	3.8		5.5	
Green Extension Time (g_e), s	0.2	2.3	0.1	1.9	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	0.99	1.00	0.82		0.97	
Max Out Probability	0.06	0.00	0.11	0.04	0.18		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	288	238	40	143	153	166	47	1456	280	93	426	129
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	10.9	7.5		5.3	4.8		1.8	46.4		3.5	8.9	
Cycle Queue Clearance Time (g_c), s	10.9	7.5		5.3	4.8		1.8	46.4		3.5	8.9	
Green Ratio (*g/C*)	0.10	0.26		0.06	0.21		0.50	0.48		0.52	0.49	
Capacity (*c*), veh/h	340	847		194	731		472	1711		170	1773	
Volume-to-Capacity Ratio (*X*)	0.846	0.281		0.737	0.209		0.100	0.851		0.548	0.240	
Back of Queue (*Q*), ft/ln (95 th percentile)	224.4	151.1		107.4	97		33.6	694.8		65.9	165.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.6	5.6		4.2	3.7		1.3	27.6		2.5	6.6	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.12	0.00		0.60	0.00		0.13	0.00		0.66	0.00	
Uniform Delay (d_1), s/veh	57.5	38.8		60.4	42.2		16.9	29.9		27.2	18.9	
Incremental Delay (d_2), s/veh	9.0	0.8		2.1	0.7		0.0	5.9		1.0	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	66.4	39.6	0.0	62.4	42.9	0.0	17.0	35.8	0.0	28.2	19.2	0.0
Level of Service (LOS)	E	D	A	E	D	A	B	D	A	C	B	A
Approach Delay, s/veh / LOS	50.4	D		33.5	C		29.7	C		16.7	B	
Intersection Delay, s/veh / LOS	31.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.46	B	2.57	C	2.56	C
Bicycle LOS Score / LOS	0.95	A	0.87	A	1.96	B	1.02	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	4/5/2023	Area Type	Other
Jurisdiction	CABQ	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	98th St	File Name	6 PM Build Out Total 2023.xus		
Project Description	PM Build Out Total 2023 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	193	224	74	305	277	168	46	811	196	144	1204	188

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	0.1	38.0	8.3	3.5	30.6						
Yellow	3.5	3.5	4.5	3.5	0.0	6.0						
Red	1.0	1.0	1.5	1.0	0.0	1.0						

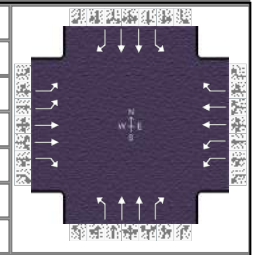
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.8	37.6	16.3	41.1	7.5	44.0	12.1	48.6
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	8.2	7.8	11.6	10.8	3.9		7.6	
Green Extension Time (g_e), s	0.2	2.9	0.2	2.9	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.75		0.99	
Max Out Probability	0.00	0.00	0.22	0.00	0.01		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	193	224	74	305	277	168	46	811	196	144	1204	188
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	6.2	5.8		9.6	6.6		1.9	21.0		5.6	34.0	
Cycle Queue Clearance Time (g_c), s	6.2	5.8		9.6	6.6		1.9	21.0		5.6	34.0	
Green Ratio (*g/C*)	0.08	0.28		0.11	0.31		0.37	0.35		0.43	0.39	
Capacity (*c*), veh/h	255	921		367	1069		138	1242		287	1391	
Volume-to-Capacity Ratio (*X*)	0.757	0.243		0.831	0.259		0.333	0.653		0.502	0.865	
Back of Queue (*Q*), ft/ln (95 th percentile)	121.1	112.5		199.6	128.8		36.2	353.2		102.8	546.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	4.1		7.8	4.9		1.4	14.0		4.0	21.7	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.61	0.00		1.11	0.00		0.14	0.00		1.03	0.00	
Uniform Delay (d_1), s/veh	49.9	30.7		48.1	28.5		27.2	30.4		22.4	31.0	
Incremental Delay (d_2), s/veh	1.8	0.6		7.9	0.6		0.5	2.7		0.5	8.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	51.6	31.3	0.0	56.0	29.1	0.0	27.8	33.1	0.0	22.9	39.1	0.0
Level of Service (LOS)	D	C	A	E	C	A	C	C	A	C	D	A
Approach Delay, s/veh / LOS	34.6	C		33.5	C		26.7	C		32.8	C	
Intersection Delay, s/veh / LOS	31.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.44	B	2.58	C	2.57	C
Bicycle LOS Score / LOS	0.89	A	1.11	A	1.36	A	1.75	B

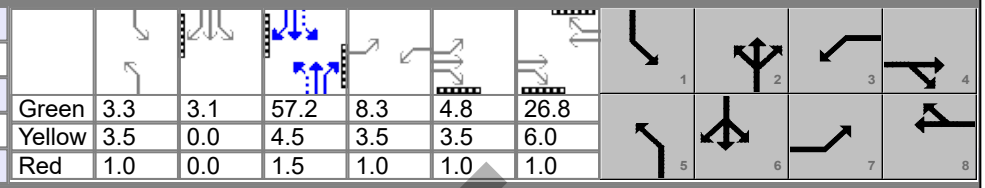
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	Apr 5, 2023	Area Type	Other
Jurisdiction	CABQ	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	98th St	File Name	7 AM Horizon Background 2033.xus		
Project Description	AM Horizon Background 2033 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	447	322	60	168	218	258	48	2150	384	112	647	198

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On



Green	3.3	3.1	57.2	8.3	4.8	26.8						
Yellow	3.5	0.0	4.5	3.5	3.5	6.0						
Red	1.0	0.0	1.5	1.0	1.0	1.0						

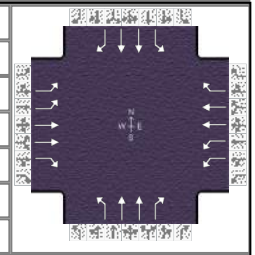
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	22.1	43.1	12.8	33.8	7.8	63.2	10.9	66.3
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.1	2.5	4.1	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	19.1	12.1	8.3	21.8	4.0		6.5	
Green Extension Time (g_e), s	0.0	3.4	0.1	1.7	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.82		0.98	
Max Out Probability	1.00	0.01	0.59	0.79	0.25		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	447	322	60	168	218	258	48	2150	384	112	647	198
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	17.1	10.1		6.3	7.0		2.0	57.2		4.5	15.3	
Cycle Queue Clearance Time (g_c), s	17.1	10.1		6.3	7.0		2.0	57.2		4.5	15.3	
Green Ratio (*g/C*)	0.14	0.28		0.06	0.21		0.47	0.44		0.49	0.46	
Capacity (*c*), veh/h	457	918		219	711		345	1579		141	1664	
Volume-to-Capacity Ratio (*X*)	0.978	0.351		0.766	0.307		0.139	1.362		0.793	0.389	
Back of Queue (*Q*), ft/ln (95 th percentile)	433.1	203.5		131.1	143		37.5	5867.9		125.9	266	
Back of Queue (*Q*), veh/ln (95 th percentile)	16.7	7.5		5.1	5.5		1.4	232.9		4.8	10.6	
Queue Storage Ratio (*RQ*) (95 th percentile)	2.17	0.00		0.73	0.00		0.15	0.00		1.26	0.00	
Uniform Delay (d_1), s/veh	56.0	37.6		59.9	43.7		20.0	36.4		30.6	22.8	
Incremental Delay (d_2), s/veh	63.9	1.1		5.7	1.1		0.1	655.6		23.7	0.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	119.9	38.6	0.0	65.6	44.8	0.0	20.0	692.0	0.0	54.4	23.5	0.0
Level of Service (LOS)	F	D	A	E	D	A	C	F	A	D	C	A
Approach Delay, s/veh / LOS	79.6	E		32.3	C		576.6	F		22.2	C	
Intersection Delay, s/veh / LOS	318.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.46	B	2.57	C	2.57	C
Bicycle LOS Score / LOS	1.17	A	1.02	A	2.62	C	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	4/5/2023	Area Type	Other
Jurisdiction	CABQ	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	98th St	File Name	8 PM Horizon Background 2033.xus		
Project Description	PM Horizon Background 2033 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	294	313	110	399	399	253	61	1200	279	222	1830	298

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.9	0.3		36.9	11.6	3.0	27.8					
Yellow	3.5	3.5		4.5	3.5	0.0	6.0					
Red	1.0	1.0		1.5	1.0	0.0	1.0					

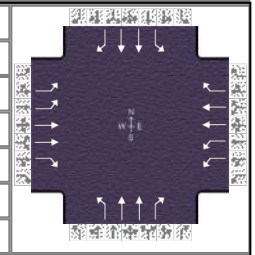
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	16.1	34.8	19.1	37.8	8.4	42.9	13.2	47.7
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	11.4	10.6	14.5	16.8	4.6		10.7	
Green Extension Time (g_e), s	0.2	4.1	0.1	3.8	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.84		1.00	
Max Out Probability	0.17	0.07	1.00	0.13	0.04		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	294	313	110	399	399	253	61	1200	279	222	1830	298
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	9.4	8.6		12.5	10.4		2.6	36.7		8.7	41.7	
Cycle Queue Clearance Time (g_c), s	9.4	8.6		12.5	10.4		2.6	36.7		8.7	41.7	
Green Ratio (*g/C*)	0.11	0.25		0.13	0.28		0.37	0.34		0.43	0.38	
Capacity (*c*), veh/h	355	835		456	966		125	1204		204	1361	
Volume-to-Capacity Ratio (*X*)	0.827	0.375		0.875	0.413		0.487	0.997		1.089	1.344	
Back of Queue (*Q*), ft/ln (95 th percentile)	196.3	170.4		266.9	202.9		49.3	786.4		628.7	4714.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.6	6.3		10.4	7.7		1.9	31.2		24.2	187.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.98	0.00		1.48	0.00		0.20	0.00		6.29	0.00	
Uniform Delay (d_1), s/veh	48.2	33.9		46.8	32.2		28.8	36.5		29.0	34.1	
Incremental Delay (d_2), s/veh	7.4	1.3		17.8	1.3		1.1	48.9		234.9	624.9	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	55.6	35.2	0.0	64.6	33.5	0.0	29.9	85.4	0.0	263.8	659.1	0.0
Level of Service (LOS)	E	D	A	E	C	A	C	F	A	F	F	A
Approach Delay, s/veh / LOS	38.2	D		37.3	D		67.7	E		538.1	F	
Intersection Delay, s/veh / LOS	253.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.44	B	2.58	C	2.57	C
Bicycle LOS Score / LOS	1.08	A	1.35	A	1.76	B	2.43	B

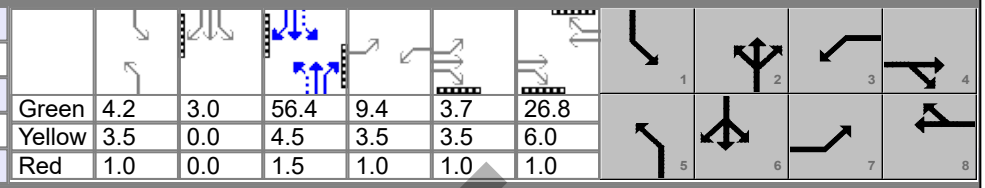
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	Apr 5, 2023	Area Type	Other
Jurisdiction	CABQ	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	98th St	File Name	9 AM Horizon Total 2033.xus		
Project Description	AM Horizon Total 2033 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	447	344	60	198	225	295	63	2188	407	142	647	198

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	4.2	3.0		56.4	9.4	3.7	26.8					
Yellow	3.5	0.0		4.5	3.5	3.5	6.0					
Red	1.0	0.0		1.5	1.0	1.0	1.0					

