FEHR PEERS

Draft Memorandum

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To: Scott Gregory, Lamphier-Gregory

From: Sam Tabibnia, Fehr & Peers

Subject: Head-Royce School Expansion – Transportation Impact Review (non-CEQA)

OK18-0287

This memorandum summarizes the non-CEQA transportation impact review (TIR) that Fehr & Peers completed for the proposed Head-Royce School Expansion Project in Oakland. The TIR evaluates access and circulation for all travel modes for the proposed Project, including a detailed evaluation of access and circulation by automobiles using microsimulation. The information provided in this memorandum is consistent with the City of Oakland's *Transportation Impact Review Guidelines* (TIRG, April 2017).

Sections in this memorandum include:

In the last two years, travel behavior has changed at a global level due to the COVID-19 pandemic. In the City of Oakland and the surrounding areas, travel patterns (both amount and mode of trips) have changed significantly since the first "shelter-in-place" order was issued on March 17, 2020. As a result, many in-person activities at the Head-Royce School have been canceled or modified. The existing conditions presented in this memorandum, such as traffic volumes, bus ridership, and student drop off and pick-up behavior, are generally based on data collection or observations prior to the start of the pandemic. The analysis presented in this memorandum is generally based on the assumption that long-term travel behavior characteristics would be similar to conditions prior to the start of the pandemic, because, at present, the

medium- or long-term effects of the COVID-19 pandemic on travel behavior are uncertain and it would be speculative to estimate any potential long-term or permanent changes.

1. Project Description

Head-Royce School is an independent K-12 school located at 4315 Lincoln Avenue between State Route (SR) 13 and Interstate (I)-580 in the Lincoln Highlands/Oakmore/Dimond neighborhood of Oakland. The existing school is on the north side of Lincoln Avenue and is referred to as the North Campus. The Project would consist of redeveloping the properties on the south side of Lincoln Avenue (South Campus) and integrating it with the existing North Campus.

Table 1 summarizes the School population under current conditions and at Project buildout. Based on November 2018 data, the School currently has 894 students and 158 faculty and staff for a total population of 1,052. The Project would increase the population to a maximum enrollment of 1,250 students and 189 faculty and staff, for a total population of 1,439, which is about 37 percent higher than the current population.

Currently, School starts at 8:25 AM for all students and ends at 2:00 PM for the kindergarten classes and 3:20 for all other classes. The School also offers before-school activities, which start at 7:30 AM and after-school activities which mostly end between 5:00 and 6:00 PM. About 40 students are in the before-school activities and about 390 students are in the after-school activities. The School is expected to have the same hours with similar proportion of students in before- and after-school activities after the completion of the Project.

Table 1: Enrollment and Employment Growth

Population Group	Existing (2018)	Project Buildout (Maximum Enrollment)	School Expansion Project	
			Population	Percent
Students	894	1,250	356	40%
Faculty/Staff	158	189	31	20%
Total	**1,052**	**1,439**	**387**	**37%**

Source: Head-Royce School, November 2018.

Existing Access and Circulation

Currently, the Project frontage along Lincoln Avenue is used for morning drop offs and afternoon pick-ups. Morning drop offs are allowed on both sides of the street; however, afternoon pick-ups by private vehicles are only allowed on the northside of the street. Passenger loading for private buses occur at a designated space on the north side of Lincoln Avenue adjacent to the main gate. AC Transit bus stops are provided on both sides of the street. A midblock signal on Lincoln

Avenue adjacent to the main gate allows for protected pedestrian crossing of the street. The School uses several traffic monitors during both morning drop offs and afternoon pick-ups to manage the student pick-ups and drop offs, direct pedestrian crossings, and ensure that parents and students follow the appropriate procedures.

Parents wishing to turn around on Lincoln Avenue before or after dropping off or picking-up their students are directed to use the following "Loops" east and west of the School:

- Drivers on westbound Lincoln Avenue (downhill) who wish to return to eastbound Lincoln Avenue towards SR 13 are directed to turn left on Alida Street, then right on Laguna Street, right on Potomac Street and then right on Lincoln Avenue to head eastbound (uphill).
- Drivers on eastbound Lincoln Avenue (uphill) who wish to return to westbound Lincoln Avenue towards I-580 are directed to turn right on Maiden Lane, then left on Monterey Boulevard before turning left on westbound (downhill) Lincoln Avenue.

Head-Royce School currently uses 283 off-street parking spaces in the following facilities:

- Lots A through C are in the South Campus and accessed through a side-street stop-controlled driveway on Lincoln Avenue north of the main gate. The three lots combined provide 67 spaces which are mostly assigned to faculty and staff, with limited spaces available for visitors.
- Lot D is in the South Campus and accessed through a side-street stop-controlled driveway on Lincoln Avenue west of the main gate. It provides 62 spaces which are assigned to faculty and staff.
- Lot E is in the North Campus and accessed through Whittle Avenue, which is a residential street on the north side of the North Campus. It provides 20 spaces which are assigned to faculty and staff.
- Lot F is in the North Campus and accessed through a signalized intersection on Lincoln Avenue on the east side of the School. It provides 134 spaces which are assigned to faculty and staff and also used by students and visitors.

Currently, Head-Royce School is authorized to use 157 spaces, thus, the 154 spaces in the North Campus (Lots E and F) are considered part of the existing parking supply and the remaining 129 spaces in the South Campus (Lots A through D) are used as overflow parking.