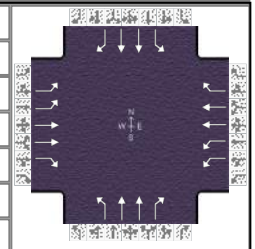
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	22.1	42.0	13.9	33.8	8.7	62.4	11.7	65.4
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.1	2.5	4.1	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	19.1	13.0	9.4	25.3	4.7		8.4	
Green Extension Time (g_e), s	0.0	3.6	0.1	0.7	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.90		0.99	
Max Out Probability	1.00	0.02	1.00	1.00	0.99		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	447	344	60	198	225	295	63	2188	407	142	647	198
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	17.1	11.0		7.4	7.2		2.7	56.4		6.4	15.5	
Cycle Queue Clearance Time (g_c), s	17.1	11.0		7.4	7.2		2.7	56.4		6.4	15.5	
Green Ratio (*g/C*)	0.14	0.27		0.07	0.21		0.47	0.43		0.49	0.46	
Capacity (*c*), veh/h	457	890		249	711		351	1557		152	1640	
Volume-to-Capacity Ratio (*X*)	0.978	0.387		0.796	0.317		0.180	1.405		0.936	0.395	
Back of Queue (*Q*), ft/ln (95 th percentile)	433.1	218.7		162.4	148		49.5	6442.5		267.9	269.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	16.7	8.0		6.3	5.6		1.9	255.7		10.3	10.7	
Queue Storage Ratio (*RQ*) (95 th percentile)	2.17	0.00		0.90	0.00		0.20	0.00		2.68	0.00	
Uniform Delay (d_1), s/veh	56.0	38.8		59.3	43.8		20.1	36.8		34.1	23.4	
Incremental Delay (d_2), s/veh	63.9	1.3		11.0	1.2		0.1	733.1		87.2	0.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	119.9	40.0	0.0	70.4	45.0	0.0	20.2	769.9	0.0	121.3	24.1	0.0
Level of Service (LOS)	F	D	A	E	D	A	C	F	A	F	C	A
Approach Delay, s/veh / LOS	79.1	E		33.5	C		634.2	F		33.3	C	
Intersection Delay, s/veh / LOS	347.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.46	B	2.57	C	2.57	C
Bicycle LOS Score / LOS	1.19	A	1.08	A	2.68	C	1.30	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	4/5/2023	Area Type	Other
Jurisdiction	CABQ	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	98th St	File Name	10 AM Horizon Total 2033.xus		
Project Description	PM Horizon Total 2033 Analysis				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	294	327	110	436	409	267	66	1213	288	261	1830	298

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.2	0.0	36.9	11.6	3.7	27.1						
Yellow	3.5	3.5	4.5	3.5	0.0	6.0						
Red	1.0	1.0	1.5	1.0	0.0	1.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	16.1	34.1	19.8	37.8	8.7	42.9	13.2	47.4
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	11.4	11.1	15.8	17.7	4.8		10.7	
Green Extension Time (g_e), s	0.2	4.1	0.0	3.8	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.87		1.00	
Max Out Probability	0.17	0.10	1.00	0.17	0.07		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	294	327	110	436	409	267	66	1213	288	261	1830	298
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	9.4	9.1		13.8	10.7		2.8	36.9		8.7	41.4	
Cycle Queue Clearance Time (g_c), s	9.4	9.1		13.8	10.7		2.8	36.9		8.7	41.4	
Green Ratio (*g/C*)	0.11	0.25		0.14	0.28		0.37	0.34		0.43	0.38	
Capacity (*c*), veh/h	355	815		477	966		130	1204		203	1352	
Volume-to-Capacity Ratio (*X*)	0.827	0.401		0.913	0.423		0.509	1.007		1.286	1.354	
Back of Queue (*Q*), ft/ln (95 th percentile)	196.3	181		308.8	207.4		53.1	842.8		1253.6	4800.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.6	6.7		12.1	7.9		2.0	33.4		48.2	190.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.98	0.00		1.72	0.00		0.21	0.00		12.54	0.00	
Uniform Delay (d_1), s/veh	48.2	34.7		46.7	32.3		28.7	36.6		29.1	34.3	
Incremental Delay (d_2), s/veh	7.4	1.5		28.3	1.4		1.1	59.2		551.6	641.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	55.6	36.1	0.0	75.0	33.7	0.0	29.8	95.7	0.0	580.7	675.7	0.0
Level of Service (LOS)	E	D	A	E	C	A	C	F	A	F	F	A
Approach Delay, s/veh / LOS	38.5	D		41.8	D		75.3	E		581.0	F	
Intersection Delay, s/veh / LOS	272.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.44	B	2.58	C	2.57	C
Bicycle LOS Score / LOS	1.09	A	1.41	A	1.78	B	2.46	B

HCS7 Two-Way Stop-Control Report

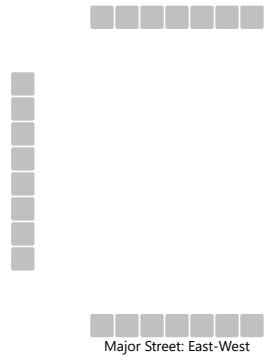
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Driveway 2
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Driveway 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	1		0	0	0
Configuration			T	TR			T					R				
Volume (veh/h)			559	74			486					74				
Percent Heavy Vehicles (%)												3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.96				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												80				
Capacity, c (veh/h)												649				
v/c Ratio												0.12				
95% Queue Length, Q_{95} (veh)												0.4				
Control Delay (s/veh)												11.3				
Level of Service (LOS)												B				
Approach Delay (s/veh)										11.3						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

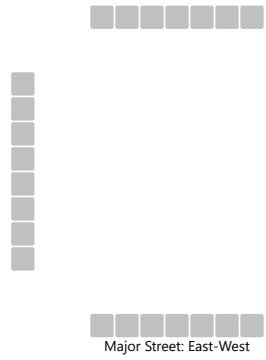
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Driveway 2
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Driveway 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	1		0	0	0
Configuration			T	TR			T					R				
Volume (veh/h)			513	68			667					64				
Percent Heavy Vehicles (%)												3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.96				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												70				
Capacity, c (veh/h)												677				
v/c Ratio												0.10				
95% Queue Length, Q_{95} (veh)												0.3				
Control Delay (s/veh)												10.9				
Level of Service (LOS)												B				
Approach Delay (s/veh)										10.9						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

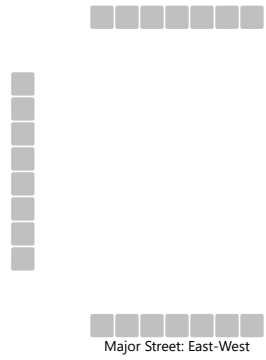
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Driveway 2
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Driveway 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	1		0	0	0
Configuration			T	TR			T					R				
Volume (veh/h)			840	74			742					74				
Percent Heavy Vehicles (%)												3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.96				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												80				
Capacity, c (veh/h)												516				
v/c Ratio												0.16				
95% Queue Length, Q_{95} (veh)												0.6				
Control Delay (s/veh)												13.3				
Level of Service (LOS)												B				
Approach Delay (s/veh)										13.3						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

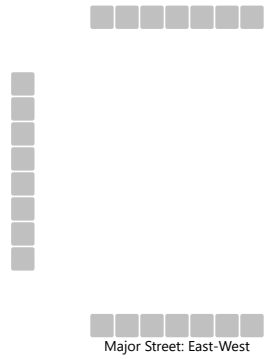
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Driveway 2
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Driveway 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	1		0	0	0
Configuration			T	TR			T					R				
Volume (veh/h)			826	68			981					64				
Percent Heavy Vehicles (%)												3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized										No						
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.96				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												70				
Capacity, c (veh/h)												525				
v/c Ratio												0.13				
95% Queue Length, Q_{95} (veh)												0.5				
Control Delay (s/veh)												12.9				
Level of Service (LOS)												B				
Approach Delay (s/veh)										12.9						
Approach LOS										B						

HCS7 Two-Way Stop-Control Report

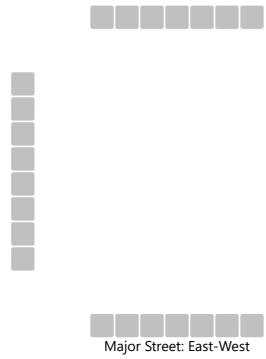
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		1	523	23	0	21	338	0		43	0	78		15	3	1
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Left + Thru							1						

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29				4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				23				47		86			21	
Capacity, c (veh/h)		1130				979				362		687			388	
v/c Ratio		0.00				0.02				0.13		0.12			0.05	
95% Queue Length, Q_{95} (veh)		0.0				0.1				0.4		0.4			0.2	
Control Delay (s/veh)		8.2				8.8				16.4		11.0			14.8	
Level of Service (LOS)		A				A				C		B			B	
Approach Delay (s/veh)	0.0				0.5				12.9				14.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

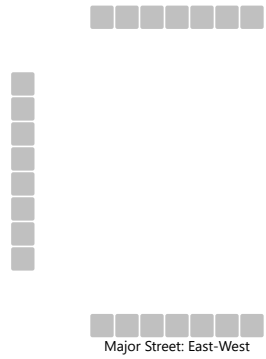
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		4	457	45	1	41	565	8		19	0	37		49	6	2
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1			6.4	4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29			6.60	4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2			2.5	2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29			2.60	2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				44				20		39			60	
Capacity, c (veh/h)		918				1028				345		737			305	
v/c Ratio		0.00				0.04				0.06		0.05			0.20	
95% Queue Length, Q_{95} (veh)		0.0				0.1				0.2		0.2			0.7	
Control Delay (s/veh)		8.9				8.7				16.1		10.2			19.7	
Level of Service (LOS)		A				A				C		B			C	
Approach Delay (s/veh)	0.1				0.6				12.2				19.7			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

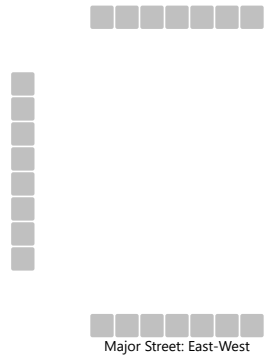
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		1	523	23	0	21	338	0		43	0	78		15	3	1
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29				4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				23				47		86			21	
Capacity, c (veh/h)		1130				979				362		687			388	
v/c Ratio		0.00				0.02				0.13		0.12			0.05	
95% Queue Length, Q_{95} (veh)		0.0				0.1				0.4		0.4			0.2	
Control Delay (s/veh)		8.2				8.8				16.4		11.0			14.8	
Level of Service (LOS)		A				A				C		B			B	
Approach Delay (s/veh)	0.0				0.5				12.9				14.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

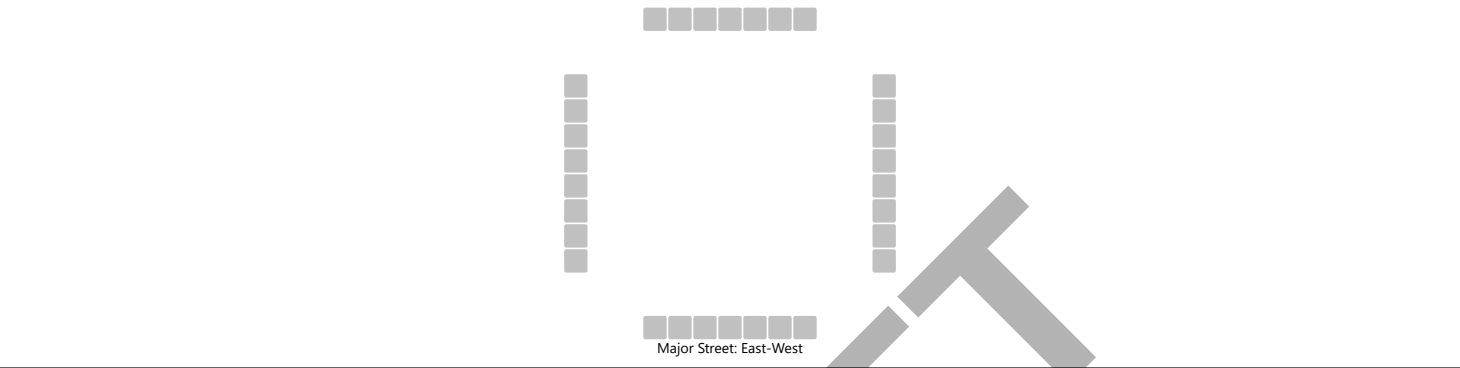
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		4	457	45	1	41	565	8		19	0	37		49	6	2
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1			6.4	4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29			6.60	4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2			2.5	2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29			2.60	2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				44				20		39			60	
Capacity, c (veh/h)		918				1028				345		737			305	
v/c Ratio		0.00				0.04				0.06		0.05			0.20	
95% Queue Length, Q_{95} (veh)		0.0				0.1				0.2		0.2			0.7	
Control Delay (s/veh)		8.9				8.7				16.1		10.2			19.7	
Level of Service (LOS)		A				A				C		B			C	
Approach Delay (s/veh)	0.1				0.6				12.2				19.7			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

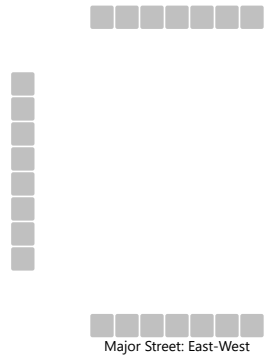
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		1	664	23	0	21	360	0		43	0	78		15	3	1
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage										1						

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29				4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				23				47		86			21	
Capacity, c (veh/h)		1106				857				296		612			344	
v/c Ratio		0.00				0.03				0.16		0.14			0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.1				0.6		0.5			0.2	
Control Delay (s/veh)		8.3				9.3				19.5		11.8			16.2	
Level of Service (LOS)		A				A				C		B			C	
Approach Delay (s/veh)	0.0				0.5				14.6				16.2			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

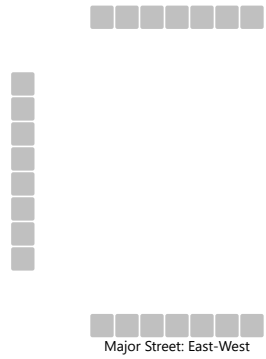
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		4	471	45	1	21	579	8		19	0	37		49	6	2
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1			6.4	4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29			6.60	4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2			2.5	2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29			2.60	2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				23				20		39			60	
Capacity, c (veh/h)		906				998				354		729			320	
v/c Ratio		0.00				0.02				0.06		0.05			0.19	
95% Queue Length, Q_{95} (veh)		0.0				0.1				0.2		0.2			0.7	
Control Delay (s/veh)		9.0				8.7				15.8		10.2			18.8	
Level of Service (LOS)		A				A				C		B			C	
Approach Delay (s/veh)	0.1				0.3				12.1				18.8			
Approach LOS									B				C			

HCS7 Two-Way Stop-Control Report

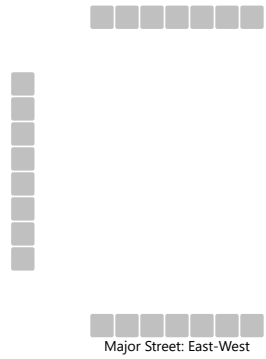
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		1	779	34	0	31	569	0		64	0	116		22	4	1
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29				4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				34				70		127			30	
Capacity, c (veh/h)		902				761				230		552			235	
v/c Ratio		0.00				0.04				0.31		0.23			0.13	
95% Queue Length, Q_{95} (veh)		0.0				0.1				1.3		0.9			0.4	
Control Delay (s/veh)		9.0				10.0				27.5		13.5			22.6	
Level of Service (LOS)		A				A				D		B			C	
Approach Delay (s/veh)	0.0				0.5				18.5				22.6			
Approach LOS									C				C			

HCS7 Two-Way Stop-Control Report

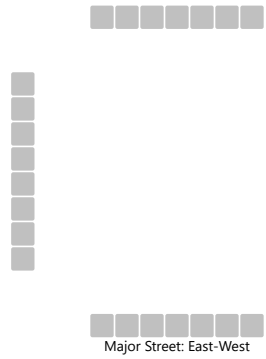
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		6	747	67	1	61	866	12		28	0	55		73	9	3
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1			6.4	4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29			6.60	4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2			2.5	2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29			2.60	2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6				65				29		58			89	
Capacity, c (veh/h)		688				774				201		577			169	
v/c Ratio		0.01				0.08				0.15		0.10			0.53	
95% Queue Length, Q_{95} (veh)		0.0				0.3				0.5		0.3			3.1	
Control Delay (s/veh)		10.3				10.1				26.0		11.9			49.6	
Level of Service (LOS)		B				B				D		B			E	
Approach Delay (s/veh)	0.2				0.7				16.7				49.6			
Approach LOS									C				E			

HCS7 Two-Way Stop-Control Report

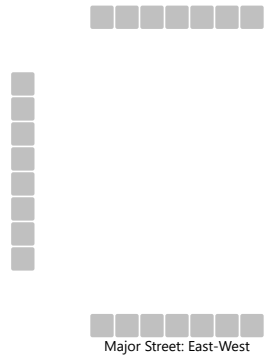
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		1	802	34	0	31	592	0		64	0	116		22	4	1
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage						Left + Thru						1				

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29				4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				34				70		127			30	
Capacity, c (veh/h)		882				745				222		542			226	
v/c Ratio		0.00				0.05				0.32		0.24			0.13	
95% Queue Length, Q_{95} (veh)		0.0				0.1				1.4		0.9			0.5	
Control Delay (s/veh)		9.1				10.1				28.8		13.7			23.4	
Level of Service (LOS)		A				B				D		B			C	
Approach Delay (s/veh)	0.0				0.5				19.0				23.4			
Approach LOS									C				C			

HCS7 Two-Way Stop-Control Report

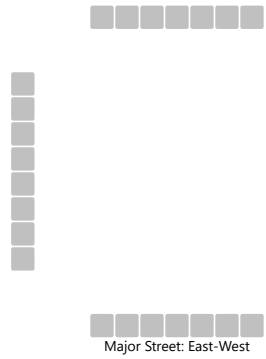
General Information

Analyst	ES
Agency/Co.	Lee Engineering
Date Performed	3/28/2023
Analysis Year	2023
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Central 98th Coffee Shop w Drive Thru & Retail TIS

Site Information

Intersection	Central Ave & Westland Rd
Jurisdiction	CABQ
East/West Street	Central Ave
North/South Street	Westland Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		1	1	0		0	1	0
Configuration		LT		TR		L	T	TR		L		TR			LTR	
Volume (veh/h)		6	760	67	1	61	880	12		28	0	55		73	9	3
Percent Heavy Vehicles (%)		9			10	0				2	0	1		2	0	6
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

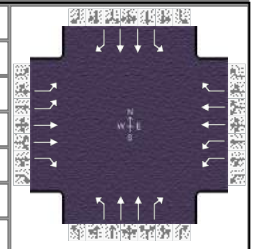
Base Critical Headway (sec)		4.1			6.4	4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.29			6.60	4.11				7.53	6.50	6.92		7.54	6.50	7.03
Base Follow-Up Headway (sec)		2.2			2.5	2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29			2.60	2.20				3.52	4.00	3.31		3.52	4.00	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6				65				29		58			89	
Capacity, c (veh/h)		679				764				197		571			165	
v/c Ratio		0.01				0.09				0.15		0.10			0.54	
95% Queue Length, Q_{95} (veh)		0.0				0.3				0.5		0.3			3.3	
Control Delay (s/veh)		10.4				10.1				26.5		12.0			51.8	
Level of Service (LOS)		B				B				D		B			F	
Approach Delay (s/veh)	0.2				0.7				16.9				51.8			
Approach LOS									C				F			

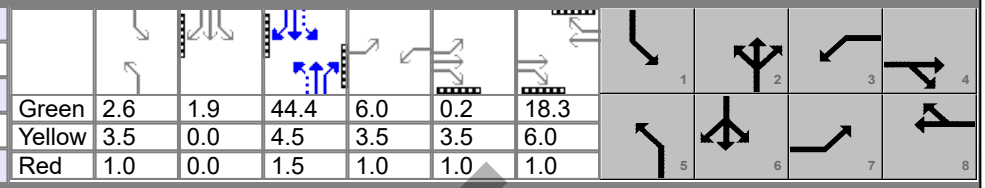
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	Apr 5, 2023	Area Type	Other
Jurisdiction	CABQ	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	98th St	File Name	5 AM Build Out Total 2023.xus		
Project Description	AM Build Out Total 2023 Optimized				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	288	238	40	143	153	166	47	1456	280	93	426	129

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Float	Simult. Gap N/S	On



Green	2.6	1.9		44.4	6.0	0.2	18.3					
Yellow	3.5	0.0		4.5	3.5	3.5	6.0					
Red	1.0	0.0		1.5	1.0	1.0	1.0					

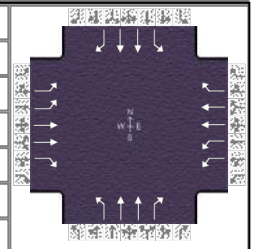
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	15.2	30.0	10.5	25.3	7.1	50.4	9.0	52.4
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	10.3	8.0	6.1	11.5	3.5		4.9	
Green Extension Time (g_e), s	0.4	2.0	0.1	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	0.98	1.00	0.73		0.92	
Max Out Probability	0.00	0.02	0.21	1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	288	238	40	143	153	166	47	1456	280	93	426	129
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	8.3	6.0		4.1	3.8		1.5	37.9		2.9	7.2	
Cycle Queue Clearance Time (g_c), s	8.3	6.0		4.1	3.8		1.5	37.9		2.9	7.2	
Green Ratio (*g/C*)	0.11	0.23		0.06	0.18		0.47	0.44		0.49	0.46	
Capacity (*c*), veh/h	361	761		207	632		456	1595		174	1665	
Volume-to-Capacity Ratio (*X*)	0.797	0.313		0.691	0.242		0.103	0.913		0.535	0.256	
Back of Queue (*Q*), ft/ln (95 th percentile)	160.4	117.2		79.5	75.8		26	598.2		50.8	128.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	6.2	4.3		3.1	2.9		1.0	23.7		2.0	5.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.80	0.00		0.44	0.00		0.10	0.00		0.51	0.00	
Uniform Delay (d_1), s/veh	43.6	31.9		46.1	34.9		14.7	26.0		22.8	16.3	
Incremental Delay (d_2), s/veh	1.6	1.1		1.6	0.9		0.0	11.0		1.0	0.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	45.2	33.0	0.0	47.6	35.8	0.0	14.7	37.0	0.0	23.8	16.7	0.0
Level of Service (LOS)	D	C	A	D	D	A	B	D	A	C	B	A
Approach Delay, s/veh / LOS	36.9	D		26.6	C		30.6	C		14.4	B	
Intersection Delay, s/veh / LOS	28.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	2.56	C	2.56	C
Bicycle LOS Score / LOS	0.95	A	0.87	A	1.96	B	1.02	A

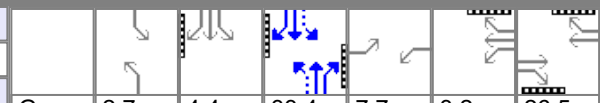
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Lee Engineering			Duration, h	1.000
Analyst	ES	Analysis Date	4/5/2023	Area Type	Other
Jurisdiction	CABQ	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Central Ave	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	98th St	File Name	6 PM Build Out Total 2023.xus		
Project Description	PM Build Out Total 2023 Optimized				