Head-Royce School is required to maintain a Transportation Demand Management (TDM) plan to (1) ensure effective and efficient drop off/pick-up processes, (2) implement parking management strategies to minimize parking on the adjacent residential streets, and (3) reduce single-student and single parent/student driving trips.

Proposed Access and Circulation

In addition to accommodating the increased enrollment, the redevelopment of the South Campus would also modify access and circulation for the School. The primary changes would consist of:

- The provision of a clockwise Loop Road along the perimeter of the South Campus with an inbound driveway on Lincoln Avenue along the east side of the South Campus and an outbound driveway along the west side. Both driveways on Lincoln Avenue would be signalized. The signal at the Lincoln Avenue/Loop Road Outbound intersection on the west side of the South Campus would replace the existing pedestrian signal on Lincoln Avenue adjacent to the School gate and the Loop Road Outbound approach would provide one left-turn and one right-turn lane at Lincoln Avenue. The signalized Lincoln Avenue/Loop Road Inbound intersection on the east side of the South Campus would provide a crosswalk on the west side of the intersection; it would also provide a left-turn lane on the westbound downhill Lincoln Avenue approach and a right-turn lane on the eastbound uphill Lincoln Avenue approach. The Project would also provide a left-turn lane on eastbound Lincoln Avenue at the signalized Lot F driveway. The proposed turn lanes would eliminate the existing on-street parking on the south side of Lincoln Avenue along the School frontage between the Loop Road Outbound Driveway and the Lot F driveway.
- The Loop Road would provide access to 138 parking spaces consisting of a 131-space parking facility on the east side of the South Campus and seven parking spaces on the west side. The Loop Road would accommodate two designated passenger loading areas (i.e., drop off and pick-up areas):one within the parking lot on the east side of the South Campus and another on the west side of the South Campus.
- The provision of the Loop Road within the South Campus would eliminate the drop offs and pick-ups along Lincoln Avenue, which would eliminate the need for parents to use the Alida Street and Maiden Lane loops to turnaround on Lincoln Avenue.
- Passenger loading for both public and private buses would remain on Lincoln Avenue. They would be located on both sides of Lincoln Avenue just east of the Loop Road Outbound Driveway.
- Completion of an underground pedestrian tunnel under Lincoln Avenue would connect the North and South Campuses and reduce at-grade pedestrian crossings across Lincoln Avenue.
- The on-site parking supply would increase to 328 parking spaces by demolishing the existing parking facilities in the South Campus and providing 138 parking space in the South Campus and accommodating stacked parking for 36 vehicles in the existing Lot F parking lot.

2. Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the local roadway network. Trip generation for the Project is estimated by first estimating the mode share for the existing Head-Royce School and then estimating the existing trip generation for the School and applying it to the proposed School expansion.

Mode Share

The current travel mode shares for Head-Royce School students and faculty/staff were estimated based on data provided by Head-Royce School, recorded observations by the School traffic monitor in November 2018, data collected by Fehr & Peers along the School frontage in November 2019, and Alameda-Contra Costa Transit (AC Transit) stop-level ridership in Spring 2019. **Table 2** summarizes the mode share for students, faculty/staff, and the overall School population.

Table 2: Student and Faculty/Staff Travel Mode Shares

Mode	Students		Faculty/Staff		Combined	
	Percent	Persons	Percent	Persons	Percent	Persons
Drop off/Pick-up (Carpool)[1]	21%	190	0%	-	18%	190
Drop off/Pick-up (SOV)[1]	20%	179	0%	-	17%	179
On-site Parking (Carpool)[2]	5%	44	20%	32	7%	76
On-site Parking (SOV)[3]	8%	68	72%	114	17%	182
Private Bus[4]	34%	308	1%	1	29%	309
Public Bus[5]	9%	80	1%	1	8%	81
Bike[1]	1%	6	3%	4	1%	10
Walk[1]	2%	19	4%	6	2%	25
Total	**100%**	**894**	**100%**	**158**	**100%**	**1,052**

Notes:
SOV = Single Occupant Vehicle (single-student or single parent/student driving trips)
1. Based on the Head-Royce School traffic monitor observations in November 2018 and confirmed by count data collected in November 2019
2. Based on the number of students and faculty/staff carpool parking permits provided by Head-Royce School
3. Based on data provided by Head-Royce School and the available parking supply
4. Based on data provided by Head-Royce School in November 2018
5. Based on the Head-Royce School traffic monitor observations and confirmed by AC Transit stop-level ridership data

Source: Fehr & Peers 2021.

Currently, about 43 percent of students use either a private or public bus, about 41 percent are dropped off and picked-up, about 13 percent drive and park on-site, and about three percent walk or bike. About 93 percent of the faculty and staff drive and park in either single-occupant or carpool vehicles, with the rest using buses, walking or biking to and from the School.

This analysis assumes the commute mode shares for students and faculty/staff after Project buildout would remain the same as existing conditions.

Existing Automobile Trip Generation

The automobile trip generation for the existing Head-Royce School is estimated based on the mode shares described in Table 2 and the School operating conditions described in the Project Description section of this memorandum. **Table 3** summarizes the existing automobile trip generation for the Head-Royce School. Automobile trip generation on a typical weekday for the School consists of parents dropping off and picking-up their students, and faculty/staff and a limited number of students driving and parking at the School, the private buses serving the School, and other trips, such as deliveries and visitors, which are assumed to be about five percent of the total trips generated by the School. The morning peak hour is from 7:45 to 8:45 AM and the afternoon peak hour is from 3:15 to 4:15 PM. Within each peak hour, most of the trips are concentrated around the School bell times, which are at 8:25 AM and 3:25 PM, respectively, for most students.