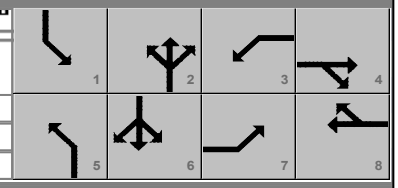


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	193	224	74	305	277	168	46	811	196	144	1204	188

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.7	4.4		33.4	7.7	3.2	26.5					
Yellow	3.5	0.0		4.5	3.5	0.0	6.0					
Red	1.0	0.0		1.5	1.0	0.0	1.0					



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.2	33.5	15.5	36.8	7.2	39.4	11.6	43.8
Change Period, ($Y+R_c$), s	4.5	7.0	4.5	7.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	2.5	4.0	2.5	4.0	2.5	0.0	2.5	0.0
Queue Clearance Time (g_s), s	7.6	7.3	10.7	10.2	3.8		7.2	
Green Extension Time (g_e), s	0.2	2.8	0.3	2.8	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	0.72		0.98	
Max Out Probability	0.00	0.01	0.00	0.01	0.01		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	193	224	74	305	277	168	46	811	196	144	1204	188
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1654		1716	1724		1697	1795		1739	1795	
Queue Service Time (g_s), s	5.6	5.3		8.7	6.1		1.8	19.5		5.2	31.4	
Cycle Queue Clearance Time (g_c), s	5.6	5.3		8.7	6.1		1.8	19.5		5.2	31.4	
Green Ratio (*g/C*)	0.08	0.27		0.11	0.30		0.36	0.33		0.42	0.38	
Capacity (*c*), veh/h	261	877		376	1027		138	1198		288	1356	
Volume-to-Capacity Ratio (*X*)	0.740	0.255		0.810	0.270		0.334	0.677		0.501	0.888	
Back of Queue (*Q*), ft/ln (95 th percentile)	108.4	103.2		167.8	117.8		33	330.2		93	517.6	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.2	3.8		6.6	4.5		1.2	13.1		3.6	20.5	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.54	0.00		0.93	0.00		0.13	0.00		0.93	0.00	
Uniform Delay (d_1), s/veh	45.2	29.0		43.5	26.8		25.7	28.7		21.0	29.1	
Incremental Delay (d_2), s/veh	1.6	0.7		1.9	0.6		0.5	3.1		0.5	10.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	46.7	29.7	0.0	45.4	27.5	0.0	26.2	31.8	0.0	21.5	39.2	0.0
Level of Service (LOS)	D	C	A	D	C	A	C	C	A	C	D	A
Approach Delay, s/veh / LOS	31.9	C		28.6	C		25.6	C		32.7	C	
Intersection Delay, s/veh / LOS	29.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.44	B	2.58	C	2.57	C
Bicycle LOS Score / LOS	0.89	A	1.11	A	1.36	A	1.75	B

Appendix E: ITE Trip Generation Reports

Coffee/Donut Shop with Drive-Through Window
(937)

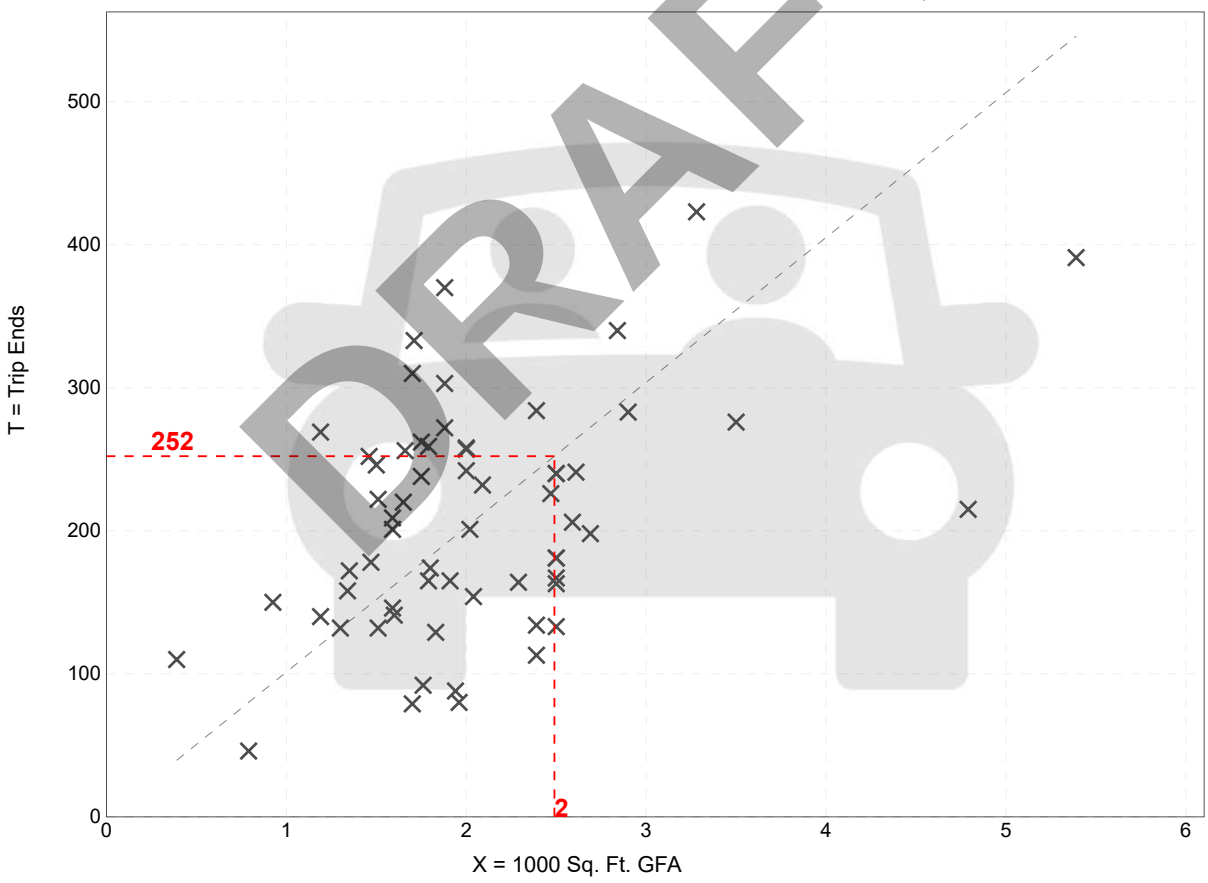
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 62
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
101.27	40.82 - 282.05	41.74

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

Coffee/Donut Shop with Drive-Through Window
(937)

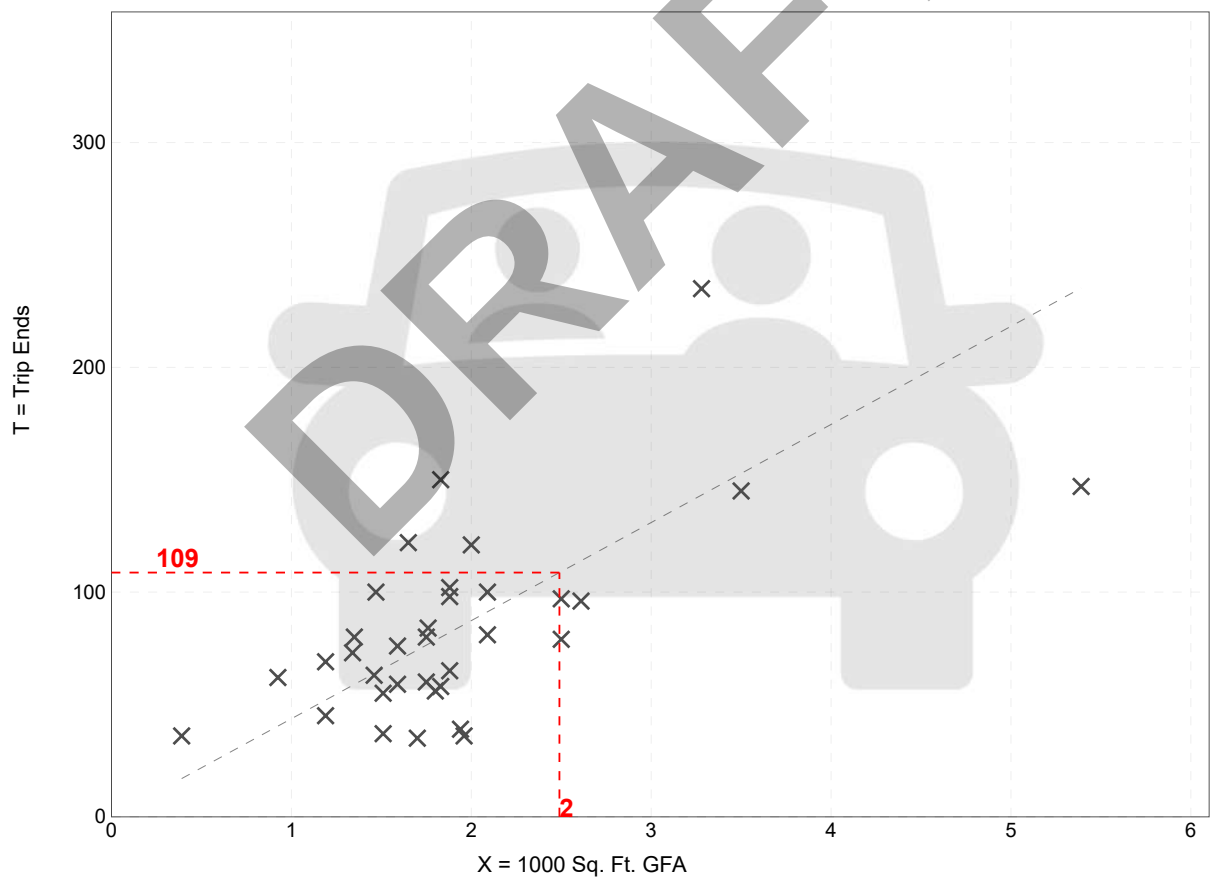
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 34
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.65	18.37 - 92.31	16.74

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

Strip Retail Plaza (<40k)
(822)

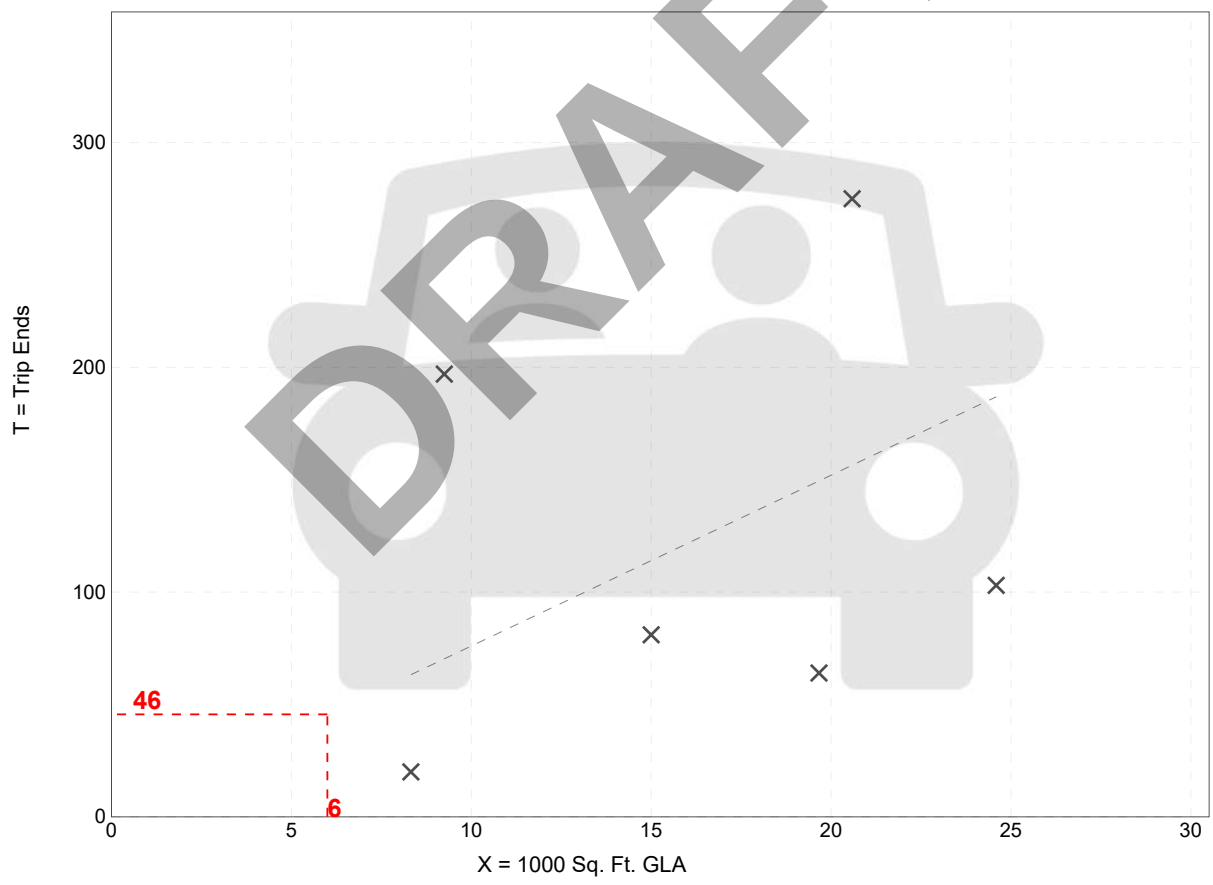
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 6
Avg. 1000 Sq. Ft. GLA: 16
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
7.60	2.40 - 21.30	6.45

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
PM Peak Hour of Generator

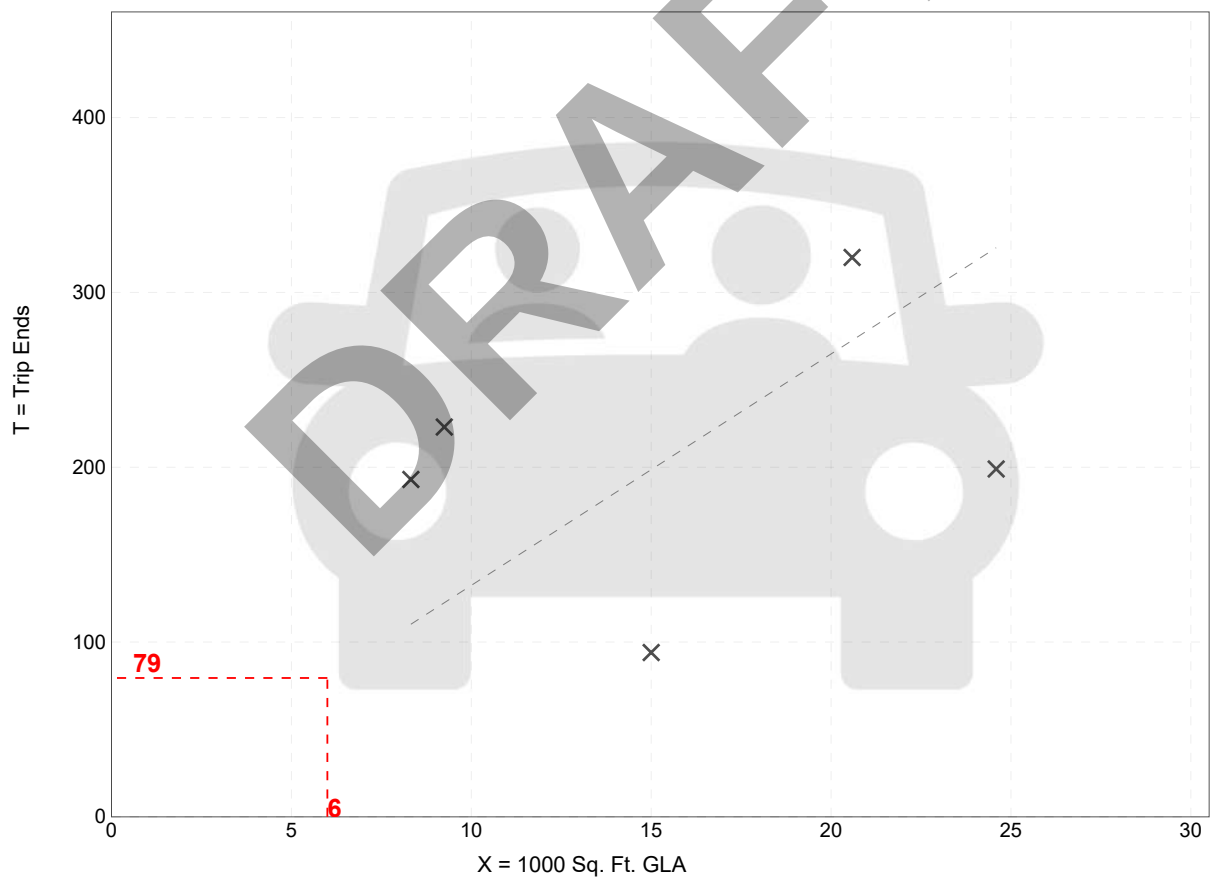
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 16
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
13.24	6.27 - 24.11	7.40

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ****

Appendix F: Intersection Sight Distance Calculations

Intersection Sight Distance Calculations

Reference: 2018 AASHTO "Green Book" chapter 9.5

Design Vehicle: Passenger Vehicles
Major Road Lanes:

Central Ave:	WB – 2 through lanes and 1 left turn lane
	EB – 2 through lanes
	38-ft. wide median with an opening at Westland Rd allowing left turns
98th St:	SB – 2 through lanes and 1 left turn lane
	NB – 2 through lanes

Major Road Speed:

- Central Ave: 55 MPH
- 98th St: 45 MPH

Case B1: A stopped vehicle turning left from a minor street approach onto a major road
Case B2: A stopped vehicle turning right from a minor street approach onto a major road

Formula:

$ISD = 1.47 * V_{major} * t_g$

Units: ISD (ft), V_{major} (MPH), and t_g (seconds)
Time Gaps (t_g):

- 7.5 (for passenger vehicles turning left, crossing one lane of traffic)
- 6.5 (for passenger vehicles turning right)
- 0.5 (added for each additional lane or 12-ft. median crossed)

Site Driveway 1

Case B2 (right turn):

Assumption: Design vehicle is turning into the first lane of the major roadway.
Time Gap (t_g)= 6.5
ISD= 1.47*45*6.5= 429.98 ft~ **430 ft**

Site Driveway 2

Case B2 (right turn):

Assumption: Design vehicle is turning into the first lane of the major roadway.
Time Gap (t_g)= 6.5
ISD= 1.47*55*6.5= 525.53 ft~ **530 ft**

Appendix G: VISSIM Output Sheets

$VISION
* File:L:\PROJECTS\NM309.04 - Central 98th Fast Food TIS\Vissim\Central 98th Fast Food TIS.inpx
* Comment:
* Date:5/2/2023 11:23:13 AM
* Application:PTV Vissim 2022.00-04 [240461]
*
* Table: Node Results
*
* SIMRUN: SimRun, Simulation run (Number of simulation run)
* TIMEINT: TimeInt, Time interval (Time interval)
* MOVEMENT: Movement, Movement (Movement)
* QLEN: QLen, Queue length (Average queue length: In each time step, the current queue length is measured and the arithmetic mean is thus calculated per time interval.) [ft]

* QLENMAX: QLenMax, Queue length (maximum) (Queue length (maximum): In each time step, the current queue length is measured and the maximum is thus calculated per time interval.) [ft]
* VEHS(ALL): Vehs(All), Vehicles (All) (Number of vehicles)
* PERS(ALL): Pers(All), Persons (All) (Number of persons)
* LOS(ALL): LOS(All), Level of service (All) (Level-of-service (A..F) as computed by the associated LOS scheme)
* LOSVAL(ALL): LOSVal(All), Level-of-service value (All) (Level-of-service as numerical value (1..6) as computed by the associated LOS scheme. Value 1 corresponds to LOS 'A', 6 to LOS 'F')
* VEHDELAY(ALL): VehDelay(All), Vehicle delay (average) (All) (Delay of all vehicles. The delay of a vehicle in leaving a travel time measurement is obtained by subtracting the theoretical (ideal) travel time from the actual travel time. The theoretical travel time is the travel time which could be achieved if there were no other vehicles and/or no signal controls or other reasons for stops. Reduced speed areas are taken into account. The actual travel time does not include any passenger service times of PT vehicles at line stops and no parking time in real parking lots. The delay due to braking before a PT stop and/or the subsequent acceleration after a PT stop are part of the delay.) [s]
* PERSDELAY(ALL): PersDelay(All), Person delay (average) (All) (Delay of all pedestrians in seconds without passenger service times at stops) [s]
* STOPDELAY(ALL): StopDelay(All), Stopped delay (average) (All) (Stopped delay per vehicle in seconds without stops at PT stops and in parking lots) [s]
* STOPS(ALL): Stops(All), Stops (All) (Number of vehicle stops per vehicle without stops at PT stops and in parking lots)
* EMISSIONSCO: EmissionsCO, Emissions CO (Quantity of carbon monoxide [grams])
* EMISSIONSNOX: EmissionsNOx, Emissions NOx (Quantity of nitrogen oxides [grams])
* EMISSIONSVOC: EmissionsVOC, Emissions volatile organic compounds (Quantity of volatile organic compounds [grams])
* FUELCONSUMPTION: FuelConsumption, Fuel consumption (Fuel consumption [US liquid gallon])
*
* SimRun TimeInt Movement QLen QLenMax Vehs(All) Pers(All) LOS(All) LOSVal(All) VehDelay(A PersDelay(. StopDelay(Stops(All) EmissionsC EmissionsN EmissionsV FuelConsumption
* Simulatio Time inter\ Movement Queue leng Queue leng Vehicles (A Persons (Al Level of ser Level-of-se Vehicle del Person del: Stopped de Stops (All) Emissions (Emissions I Emissions \ Fuel consumption
*

$MOVEME	TIMEINT	MOVEMEN	QLEN	QLENMAX	VEHS(ALL)	PERS(ALL)	LOS(ALL)	LOSVAL(AL	VEHDELAY(	PERSDELAY	STOPDELA\	STOPS(ALL	EMISSIONS	EMISSIONS	EMISSIONS	FUELCONSUMPTION
1	900-4500	1-1: EB@1(	25.3	141.08	260	260	LOS_C	3	29.73	29.73	24.2	0.65	346.838	67.482	80.383	4.962
1	900-4500	1-1: EB@1(	0.09	20.45	35	35	LOS_A	1	2.99	2.99	0.88	0.14	23.317	4.537	5.404	0.334
1	900-4500	1-1: EB@1(	48.82	228.23	291	291	LOS_D	4	49.14	49.14	40.97	0.9	511.664	99.551	118.583	7.32
1	900-4500	1-4: WB@1	14.62	85.5	141	141	LOS_C	3	30.26	30.26	24.4	0.68	178.658	34.76	41.406	2.556
1	900-4500	1-4: WB@1	38.1	149.53	190	190	LOS_E	5	56.15	56.15	47.88	0.89	337.416	65.649	78.2	4.827
1	900-4500	1-4: WB@1	8.65	123.91	169	169	LOS_B	2	11.66	11.66	6.31	0.75	167.603	32.609	38.844	2.398
1	900-4500	1-5: NB@4	5.8	85.32	32	32	LOS_F	6	88.88	88.88	70.93	2.06	88.685	17.255	20.554	1.269
1	900-4500	1-5: NB@4	0.49	60.9	234	234	LOS_E	5	74.13	74.13	57.91	1.72	553.737	107.737	128.334	7.922
1	900-4500	1-5: NB@4	896.09	1068.34	1345	1345	LOS_F	6	106	106	86.74	2.17	4190.211	815.263	971.122	59.946
1	900-4500	1-7: SB@4	0.06	19.31	130	130	LOS_A	1	6.93	6.93	4.27	0.25	88.363	17.192	20.479	1.264
1	900-4500	1-7: SB@4	12.39	107.84	94	94	LOS_C	3	33.13	33.13	25.41	1.09	139.742	27.189	32.387	1.999
1	900-4500	1-7: SB@4	25.9	232.24	406	406	LOS_C	3	20.28	20.28	15.35	0.54	445.586	86.695	103.269	6.375