Table 3: Existing Automobile Trip Generation

Travel Mode	Morning Peak Hour (7:45 AM to 8:45 AM)			Afternoon Peak Hour (3:15 PM to 4:15 PM)			Daily Trips
	In	Out	Total	In	Out	Total	
School Population							
Drop offs/Pick-ups	245	245	490	97	97	193	1,100
On-Site Parking	221	0	221	0	105	105	450
Private Buses	5	5	10	5	5	10	20
Subtotal	471	250	721	102	206	308	1,570
Others (deliveries, visitors, etc.)[1]	24	13	37	5	10	15	80
Total	**495**	**263**	**758**	**107**	**216**	**323**	**1,650**

Notes:
1. Assumed to be five percent of the Project trips.
Source: Fehr & Peers, 2021.

The Head-Royce School currently generates about 758 morning peak hour, 323 afternoon peak hour, and 1,650 daily automobile trips on a typical weekday. Note that the afternoon peak hour trips are lower than the morning peak hour trips because although most of the students arrive during the morning peak hour, some, such as kindergarten students leave before the afternoon bell time, and many stay after the afternoon bell time due to participation in after-school activities.

Project Buildout Automobile Trip Generation

Table 4 summarizes the automobile trip generation at Project buildout based on the number of students and faculty/staff at maximum enrollment. The trip generation assumes the School would have similar operating conditions (such as similar bell times and similar number of students in before- and after-school activities, etc.), and students and faculty/staff would have similar mode shares. It is estimated that at buildout, the Head-Royce School would generate about 1,028 morning peak hour, 431 afternoon peak hour, and 2,250 daily automobile trips on a typical weekday.

Table 4: Project Buildout Automobile Trip Generation

Travel Mode	Morning Peak Hour (7:45 AM to 8:45 AM)			Afternoon Peak Hour (3:15 PM to 4:15 PM)			Daily Trips
	In	Out	Total	In	Out	Total	
School Population							
Drop offs/Pick-ups	343	343	685	135	135	270	1,540
On-Site Parking	283	0	283	0	130	130	580
Private Buses	5	5	10	5	5	10	20
Subtotal	631	348	979	140	270	410	2,140
Others (deliveries, visitors, etc.)[1]	32	17	49	7	14	21	110
Total	**663**	**365**	**1,028**	**147**	**284**	**431**	**2,250**

Notes:
1. Assumed to be five percent of the Project trips.
Source: Fehr & Peers, 2021.

Table 5 presents the net new trips that would be generated by the Project by subtracting the existing trip generation from the buildout trip generation. It is estimated that the Project would result in net new 270 morning peak hour, 108 afternoon peak hour, and 600 daily automobile trips on a typical weekday.

Table 5: Project Automobile Trip Generation

Automobile Trips	Morning Peak Hour (7:45 AM to 8:45 AM)			Afternoon Peak Hour (3:15 PM to 4:15 PM)			Daily
	In	Out	Total	In	Out	Total	
Existing[1]	495	263	758	107	216	323	1,650
Buildout[2]	663	365	1,028	147	284	431	2,250
School Expansion Project	**168**	**102**	**270**	**40**	**68**	**108**	**600**

Notes:
1. See Table 3 for details.
2. See Table 4 for details.
Source: Fehr & Peers, 2021.

Non-Automobile Trip Generation

Table 6 presents the person trip generation estimates for the various travel modes based on the existing mode shares and operating conditions described above.

Table 6: Person Trip Generation by Travel Mode[1]

Travel Mode	Morning Peak Hour (7:45 AM to 8:45 AM)			Afternoon Peak Hour (3:15 PM to 4:15 PM)			Daily		
	Existing	Buildout	Project	Existing	Buildout	Project	Existing	Buildout	Project
Automobile	589	796	207	251	332	82	1,270	1,720	450
Private Bus	301	421	120	301	420	120	600	840	240
Public Bus	81	113	32	81	113	32	160	230	70
Bike	10	13	3	3	8	5	20	30	10
Walk	24	32	8	8	21	13	50	70	20
Total	**1,005**	**1,374**	**370**	**644**	**894**	**251**	**2,100**	**2,890**	**790**

Notes:
1. Based on the application of the travel mode shares presented in Table 2 to the existing and buildout populations and accounting for the school start and end times for the different populations.
Source: Fehr & Peers, 2021.

3. Trip Distribution, Assignment, and Study Intersection Selection

The trip distribution and assignment process is used to estimate how the vehicle trips generated by a project site would be distributed across the roadway network. Based on current home ZIP code data for students and faculty/staff provided by the Head-Royce School, **Figure 1** shows the geographic distribution of students and faculty/staff homes by ZIP code. The ZIP codes nearest to Head-Royce School have the highest percentage of students and faculty/staff. About 50 percent of students and faculty/staff live within 10 miles of the Head-Royce School, while over 80 percent live within 20 miles, and all live within 30 miles.

Route assignments between home ZIP codes and the Head-Royce School were calculated using a network analysis in Geographic Information System (GIS) software. The network analysis finds the shortest path along the roadways between an origin and a destination. The shortest paths were aggregated to calculate the percentage of the population using the major access roadways.