1	900-4500	1-14: Site D	16.14	105.61	16	16	LOS_E	5	79.03	79.03	57.22	3.69	51.509	10.022	11.938	0.737
1	900-4500	1-14: Site D	15.02	103.85	18	18	LOS_C	3	34.13	34.13	18.99	2.72	37.073	7.213	8.592	0.53
1	900-4500	1-14: Site D	17.99	104.57	41	41	LOS_E	5	79.03	79.03	57.46	5.56	167.817	32.651	38.893	2.401
1	900-4500	1	75.03	1068.34	3402	3402	LOS_E	5	64.42	64.42	52.07	1.44	7325.903	1425.355	1697.849	104.805
2	900-4500	1-1: EB@1(	22.99	97.36	247	247	LOS_C	3	30.34	30.34	24.56	0.68	335.009	65.181	77.642	4.793
2	900-4500	1-1: EB@1(	0.27	60.27	58	58	LOS_A	1	3.24	3.24	1.05	0.21	40.65	7.909	9.421	0.582
2	900-4500	1-1: EB@1(	50.61	189.65	289	289	LOS_D	4	51.87	51.87	43.6	0.93	522.307	101.622	121.05	7.472
2	900-4500	1-4: WB@1	19.42	159.17	160	160	LOS_C	3	32.82	32.82	26.72	0.72	211.757	41.2	49.077	3.029
2	900-4500	1-4: WB@1	30.94	140.86	159	159	LOS_D	4	53.1	53.1	44.79	0.94	279.048	54.293	64.672	3.992
2	900-4500	1-4: WB@1	6.61	128.24	156	156	LOS_B	2	12.59	12.59	7.78	0.67	151.064	29.392	35.011	2.161
2	900-4500	1-5: NB@4	7.12	65.57	38	38	LOS_F	6	92.33	92.33	72.11	2.05	105.965	20.617	24.558	1.516
2	900-4500	1-5: NB@4	0.48	61.27	237	237	LOS_E	5	72.48	72.48	54.75	1.7	554.963	107.976	128.618	7.939
2	900-4500	1-5: NB@4	896.98	1068.37	1305	1305	LOS_F	6	103.74	103.74	83.97	2.18	4024.321	782.987	932.675	57.573
2	900-4500	1-7: SB@4	0.12	20.07	133	133	LOS_A	1	6	6	3.52	0.26	89.226	17.36	20.679	1.276
2	900-4500	1-7: SB@4	13.03	131.23	103	103	LOS_C	3	34.08	34.08	25.95	1.03	152.257	29.624	35.287	2.178
2	900-4500	1-7: SB@4	29.99	168.87	410	410	LOS_C	3	22.43	22.43	17.4	0.57	467.016	90.864	108.236	6.681
2	900-4500	1-14: Site D	30.01	128.37	20	20	LOS_F	6	113.73	113.73	83.73	5.45	92.134	17.926	21.353	1.318
2	900-4500	1-14: Site D	28.86	126.6	21	21	LOS_E	5	59.43	59.43	40.7	3.62	60.192	11.711	13.95	0.861
2	900-4500	1-14: Site D	31.1	127.32	35	35	LOS_F	6	111.11	111.11	84.6	6.86	175.651	34.175	40.709	2.513
2	900-4500	1	77.9	1068.37	3371	3371	LOS_E	5	63.87	63.87	51.14	1.47	7263.512	1413.216	1683.389	103.913
3	900-4500	1-1: EB@1(	23.31	122.18	234	234	LOS_C	3	31.91	31.91	25.78	0.71	326.1	63.447	75.577	4.665
3	900-4500	1-1: EB@1(	0.05	20.09	46	46	LOS_A	1	2.63	2.63	1.34	0.09	29.273	5.695	6.784	0.419
3	900-4500	1-1: EB@1(	50.11	253.56	309	309	LOS_D	4	48.19	48.19	39.9	0.91	540.111	105.086	125.176	7.727
3	900-4500	1-4: WB@1	15.84	125.37	143	143	LOS_C	3	33.06	33.06	26.85	0.74	191.079	37.177	44.284	2.734
3	900-4500	1-4: WB@1	30.92	192.36	164	164	LOS_D	4	53.18	53.18	45.29	0.9	285.216	55.493	66.102	4.08
3	900-4500	1-4: WB@1	9.66	173.11	175	175	LOS_B	2	12.69	12.69	6.87	0.87	185.92	36.173	43.089	2.66
3	900-4500	1-5: NB@4	4.15	41.68	29	29	LOS_F	6	96.73	96.73	74.55	2.48	91.068	17.719	21.106	1.303
3	900-4500	1-5: NB@4	28.21	349.37	230	230	LOS_E	5	77.66	77.66	59.65	1.86	571.001	111.096	132.335	8.169
3	900-4500	1-5: NB@4	908.84	1068.29	1299	1299	LOS_F	6	109.43	109.43	88.51	2.35	4206.63	818.457	974.927	60.181
3	900-4500	1-7: SB@4	0.03	18.05	125	125	LOS_A	1	6.26	6.26	3.4	0.24	82.976	16.144	19.231	1.187
3	900-4500	1-7: SB@4	13.9	158.4	94	94	LOS_C	3	34.87	34.87	27.13	0.99	138.126	26.874	32.012	1.976
3	900-4500	1-7: SB@4	28.89	187.29	430	430	LOS_C	3	21.45	21.45	16.38	0.58	484.785	94.322	112.354	6.935
3	900-4500	1-14: Site D	41.9	212.95	12	12	LOS_F	6	117.47	117.47	85.42	5.08	51.135	9.949	11.851	0.732
3	900-4500	1-14: Site D	40.59	211.19	21	21	LOS_E	5	73.32	73.32	46.8	4.33	71.668	13.944	16.61	1.025
3	900-4500	1-14: Site D	43.11	211.9	46	46	LOS_F	6	124.94	124.94	92.56	7.28	254.875	49.589	59.07	3.646
3	900-4500	1	82.63	1068.29	3357	3357	LOS_E	5	66.41	66.41	53.03	1.57	7509.541	1461.084	1740.409	107.433
4	900-4500	1-1: EB@1(	22.67	127.98	235	235	LOS_C	3	29.66	29.66	23.8	0.68	316.292	61.539	73.304	4.525
4	900-4500	1-1: EB@1(	0.13	20.22	43	43	LOS_A	1	5.76	5.76	2.58	0.26	32.632	6.349	7.563	0.467
4	900-4500	1-1: EB@1(	48.54	144.65	287	287	LOS_D	4	50.44	50.44	42.52	0.88	507.41	98.724	117.597	7.259
4	900-4500	1-4: WB@1	21.35	148.09	180	180	LOS_C	3	33.59	33.59	27.53	0.72	240.183	46.731	55.665	3.436
4	900-4500	1-4: WB@1	30.59	107.82	165	165	LOS_D	4	49.85	49.85	41.97	0.87	276.008	53.701	63.968	3.949
4	900-4500	1-4: WB@1	6.84	175.82	142	142	LOS_B	2	13.97	13.97	8.5	0.82	150.72	29.325	34.931	2.156
4	900-4500	1-5: NB@4	4.87	64.26	34	34	LOS_F	6	89.19	89.19	69.53	2.12	95.423	18.566	22.115	1.365
4	900-4500	1-5: NB@4	1.11	112.33	246	246	LOS_E	5	66.84	66.84	50.12	1.67	548.701	106.757	127.167	7.85
4	900-4500	1-5: NB@4	851.22	1068.22	1331	1331	LOS_F	6	100.42	100.42	81.36	2.1	3992.553	776.806	925.313	57.118
4	900-4500	1-7: SB@4	0.03	19.87	124	124	LOS_A	1	7.72	7.72	4.86	0.25	85.47	16.629	19.808	1.223

4	900-4500	1-7: SB@4	13.04	145.34	91	91	LOS_D	4	36.34	36.34	27.94	1.18	144.476	28.11	33.484	2.067
4	900-4500	1-7: SB@4	30.91	228.64	416	416	LOS_C	3	22.17	22.17	16.99	0.58	474.854	92.389	110.052	6.793
4	900-4500	1-14: Site D	16.09	107.94	11	11	LOS_F	6	82.92	82.92	58.04	4.36	39.353	7.657	9.121	0.563
4	900-4500	1-14: Site D	15.5	106.18	22	22	LOS_D	4	37.91	37.91	21.92	3.23	50.845	9.893	11.784	0.727
4	900-4500	1-14: Site D	17.44	106.89	36	36	LOS_E	5	77.12	77.12	55.35	6.31	155.954	30.343	36.144	2.231
4	900-4500	1	72.02	1068.22	3363	3363	LOS_E	5	62.17	62.17	49.75	1.43	7113.621	1384.052	1648.65	101.769
5	900-4500	1-1: EB@1(	22.9	142.36	256	256	LOS_C	3	26.52	26.52	20.8	0.65	329.972	64.201	76.474	4.721
5	900-4500	1-1: EB@1(	0.17	20.51	46	46	LOS_A	1	1.83	1.83	0.47	0.17	30.495	5.933	7.068	0.436
5	900-4500	1-1: EB@1(	45.74	140.51	273	273	LOS_D	4	51.27	51.27	43.03	0.93	492.779	95.877	114.206	7.05
5	900-4500	1-4: WB@1	18.3	150.12	167	167	LOS_C	3	29.76	29.76	24.28	0.65	207.87	40.444	48.176	2.974
5	900-4500	1-4: WB@1	27.71	112.35	155	155	LOS_D	4	49.01	49.01	41.2	0.88	258.399	50.275	59.886	3.697
5	900-4500	1-4: WB@1	9.89	120.71	173	173	LOS_B	2	14.92	14.92	8.46	0.95	196.405	38.213	45.519	2.81
5	900-4500	1-5: NB@4	7.11	101.75	30	30	LOS_F	6	97.83	97.83	77.04	2.17	89.627	17.438	20.772	1.282
5	900-4500	1-5: NB@4	0.5	62.93	247	247	LOS_E	5	71.35	71.35	55.16	1.63	563.347	109.607	130.561	8.059
5	900-4500	1-5: NB@4	891.12	1074.38	1377	1377	LOS_F	6	99.74	99.74	80.76	2.11	4119.71	801.546	954.783	58.937
5	900-4500	1-7: SB@4	0.04	19.56	134	134	LOS_A	1	9.67	9.67	5.78	0.38	104.4	20.313	24.196	1.494
5	900-4500	1-7: SB@4	8.77	108.78	75	75	LOS_C	3	33.45	33.45	25.4	1.01	109.717	21.347	25.428	1.57
5	900-4500	1-7: SB@4	34.03	259.28	465	465	LOS_C	3	22.49	22.49	17.13	0.6	536.375	104.359	124.31	7.673
5	900-4500	1-14: Site D	13.67	151.43	14	14	LOS_E	5	74.67	74.67	53.49	3.64	43.917	8.545	10.178	0.628
5	900-4500	1-14: Site D	13.05	149.67	26	26	LOS_C	3	33.82	33.82	19.08	2.54	49.944	9.717	11.575	0.715
5	900-4500	1-14: Site D	14.27	150.39	26	26	LOS_E	5	78.8	78.8	57.56	6.42	118.762	23.107	27.524	1.699
5	900-4500	1	73.82	1074.38	3464	3464	LOS_E	5	61.24	61.24	48.94	1.41	7252.877	1411.146	1680.924	103.761
6	900-4500	1-1: EB@1(	22.44	141.42	213	213	LOS_C	3	33.19	33.19	27.16	0.72	301.322	58.626	69.834	4.311
6	900-4500	1-1: EB@1(	0.02	19.41	37	37	LOS_A	1	2.6	2.6	0.92	0.08	23.408	4.554	5.425	0.335
6	900-4500	1-1: EB@1(	47.33	246.89	286	286	LOS_D	4	50.45	50.45	42.29	0.89	506.415	98.53	117.367	7.245
6	900-4500	1-4: WB@1	17.06	123.46	161	161	LOS_C	3	31.28	31.28	25.31	0.71	208.83	40.631	48.398	2.988
6	900-4500	1-4: WB@1	29.59	103.24	171	171	LOS_D	4	48.07	48.07	40.28	0.89	284.553	55.364	65.948	4.071
6	900-4500	1-4: WB@1	7.88	101.92	155	155	LOS_B	2	13.26	13.26	7.46	0.81	161.11	31.346	37.339	2.305
6	900-4500	1-5: NB@4	4.22	80.39	26	26	LOS_F	6	82.52	82.52	61.56	2.27	73.156	14.233	16.955	1.047
6	900-4500	1-5: NB@4	0.87	81.89	257	257	LOS_E	5	72.59	72.59	54.82	1.81	611.934	119.06	141.822	8.754
6	900-4500	1-5: NB@4	883.63	1076.26	1289	1289	LOS_F	6	104.8	104.8	84.42	2.25	4034.209	784.91	934.967	57.714
6	900-4500	1-7: SB@4	0.02	17.52	127	127	LOS_A	1	4.58	4.58	2.48	0.17	77.324	15.044	17.921	1.106
6	900-4500	1-7: SB@4	13.42	149.69	110	110	LOS_C	3	33.88	33.88	25.51	1.07	164.795	32.063	38.193	2.358
6	900-4500	1-7: SB@4	24.76	217.49	391	391	LOS_C	3	20.44	20.44	15.54	0.55	430.973	83.852	99.882	6.166
6	900-4500	1-14: Site D	23.6	160.13	21	21	LOS_E	5	77.02	77.02	54.43	3.62	65.745	12.792	15.237	0.941
6	900-4500	1-14: Site D	21.66	158.37	27	27	LOS_E	5	55.08	55.08	35.07	3.19	69.039	13.432	16	0.988
6	900-4500	1-14: Site D	23.55	159.09	32	32	LOS_F	6	87.43	87.43	63.03	5.22	129.462	25.189	30.004	1.852
6	900-4500	1	74.67	1076.26	3303	3303	LOS_E	5	63.88	63.88	50.82	1.49	7143.919	1389.947	1655.672	102.202
7	900-4500	1-1: EB@1(	20.17	128.51	214	214	LOS_C	3	28.03	28.03	22.77	0.62	277.951	54.079	64.418	3.976
7	900-4500	1-1: EB@1(	0.08	19.82	42	42	LOS_A	1	2.53	2.53	1.01	0.12	27.19	5.29	6.301	0.389
7	900-4500	1-1: EB@1(	49.8	193.6	311	311	LOS_D	4	49.08	49.08	40.85	0.9	545.207	106.078	126.357	7.8
7	900-4500	1-4: WB@1	17.1	122.21	152	152	LOS_C	3	31.79	31.79	26.16	0.66	194.852	37.911	45.159	2.788
7	900-4500	1-4: WB@1	30.42	123.16	148	148	LOS_D	4	54.11	54.11	46.2	0.91	259.834	50.554	60.219	3.717
7	900-4500	1-4: WB@1	10.12	109.4	168	168	LOS_B	2	13.71	13.71	7.34	0.95	187.256	36.433	43.398	2.679
7	900-4500	1-5: NB@4	8.34	87.35	37	37	LOS_F	6	96.02	96.02	76.97	2.24	108.902	21.188	25.239	1.558
7	900-4500	1-5: NB@4	0.39	78.18	222	222	LOS_E	5	74.25	74.25	58.55	1.59	511.195	99.46	118.474	7.313

7	900-4500	1-5: NB@4	901.87	1085.91	1331	1331	LOS_F	6	107.34	107.34	88.6	2.1	4120.606	801.72	954.99	58.95
7	900-4500	1-7: SB@4	0.11	52.24	108	108	LOS_A	1	8.36	8.36	5.22	0.31	78.212	15.217	18.126	1.119
7	900-4500	1-7: SB@4	10.87	104.98	97	97	LOS_C	3	31.71	31.71	23.41	0.99	138.66	26.978	32.136	1.984
7	900-4500	1-7: SB@4	33.13	210.88	437	437	LOS_C	3	24.1	24.1	18.82	0.61	515.943	100.384	119.575	7.381
7	900-4500	1-14: Site D	47.17	162.66	21	21	LOS_F	6	160.51	160.51	124.71	6.14	116.299	22.627	26.953	1.664
7	900-4500	1-14: Site D	45.97	160.89	18	18	LOS_F	6	91.95	91.95	65.73	4.61	67.515	13.136	15.647	0.966
7	900-4500	1-14: Site D	47.94	161.61	42	42	LOS_F	6	137.69	137.69	105.46	8.24	261.675	50.912	60.646	3.744
7	900-4500	1	81.57	1085.91	3348	3348	LOS_E	5	67.13	67.13	54.58	1.49	7408.012	1441.33	1716.878	105.98
8	900-4500	1-1: EB@1(	22.67	147.48	225	225	LOS_C	3	30.88	30.88	24.84	0.68	307.28	59.786	71.215	4.396
8	900-4500	1-1: EB@1(	0.05	38.45	36	36	LOS_A	1	2.63	2.63	0.81	0.11	23.293	4.532	5.398	0.333
8	900-4500	1-1: EB@1(	47.62	209.15	283	283	LOS_D	4	50.6	50.6	42.4	0.9	503.353	97.934	116.657	7.201
8	900-4500	1-4: WB@1	17.37	147.25	146	146	LOS_C	3	33.02	33.02	26.9	0.7	191.688	37.296	44.426	2.742
8	900-4500	1-4: WB@1	31.71	128.44	181	181	LOS_D	4	49.46	49.46	41.71	0.9	304.267	59.199	70.517	4.353
8	900-4500	1-4: WB@1	6.59	123.29	169	169	LOS_B	2	12.48	12.48	6.85	0.78	172.088	33.482	39.883	2.462
8	900-4500	1-5: NB@4	4.77	56.69	33	33	LOS_F	6	94.13	94.13	72.64	2.27	97.627	18.995	22.626	1.397
8	900-4500	1-5: NB@4	1.31	206.26	274	274	LOS_E	5	69.23	69.23	51.44	1.75	630.494	122.671	146.123	9.02
8	900-4500	1-5: NB@4	891.06	1068.38	1304	1304	LOS_F	6	102.57	102.57	81.93	2.28	4058.439	789.625	940.582	58.061
8	900-4500	1-7: SB@4	0.04	20.97	127	127	LOS_A	1	6.15	6.15	3.37	0.24	84.349	16.411	19.549	1.207
8	900-4500	1-7: SB@4	15.19	208.38	95	95	LOS_D	4	38.24	38.24	29.92	1.13	150.356	29.254	34.846	2.151
8	900-4500	1-7: SB@4	32.85	215.72	445	445	LOS_C	3	22.48	22.48	17.26	0.59	510.373	99.3	118.284	7.301
8	900-4500	1-14: Site D	8.69	83.75	11	11	LOS_D	4	52.03	52.03	34.42	3.36	29.613	5.762	6.863	0.424
8	900-4500	1-14: Site D	7.89	81.99	17	17	LOS_C	3	28.71	28.71	15.78	2.06	27.714	5.392	6.423	0.396
8	900-4500	1-14: Site D	10.18	82.71	27	27	LOS_E	5	66.03	66.03	48.13	4.89	96.856	18.845	22.447	1.386
8	900-4500	1	73.2	1068.38	3373	3373	LOS_E	5	62.36	62.36	49.36	1.46	7186.336	1398.2	1665.503	102.809
9	900-4500	1-1: EB@1(	20.23	128.32	239	239	LOS_C	3	26.11	26.11	20.7	0.61	302.343	58.825	70.071	4.325
9	900-4500	1-1: EB@1(	0.05	19.97	42	42	LOS_A	1	1.52	1.52	0.38	0.07	25.798	5.019	5.979	0.369
9	900-4500	1-1: EB@1(	54.92	369.74	308	308	LOS_D	4	53.24	53.24	44.73	0.95	565.912	110.106	131.155	8.096
9	900-4500	1-4: WB@1	19.78	217.45	178	178	LOS_C	3	31.34	31.34	25.52	0.68	228.406	44.44	52.935	3.268
9	900-4500	1-4: WB@1	30.64	104.63	170	170	LOS_D	4	50.11	50.11	41.83	0.88	286.468	55.736	66.392	4.098
9	900-4500	1-4: WB@1	6.79	102.44	176	176	LOS_B	2	11.86	11.86	6.63	0.71	171.457	33.359	39.737	2.453
9	900-4500	1-5: NB@4	4.24	43.21	34	34	LOS_F	6	95.87	95.87	74.47	2.35	101.689	19.785	23.568	1.455
9	900-4500	1-5: NB@4	0.19	20.04	238	238	LOS_E	5	72.99	72.99	56.3	1.55	539.714	105.009	125.084	7.721
9	900-4500	1-5: NB@4	906.26	1068.37	1324	1324	LOS_F	6	106.12	106.12	86.31	2.13	4088.946	795.56	947.653	58.497
9	900-4500	1-7: SB@4	0.07	38.08	129	129	LOS_A	1	5.82	5.82	2.8	0.23	84.361	16.414	19.551	1.207
9	900-4500	1-7: SB@4	12.15	107.88	97	97	LOS_C	3	31.5	31.5	23.88	0.99	138.278	26.904	32.047	1.978
9	900-4500	1-7: SB@4	29.24	190.3	415	415	LOS_C	3	21.7	21.7	16.63	0.56	466.654	90.794	108.152	6.676
9	900-4500	1-14: Site D	25.82	222.94	9	9	LOS_F	6	86.28	86.28	59.05	4.56	33.514	6.521	7.767	0.479
9	900-4500	1-14: Site D	25.25	221.18	26	26	LOS_D	4	37.74	37.74	20.22	3.08	58.161	11.316	13.479	0.832
9	900-4500	1-14: Site D	27.69	221.9	40	40	LOS_F	6	111.36	111.36	82.31	6.62	201.869	39.276	46.785	2.888
9	900-4500	1	77.55	1068.37	3425	3425	LOS_E	5	63.95	63.95	51.3	1.42	7293.486	1419.047	1690.336	104.342
10	900-4500	1-1: EB@1(	27.1	188.02	272	272	LOS_C	3	30.05	30.05	24.32	0.67	366.79	71.364	85.007	5.247
10	900-4500	1-1: EB@1(	0.04	19.78	39	39	LOS_A	1	4.26	4.26	1.4	0.18	27.344	5.32	6.337	0.391
10	900-4500	1-1: EB@1(	51.07	232.39	304	304	LOS_D	4	50.17	50.17	41.86	0.94	543.508	105.747	125.963	7.776
10	900-4500	1-4: WB@1	15.17	184.44	133	133	LOS_C	3	30.79	30.79	25.46	0.63	166.957	32.484	38.694	2.389
10	900-4500	1-4: WB@1	30.71	116.11	170	170	LOS_D	4	50.56	50.56	42.89	0.91	289.599	56.346	67.117	4.143
10	900-4500	1-4: WB@1	8.85	119.1	183	183	LOS_B	2	12.88	12.88	7.54	0.75	185.393	36.071	42.967	2.652