Figure 2 shows the trip distribution for the Head-Royce School based on the network analysis completed in GIS. It is estimated that more than half the population uses SR 13 North to access the School. This analysis assumes that most trips would approach and leave the School site from the same general direction.

This analysis assumes the population at Project buildout would have a similar geographic distribution as the current population and would have similar trip distribution as shown on Figure 2.

Study Intersection Selection

According to the City of Oakland's TIRG, the criteria for selecting study intersections include:

- All intersection(s) of streets adjacent to project site;
- All signalized intersection(s), all-way stop-controlled intersection(s) or roundabouts where 100 or more peak hour trips are added by the project;
- All signalized intersection(s) with 50 or more project-related peak hour trips and existing LOS D-E-F; and
- Side-street stop-controlled intersection(s) where 50 or more peak hour trips are added by the project to any individual movement other than the major-street through movement.

Following these criteria, the following seven existing intersections are selected for evaluation in due to being adjacent to the Project site, Project adding 50 or more peak hour trips to the intersection, or being used as part of the existing designated loop for drop off/pick-up traffic to change direction:

1. Lincoln Avenue/Potomac Street
2. Lincoln Avenue/Alida Street
3. Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway
4. Lincoln Avenue/Lincoln Way/Oakland Mormon Temple Driveway
5. Lincoln Avenue/Maiden Lane
6. Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard
7. Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard

In addition, the following two intersections are evaluated under the Plus Project conditions:

8. Lincoln Avenue/Loop Road Outbound Driveway
9. Lincoln Avenue/Loop Road Inbound Driveway

Fehr & Peers collected intersection turning movement, pedestrian, and bicycle volumes at the seven existing study intersections on Thursday, November 14, 2019, when Head-Royce School, as well as other local schools, were in normal session. Fehr & Peers also collected crossing data at the existing signalized midblock crossing on Lincoln Avenue at the main school entrance and pick-up/drop off data at the passenger loading areas adjacent to the School. The data was collected from 7:00 AM to 9:00 AM and from 2:00 PM to 6:00 PM. **Appendix A** provides the detailed peak period count data.

Based on the collected data, the morning peak hour in the area is from 7:45 AM to 8:45 AM and the afternoon peak hour is from 3:15 PM to 4:15 PM. **Figure 3** shows the existing morning and afternoon peak hour volumes at the seven existing study intersections.

4. Traffic Operations Analysis

Although City of Oakland no longer evaluates intersection traffic operations for CEQA documents, Fehr and Peers conducted an intersection operations analysis for the street system serving the Project site to ensure that the street system can serve the proposed Project. The analysis evaluates the morning and afternoon peak hour operations at the seven existing study intersections and the two new signalized intersections proposed by the Project on Lincoln Avenue.

The traffic operations analysis is completed using two different methodologies: All study intersections under Existing Conditions and the study intersections not adjacent to the Head-Royce School under Existing Plus Project conditions are evaluated using the Synchro software which is based on the mathematical formulae provided in the 2010 Highway Capacity Manual (HCM). The segment of Lincoln Avenue adjacent to the Head-Royce School (segment between Alida Street and the Oakland Mormon Temple Driveway and consisting of the existing signalized Head-Royce Lot F Driveway and the two new signalized intersections providing access to the new Loop Road), and the new Loop Road is evaluated using the VISSIM microsimulation software. The analysis methodologies followed by the analysis assumptions and results are described in more detail below.

Analysis Methodologies and Tools

Intersection operations are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic operations from the vehicle driver perspective and consists of the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. **Appendix B** describes the various LOS and the corresponding ranges of delays for both signalized and unsignalized intersections in detail.

The two methodologies used to evaluate traffic operations in this analysis, as well as signal warrants, which are used to determine if an unsignalized intersection should be signalized, are discussed below.

Synchro

The Synchro Software is used to estimate delay and LOS for all signalized, all-way stop-controlled, and side-street stop-controlled study intersections under Existing Conditions and select intersections under Existing Plus Project conditions. Synchro uses the equations in 2010 HCM to calculate control delay. These equations use intersection characteristics, such as vehicle and pedestrian volumes, lane geometry, and signal phases, as inputs in estimating control delay.

VISSIM

The VISSIM 2020 software is used to simulate the interactions between vehicles, pedestrian, and buses in the study area. VISSIM is a microsimulation tool that analyzes the transportation system through simulating every user (motor vehicle, bicycle, bus, and pedestrian, including transit rider) of the transportation system.

Traditional methods of analyzing transportation systems rely on mathematical formulae that focus on interactions between vehicles, with minor adjustments for bicycle and pedestrian volumes at intersections. VISSIM simulates the movements of, and interactions between, vehicles, buses and pedestrians to provide a more accurate analysis of the transportation system where high bus and pedestrian volumes can substantially influence the operations of the transportation system.

Traffic operations analyses are generally conducted at 60-minute intervals to capture operations over the peak hour. For this assessment, the analysis was conducted at 15-minute intervals over each peak hour to better account for the peaking characteristics of the School, which is consistent with the traffic volume observations peaking around the bell times during the two peak hours.

Microsimulation programs, such as VISSIM, incorporate randomness inherent in traffic flow and travel behavior. As a result, a microsimulation model should be run several times and the average of the runs should be reported to obtain a statistically significant result. For this study, the program is run 20 times for each scenario, and the 10 most representative and clustered model runs are selected, and the results summarized.

Peak Hour Signal Warrants

To assess the need for signalization of stop-controlled intersections, the California Manual on Uniform Traffic Control Devices (MUTCD) includes eight signal warrants. Generally, meeting one or more of the signal warrants could justify signalization of an intersection. This analysis evaluates the California MUTCD peak hour vehicular volume warrant (Warrant 3) for urban conditions to determine if any of the stop-controlled study intersections should be signalized.

Existing Conditions

Based on the volumes, intersection controls, and roadway configurations presented on Figure 3, Fehr & Peers calculated the existing morning and afternoon peak hour LOS at the study intersections using the Synchro software and the HCM methodologies discussed above. **Table 7** summarizes the existing weekday morning and afternoon peak hour intersection LOS analysis results. **Appendix C** provides the detailed Synchro calculation work sheets.

All study intersections, except the following two, operate at LOS C or better during both morning and afternoon peak hours under Existing Conditions:

- The all-way stop-controlled Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard intersections (#6) operates at LOS F during the morning and LOS E during the afternoon peak hours.
- The all-way stop-controlled Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard intersection (#7) operates at LOS F during both the morning and afternoon peak hours.

The peak hour traffic signal warrant was evaluated for the six unsignalized study intersections. The two intersections listed above that operate at LOS E or LOS F during the morning and afternoon peak hours also meet the California MUTCD peak hour signal warrant under the Existing Conditions. **Appendix D** provides the signal warrant worksheets.

Existing Plus Project Conditions

The Existing Plus Project conditions evaluates morning and afternoon peak hours (7:45 AM to 8:45 AM and 3:15 PM to 4:15 PM) traffic conditions with the proposed Project. The analysis accounts for the completion of the Loop Road and other street modifications discussed above, and the additional trips generated by the expected population increase at Project buildout. The analysis consists of a VISSIM microsimulation of Lincoln Avenue along the Project frontage between Alida Street and the Oakland Mormon Temple and the Loop Road, and a Synchro analysis using the 2010 HCM mathematical formulae for the intersections not adjacent to the Head-Royce School. The assumptions used for both of these analyses and the analysis results are described below.

Table 7: Existing Conditions - Study Intersection LOS Summary

Intersection	Control	Morning Peak Hour		Afternoon Peak Hour	
		Delay (Seconds)[1]	LOS[2]	Delay (Seconds)[1]	LOS[2]
1. Lincoln Avenue/ Potomac Street	Side-street Stop	2 (13)	A (B)	1 (11)	A (B)
2. Lincoln Avenue/ Alida Street	Side-street Stop	2 (18)	A (C)	2 (14)	A (B)
3. Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway[3]	Signal	16	B	9	A
4. Lincoln Avenue/Lincoln Way/ Oakland Mormon Temple Driveway	Side-street Stop	3 (24)	A (C)	2 (14)	A (B)
5. Lincoln Avenue/Maiden Lane	Side-street Stop	1 (12)	A (B)	1 (11)	A (B)
6. Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard	All-way Stop	**75**	**F**	**50**	**E**
7. Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard	All-way Stop	**>120**	**F**	**71**	**F**

Notes:
Intersections operating at LOS E or F are in **bold**.
1. Intersection average delay is reported for signalized and all-way stop-controlled intersections. Average intersection and worst-movement delays, respectively, are reported for side-street stop-controlled intersections.
2. Estimated based on 2010 HCM delay thresholds, unless noted.
3. Average intersection delay and LOS based on the HCM 2000 method because the intersection cannot be correctly evaluated in the 2010 HCM.

Source: Fehr & Peers, 2021.

Existing Plus Project Volumes and Analysis Assumptions

Figure 4 shows the morning and afternoon peak hour traffic volumes under the Existing Plus Project conditions. The Existing Plus Project volumes account for the following:

- Relocation of the student drop offs and pick-ups from Lincoln Avenue to the designated passenger loading areas along the new South Campus Loop Road. The drop off and pick-up volumes and routes are based on the trip generation presented in Table 4 and the trip distribution shown on Figure 2.
- Private vehicles driving to and from the new South Campus parking lot based on trip generation presented in Table 4 and the trip distribution shown on Figure 2.
- The relocation of the student drop offs and pick-ups from Lincoln Avenue to the new Loop Road would eliminate the need for parents to use the existing Alida Street or

Maiden Lane loops to turnaround on Lincoln Avenue. It is estimated that 80 fewer vehicles during the morning peak hour and 40 fewer vehicles during the afternoon peak hour would use the Alida Street loop and about five fewer vehicles during the morning or afternoon peak hours would use the Maiden Lane loop.

In addition, the Existing Plus Project VISSIM analysis is based on the following assumptions:

- The VISSIM analysis accounts for the physical characteristics of the transportation system, including the intersection configurations and controls shown on Figure 4. The analysis also accounts for the grades along Lincoln Avenue and the Loop Road. The Project would construct two new signals at the new Loop Road driveways on Lincoln Avenue. The signal timing for these two new signals would be coordinated with each other and the existing signal on Lincoln Avenue at Lot F Driveway.
- AC Transit would continue to operate four bus routes (Local Line 39 and School Lines 603, 604, and 605) and Head-Royce School would continue to operate five bus routes during the morning and afternoon peak hours. Under the Existing Plus Project conditions, the bus stops would remain just east of the signalized Loop Road Outbound Driveway on Lincoln Avenue. The VISSIM analysis assumes that similar to current condition, three AC Transit buses would arrive between 8:05 and 8:10 AM, and the five school buses would arrive before 8:25 AM; for the afternoon peak hour, all buses would leave between 3:30 and 3:40 PM. The public and school buses would use the bus stop on the north side of Lincoln Avenue during the morning peak hour and the bus stop on the south side of Lincoln Avenue during the afternoon peak hour. As shown in Table 6, about 420 students are projected to take the public buses and about 113 students are projected to take the private buses during both the morning and afternoon peak hours. Bus riders would use the signal-protected crosswalks on the east side of the Lincoln Avenue/Loop Road Outbound intersection and on the west side of the Lincoln Avenue/Loop Road Inbound intersection to walk to and from the bus stops.
- The Project would construct a tunnel under Lincoln Avenue which most students and faculty/staff would use to walk between the North and South Campuses, including the passenger loading areas along the Loop Road and the South Campus parking lot. This analysis assumes that approximately 210 pedestrians during each peak hour would cross Lincoln Avenue at the signal-protected crosswalk on the east side of the Loop Road Outbound Driveway and about 120 pedestrians would use the signal-protected crosswalk on the west side of the Loop Road Inbound Driveway. The microsimulation model was coded to have vehicles yield to the pedestrians crossing the street.
- Based on data collected along the existing School frontage in November 2019, the following are assumed for the Existing Plus Project VISSIM analysis:
    - During the morning peak hour, the arrivals would have the following distribution in 15-minute intervals:

- 7:45 AM to 8:00 AM – 12%
- 8:00 AM to 8:15 AM – 38%
- 8:15 AM to 8:30 AM – 46%
- 8:30 AM to 8:45 AM – 4%

- During the afternoon peak hour, the departures would have the following distribution in 15-minute intervals:

  - 3:15 PM to 3:30 PM – 19%
  - 3:30 PM to 3:45 PM – 48%
  - 3:45 PM to 4:00 PM – 18%
  - 4:00 PM to 4:15 PM – 15%

- During the morning peak hour, each drop off would take between 20 and 100 seconds with an average of 37 seconds. During the afternoon peak hour, each pick-up would take between 20 and 150 seconds with an average of 81 seconds.

VISSIM Analysis Results

As previously described, the VISSIM model was run for Existing Plus Project conditions for the morning and afternoon peak hours with the proposed access, circulation, and other assumptions described above. The model is used to estimate the following:

- ***Intersection Delay and Level of Service (LOS)*** – As previously described, LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Appendix B describes the various LOSs and the corresponding ranges of delays for both signalized intersections and unsignalized intersections.
- ***Percent Demand Served*** – Percent demand served is a measure of the actual volume through an intersection compared to the estimated total demand volume. Values between 95 to 105 percent typically represent conditions where the traffic network is serving the estimated travel demand well.
- ***Queue Lengths*** - A vehicle is considered to be queued when it approaches within one car length of a stopped vehicle and is itself about to stop. Average and maximum queue length are observed over 10 simulation runs. Average queue represents the average queue for the entire peak hour over 10 simulation runs, and the maximum queue is the average maximum queue over the 10 simulation runs.

Table 8 summarizes the intersection delay and corresponding LOS as well as the percent volume served, and **Table 9** summarizes the average and maximum queues at the study intersections during both the morning and afternoon peak hours under the Existing Plus Project conditions based on the results of the microsimulation. **Appendix E** provides the detailed VISSIM output worksheets.

Table 8: Existing Plus Project Conditions – Intersection LOS and Percent Demand Served Summary (Microsimulation)

Intersection	Traffic Control	Morning Peak Hour			Afternoon Peak Hour		
		Delay (Seconds)[1]	LOS[2]	% Demand Served[1]	Delay (Seconds)[1]	LOS[2]	% Demand Served[1]
Lincoln Avenue/Loop Road Outbound Driveway	Signal	**57**	**E**	**100%**	29	C	99%
Lincoln Avenue/Loop Road Inbound Driveway	Signal	18	B	100%	19	B	100%
Lincoln Avenue/United Cerebral Palsy Driveway/ Head-Royce Lot F Driveway[3]	Signal	12	B	100%	14	B	100%

Notes:
Intersections operating at LOS E or F are in **bold**.
1. Delay and percent demand served based on the results of ten simulation runs. Intersection average delay is reported for signalized intersections. Average intersection and worst-movement delays, respectively, are reported for side-street stop-controlled intersections.
2. Estimated based on the 2010 HCM delay thresholds.
3. The northbound United Cerebral Palsy driveway is not controlled by the signal. The reported average intersection delay accounts for the delay experienced by the vehicles on the northbound driveway.

Source: Fehr & Peers, 2022.

Level of Service Findings

As shown in Table 8, the three signalized study intersections are projected to operate at an overall LOS D or better during both the morning and afternoon peak hours, except for the Lincoln Avenue/Loop Road Outbound intersection, which would operate at overall LOS E during the morning peak hour. Most of the delay would be experienced by vehicles on the Loop Road Outbound approach, which would operate at LOS F.

As previously described, higher traffic volumes are expected within the peak 15-minutes of each peak hour (8:15 AM to 8:30 AM during the morning peak hour and 3:30 PM to 3:45 PM during the afternoon peak hour). The intersection delay and the corresponding LOS presented in Table 8 are for the entire peak hour, and vehicles would experience higher delay during the peak 15-minute periods.

The study intersections have higher delay during the morning peak hour than during the afternoon peak hour because the site trip generation during the afternoon peak hour is lower than during the morning peak hour due to student participation in after-school activities.