	10	900-4500	1-5: NB@4	5.32	64.19	26	26	LOS_F	6	85.79	85.79	66.9	2	70.163	13.651	16.261	1.004
	10	900-4500	1-5: NB@4	0.68	81.08	231	231	LOS_E	5	75.26	75.26	57.48	1.8	557.772	108.522	129.269	7.98
	10	900-4500	1-5: NB@4	904.21	1085.94	1329	1329	LOS_F	6	106.41	106.41	86.32	2.16	4136.829	804.877	958.75	59.182
	10	900-4500	1-7: SB@4	0.01	18.91	129	129	LOS_A	1	6.93	6.93	4.23	0.19	83.594	16.264	19.374	1.196
	10	900-4500	1-7: SB@4	15.35	190.89	112	112	LOS_C	3	33.8	33.8	25.02	1.09	168.174	32.721	38.976	2.406
	10	900-4500	1-7: SB@4	28.75	269.21	414	414	LOS_C	3	21.78	21.78	16.59	0.58	469.151	91.28	108.73	6.712
	10	900-4500	1-14: Site D	126.35	283.6	16	16	LOS_F	6	351.19	351.19	269.3	14	190.398	37.044	44.127	2.724
	10	900-4500	1-14: Site D	124.93	281.83	25	25	LOS_F	6	216.35	216.35	156.4	9.56	198.576	38.636	46.022	2.841
	10	900-4500	1-14: Site D	126.59	282.55	46	46	LOS_F	6	263.7	263.7	200.21	14.37	498.742	97.037	115.588	7.135
	10	900-4500	1	97.68	1085.94	3429	3429	LOS_E	5	68.98	68.98	55.07	1.66	7950.276	1546.835	1842.553	113.738
AVG		900-4500	1-1: EB@1(	22.98	136.47	240	240		3	29.64	29.64	23.89	0.67	320.99	62.453	74.392	4.592
AVG		900-4500	1-1: EB@1(	0.09	25.9	42	42		1	3	3	1.08	0.14	28.34	5.514	6.568	0.405
AVG		900-4500	1-1: EB@1(	49.46	220.84	294	294		4	50.44	50.44	42.21	0.91	523.867	101.925	121.411	7.495
AVG		900-4500	1-4: WB@1	17.6	146.31	156	156		3	31.77	31.77	25.91	0.69	202.028	39.307	46.822	2.89
AVG		900-4500	1-4: WB@1	31.13	127.85	167	167		4	51.36	51.36	43.4	0.9	286.081	55.661	66.302	4.093
AVG		900-4500	1-4: WB@1	8.19	127.79	167	167		2	13	13	7.37	0.8	172.902	33.64	40.072	2.474
AVG		900-4500	1-5: NB@4	5.59	69.04	32	32		6	91.93	91.93	71.67	2.2	92.231	17.945	21.375	1.319
AVG		900-4500	1-5: NB@4	3.42	111.43	242	242		5	72.68	72.68	55.62	1.71	564.286	109.79	130.779	8.073
AVG		900-4500	1-5: NB@4	893.13	1073.24	1323	1323		6	104.66	104.66	84.89	2.18	4097.245	797.175	949.576	58.616
AVG		900-4500	1-7: SB@4	0.05	24.46	127	127		1	6.84	6.84	3.99	0.25	85.827	16.699	19.891	1.228
AVG		900-4500	1-7: SB@4	12.81	141.34	97	97		3	34.1	34.1	25.96	1.06	144.458	28.106	33.48	2.067
AVG		900-4500	1-7: SB@4	29.85	217.99	423	423		3	21.93	21.93	16.81	0.58	480.171	93.424	111.284	6.869
AVG		900-4500	1-14: Site D	34.95	161.94	15	15		6	119.48	119.48	87.98	5.39	71.362	13.884	16.539	1.021
AVG		900-4500	1-14: Site D	33.87	160.18	22	22		4	66.84	66.84	44.07	3.89	69.073	13.439	16.008	0.988
AVG		900-4500	1-14: Site D	35.99	160.89	37	37		6	113.72	113.72	84.67	7.18	206.166	40.112	47.781	2.949
AVG		900-4500	1	78.61	1073.24	3384	3384		5	64.44	64.44	51.6	1.48	7344.748	1429.021	1702.216	105.075
STDDEV		900-4500	1-1: EB@1(	2.07	23.08	19	19		0	2.23	2.23	2.02	0.03	25.53	4.967	5.917	0.365
STDDEV		900-4500	1-1: EB@1(	0.08	13.4	7	7		0	1.22	1.22	0.62	0.06	5.367	1.044	1.244	0.077
STDDEV		900-4500	1-1: EB@1(	2.52	65.17	13	13		0	1.46	1.46	1.41	0.02	23.539	4.58	5.455	0.337
STDDEV		900-4500	1-4: WB@1	2.14	36.42	16	16		0	1.31	1.31	1.1	0.04	22.063	4.293	5.113	0.316
STDDEV		900-4500	1-4: WB@1	2.67	27.38	12	12		0	2.61	2.61	2.48	0.02	22.578	4.393	5.233	0.323
STDDEV		900-4500	1-4: WB@1	1.43	26.19	12	12		0	0.99	0.99	0.74	0.09	15.715	3.058	3.642	0.225
STDDEV		900-4500	1-5: NB@4	1.46	19.51	4	4		0	5.15	5.15	4.76	0.15	12.767	2.484	2.959	0.183
STDDEV		900-4500	1-5: NB@4	8.71	96.77	15	15		0	3.05	3.05	3.04	0.1	34.328	6.679	7.956	0.491
STDDEV		900-4500	1-5: NB@4	16.66	7.28	26	26		0	3.06	3.06	2.86	0.08	70.751	13.766	16.397	1.012
STDDEV		900-4500	1-7: SB@4	0.04	11.45	7	7		0	1.45	1.45	1.07	0.06	7.534	1.466	1.746	0.108
STDDEV		900-4500	1-7: SB@4	1.96	36.59	10	10		0	2.02	2.02	1.93	0.06	16.373	3.186	3.795	0.234
STDDEV		900-4500	1-7: SB@4	3.03	31.31	22	22		0	1.1	1.1	0.98	0.02	32.479	6.319	7.527	0.465
STDDEV		900-4500	1-14: Site D	34.38	61.97	4	4		1	86.82	86.82	68.4	3.16	49.898	9.708	11.564	0.714
STDDEV		900-4500	1-14: Site D	34.21	61.97	4	4		1	56.29	56.29	42.56	2.14	47.622	9.266	11.037	0.681
STDDEV		900-4500	1-14: Site D	34.08	61.97	7	7		1	57.67	57.67	44.71	2.71	116.174	22.603	26.924	1.662
STDDEV		900-4500	1	7.56	7.28	47	47		0	2.41	2.41	2.1	0.08	243.742	47.423	56.49	3.487
MIN		900-4500	1-1: EB@1(	20.17	97.36	213	213		3	26.11	26.11	20.7	0.61	277.951	54.079	64.418	3.976
MIN		900-4500	1-1: EB@1(	0.02	19.41	35	35		1	1.52	1.52	0.38	0.07	23.293	4.532	5.398	0.333
MIN		900-4500	1-1: EB@1(	45.74	140.51	273	273		4	48.19	48.19	39.9	0.88	492.779	95.877	114.206	7.05
MIN		900-4500	1-4: WB@1	14.62	85.5	133	133		3	29.76	29.76	24.28	0.63	166.957	32.484	38.694	2.389

MIN	900-4500	1-4: WB@1	27.71	103.24	148	148	4	48.07	48.07	40.28	0.87	258.399	50.275	59.886	3.697
MIN	900-4500	1-4: WB@1	6.59	101.92	142	142	2	11.66	11.66	6.31	0.67	150.72	29.325	34.931	2.156
MIN	900-4500	1-5: NB@4	4.15	41.68	26	26	6	82.52	82.52	61.56	2	70.163	13.651	16.261	1.004
MIN	900-4500	1-5: NB@4	0.19	20.04	222	222	5	66.84	66.84	50.12	1.55	511.195	99.46	118.474	7.313
MIN	900-4500	1-5: NB@4	851.22	1068.22	1289	1289	6	99.74	99.74	80.76	2.1	3992.553	776.806	925.313	57.118
MIN	900-4500	1-7: SB@4	0.01	17.52	108	108	1	4.58	4.58	2.48	0.17	77.324	15.044	17.921	1.106
MIN	900-4500	1-7: SB@4	8.77	104.98	75	75	3	31.5	31.5	23.41	0.99	109.717	21.347	25.428	1.57
MIN	900-4500	1-7: SB@4	24.76	168.87	391	391	3	20.28	20.28	15.35	0.54	430.973	83.852	99.882	6.166
MIN	900-4500	1-14: Site D	8.69	83.75	9	9	4	52.03	52.03	34.42	3.36	29.613	5.762	6.863	0.424
MIN	900-4500	1-14: Site D	7.89	81.99	17	17	3	28.71	28.71	15.78	2.06	27.714	5.392	6.423	0.396
MIN	900-4500	1-14: Site D	10.18	82.71	26	26	5	66.03	66.03	48.13	4.89	96.856	18.845	22.447	1.386
MIN	900-4500	1	72.02	1068.22	3303	3303	5	61.24	61.24	48.94	1.41	7113.621	1384.052	1648.65	101.769
MAX	900-4500	1-1: EB@1	27.1	188.02	272	272	3	33.19	33.19	27.16	0.72	366.79	71.364	85.007	5.247
MAX	900-4500	1-1: EB@1	0.27	60.27	58	58	1	5.76	5.76	2.58	0.26	40.65	7.909	9.421	0.582
MAX	900-4500	1-1: EB@1	54.92	369.74	311	311	4	53.24	53.24	44.73	0.95	565.912	110.106	131.155	8.096
MAX	900-4500	1-4: WB@1	21.35	217.45	180	180	3	33.59	33.59	27.53	0.74	240.183	46.731	55.665	3.436
MAX	900-4500	1-4: WB@1	38.1	192.36	190	190	5	56.15	56.15	47.88	0.94	337.416	65.649	78.2	4.827
MAX	900-4500	1-4: WB@1	10.12	175.82	183	183	2	14.92	14.92	8.5	0.95	196.405	38.213	45.519	2.81
MAX	900-4500	1-5: NB@4	8.34	101.75	38	38	6	97.83	97.83	77.04	2.48	108.902	21.188	25.239	1.558
MAX	900-4500	1-5: NB@4	28.21	349.37	274	274	5	77.66	77.66	59.65	1.86	630.494	122.671	146.123	9.02
MAX	900-4500	1-5: NB@4	908.84	1085.94	1377	1377	6	109.43	109.43	88.6	2.35	4206.63	818.457	974.927	60.181
MAX	900-4500	1-7: SB@4	0.12	52.24	134	134	1	9.67	9.67	5.78	0.38	104.4	20.313	24.196	1.494
MAX	900-4500	1-7: SB@4	15.35	208.38	112	112	4	38.24	38.24	29.92	1.18	168.174	32.721	38.976	2.406
MAX	900-4500	1-7: SB@4	34.03	269.21	465	465	3	24.1	24.1	18.82	0.61	536.375	104.359	124.31	7.673
MAX	900-4500	1-14: Site D	126.35	283.6	21	21	6	351.19	351.19	269.3	14	190.398	37.044	44.127	2.724
MAX	900-4500	1-14: Site D	124.93	281.83	27	27	6	216.35	216.35	156.4	9.56	198.576	38.636	46.022	2.841
MAX	900-4500	1-14: Site D	126.59	282.55	46	46	6	263.7	263.7	200.21	14.37	498.742	97.037	115.588	7.135
MAX	900-4500	1	97.68	1085.94	3464	3464	5	68.98	68.98	55.07	1.66	7950.276	1546.835	1842.553	113.738