Table 9: Existing Plus Project Conditions – Vehicle Queues Summary (Microsimulation)

Locations	Movement	Storage Length (ft)	Morning Peak Hour		Afternoon Peak Hour	
			Average Queue (ft)	Maximum Queue (ft)	Average Queue (ft)	Maximum Queue (ft)
Lincoln Avenue/ Alida Street	EBT WBT	500 300	50 10	**630** 150	10 10	160 160
Lincoln Avenue/Loop Road Outbound Driveway	NBL NBR EBT WBT	150 150 350 500	70 70 60 30	**600** **610** 320 290	20 30 30 30	**300** **310** 310 300
Lincoln Avenue/Loop Road Inbound Driveway	EBT EBR WBL WBT	500 500 280 460	50 50 50 10	480 480 **370** 230	90 90 10 10	410 410 170 210
Lincoln Avenue/ United Cerebral Palsy Driveway/Head-Royce Lot F Driveway	EBL EBT WBT	80 460 1,100	10 10 40	60 270 900	10 20 20	20 390 310
Lincoln Avenue/ Lincoln Way/Oakland Mormon Temple Driveway	EBT WBT	1,000 260	10 10	90 110	10 10	50 80
Loop Road at South Campus Parking Lot	SBT	90	0	90	0	0

Notes:
Reported queues based on the results of 10 simulation runs. Queue length exceeding the storage length are in **bold.**
Source: Fehr & Peers, 2022.

Percent Demand Served Findings

As shown in Table 8, the study intersections would serve all of the estimated demand volume during both the morning and afternoon peak hours.

Queue Findings

As shown in Table 9, the average queues at the study intersections during both the morning and afternoon peak hours can be accommodated within the available storage. The average queues would not spill back into upstream intersections or beyond turn pockets when they are provided. During the morning peak hour, the following maximum queues would exceed the available storage length along Lincoln Avenue:

- The maximum queue on eastbound Lincoln Avenue at the Loop Road Outbound could spill back to Alida Street occasionally between 8:05 AM and 8:20 AM.
- The maximum queue on the westbound left-turn lane on Lincoln Avenue at the Loop Road Inbound intersection could exceed the left-turn pocket length between 8:10 AM and 8:30 AM periodically.

Both queue spillovers are expected to generally clear within one or two signal cycles.

During the afternoon peak hour, all maximum queues along Lincoln Avenue are expected to be accommodated within the available storage areas and no queue spillbacks are expected.

In addition, queueing is expected within the South Campus Loop Road on the Outbound Driveway at Lincoln Avenue due to vehicles yielding to pedestrians crossing Lincoln Avenue and at both the Upper School and Lower School passenger loading areas due to parents waiting for the morning drop offs and afternoon pick-ups. These queues would be accommodated within the Loop Road and would not spill back onto Lincoln Avenue and block through traffic during morning or afternoon peak hours. This analysis assumes that about 15 percent of the morning drop offs and afternoon pick-ups would occur at the Upper School passenger loading area and about 85 percent would occur at the Lower School passenger loading area. It is likely that if additional activity, especially morning drop offs, occurs at the Upper School loading area, the queues may spill back into Lincoln Avenue. It is estimated that the additional travel time for vehicles using the Loop Road for the morning drop offs or afternoon pick-ups would be between three to five minutes.

Analysis Summary

Overall, the proposed roadway configurations would operate generally adequately during the morning and afternoon peak hours with occasional congestion and queue spillbacks at some locations, especially during the peak 15-minute periods around the school bell times.

Compared to current conditions, the relocation of the morning drop offs and afternoon pick-ups from the curb along Lincoln Avenue to the South Campus Loop Road would move most of the congestion and queuing from Lincoln Avenue to the South Campus Loop Road.

Vehicles leaving the Loop Road Outbound Driveway on Lincoln Avenue could experience delay primarily due to right-turning vehicles yielding to pedestrians using the crosswalk across Lincoln Avenue just east of the Loop Road Outbound Driveway, who are walking to and from the bus stops on Lincoln Avenue. The queues and the associated congestion along the Loop Road are expected to last about ten minutes right before the morning bell times or right after the afternoon bell times, when all the private and public bus loadings as well as most of the private vehicle loading occurs.

This analysis assumes that the pedestrian tunnel under Lincoln Avenue connecting the South and North Campus would be completed part of the Project. Vehicular delays would increase if the tunnel were not constructed because more pedestrians would use the Lincoln Avenue at-grade crossing. Recommendation 4 includes improvements to the crosswalk that would benefit both pedestrians and vehicles at this location.

> **Recommendation 1:** While not required to address a CEQA impact, the Project shall implement the following:
>
> - Coordinate the signal timing parameters (i.e., cycle length, amount of green time for each approach, etc.) for the three traffic signals on Lincoln Avenue along the Project frontage to prioritize pedestrian crossings, improve traffic flow along the corridor, and minimize queue spillbacks.
> - Continue to use traffic monitors during the morning drop off and afternoon pick-up periods to ensure effective and efficient passenger loading and that all passenger loading occurs at the appropriate locations.

Synchro Analysis

Based on the volumes, intersection controls, and roadway configurations shown on Figure 4, The Synchro software and the HCM 2010 formulae were used to evaluate intersection operations under Existing Plus Project conditions at the study intersections that were not evaluated with microsimulation and described above. **Table 10** summarizes the intersection LOS results under the Existing Plus Project conditions and compares the results to the Existing Conditions.

Under Existing Plus Project conditions, the four side-street stop-controlled study intersections would continue to operate at LOS C or better during both the morning and afternoon peak hours. Although the Project would increase delay along the corridor, delay at the Lincoln Avenue/ Potomac Street and Lincoln Avenue/Alida Street intersections would decrease slightly because vehicles would no longer use these streets to turnaround to travel on eastbound Lincoln Street after dropping off or picking-up students.

Similar to the Existing Conditions, both all-way stop-controlled Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard and the Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard intersections would operate at LOS E or LOS F during both morning and afternoon peak hours. Both intersections, which are under the jurisdiction of Caltrans, would continue to meet the peak hour traffic signal warrant under Existing Plus Project conditions.

Table 10: Study Intersection LOS Summary for Existing Plus Project Conditions

Intersection	Traffic Control	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay (Seconds)	LOS	Delay (Seconds)	LOS
1. Lincoln Avenue/ Potomac Street	Side-street Stop	AM PM	2 (13) 1 (11)	A (B) A (B)	1 (15) 1 (12)	A (C) A (B)
2. Lincoln Avenue/ Alida Street	Side-street Stop	AM PM	2 (18) 2 (14)	A (C) A (B)	2 (16) 1 (13)	A (C) A (B)
4. Lincoln Avenue/ Lincoln Way/Oakland Mormon Temple Driveway	Side-street Stop	AM PM	3 (24) 2 (14)	A (C) A (B)	3 (32) 2 (14)	A (D) A (B)
5. Lincoln Avenue/ Maiden Lane	Side-street Stop	AM PM	1 (12) 1 (11)	A (B) A (B)	1 (13) 1 (11)	A (B) A (B)
6. Lincoln Avenue – Joaquin Miller Road/ Monterey Boulevard	All-way Stop	AM PM	**75** **50**	**F** **E**	**117** **56**	**F** **F**
7. Joaquin Miller Road/ SR 13 Northbound Off-Ramp – Mountain Boulevard	All-way Stop	AM PM	**>120** **71**	**F** **F**	**>120** **78**	**F** **F**

Notes:
Intersections operating at LOS E or F are in **bold**.
1. Average intersection delay and LOS based on the 2010 HCM method. Average delay is reported for all-way stop-controlled intersections. Average intersection and worst-movement delays, respectively, are reported for side-street stop-controlled intersections.
2. Estimated based on 2010 HCM delay thresholds, unless noted.

Source: Fehr & Peers, 2022.

Recommendation 2: While not required to address a CEQA impact, the Project shall conduct a full signal warrant study, and coordinate with the City of Oakland and Caltrans to determine if one or both of the following currently all-way stop-controlled intersections should be signalized:

- Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard
- Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard

If City of Oakland and Caltrans determine that one or both intersections should be signalized, then the Project shall signalize one or both intersections.

5. Site Access and Circulation Evaluation

Fehr & Peers reviewed the Draft Preliminary Development dated January 2022 and the existing street network serving the Project area to evaluate safety, access, and circulation for all travel modes. Access and circulation for automobiles was described in the previous section of the memorandum. Access and circulation for bicyclists, pedestrians, and transit riders, as well as automobile parking, are described below.

Bicycle Access

There are no existing bicycle facilities adjacent to the Project site. The nearest existing bicycle facilities are Class 3 Bicycle Routes along Monterey Boulevard, about 0.3 miles east of the Project site.

The City of Oakland 2019 Bike Plan (*Let's Bike Oakland*, May 2019) proposes the following improvements to the bicycle facilities in the Project vicinity:

- Class 2 Bike Lane along Joaquin Miller Road between Monterey and Mountain Boulevards
- Class 4 Protected Bicycle Lanes along Joaquin Miller Road east of SR 13
- Class 3B Neighborhood Bike Route along Tiffen Road north of Lincoln Avenue and Potomac Street south of Lincoln Avenue that would ultimately connect Park Boulevard in the north to Mills College in the south (This corridor is also a Slow Street corridor, which promotes physical activity on the street during the COVID-19 pandemic shelter-in-place by prohibiting through movement along the corridor through placement of temporary barricades).
- Class 3B Neighborhood Bike Route along Lyman Road west of Tiffen Road, which would continue on Fruitvale Avenue and connect to the planned Class 2 bicycle lanes on Fruitvale Avenue west of I-580.

Bicycle Parking

Chapter 17.117 of the Oakland Municipal Code requires long-term and short-term bicycle parking for new developments. Long-term bicycle parking includes lockers or locked enclosures, and short-term bicycle parking includes bicycle racks.

Table 11 summarizes the long-term and short-term bicycle parking requirements for the Project at buildout. The Project is required to provide 82 long-term and 63 short-term bicycle parking spaces at buildout. The current Project site plan does not identify the location, type, or amount of bicycle parking. As shown in Table 6, it is estimated that about 15 people would bike to the School at Project buildout based on current commute mode shares at the School. Thus, the required bicycle parking supply would exceed the number of students and faculty/staff that would bicycle to the School at buildout and farther encourage bicycling.

Table 11: Bicycle Parking Requirements

Population	Size[1]	Long-Term		Short-Term	
		Spaces per Person[2]	Spaces	Spaces per Person[2]	Spaces
Students	1,250	1:20	63	1:20	63
Employees	189	1:10	19	NA	0
Total Required Bicycle Spaces			**82**		**63**
Total Bicycle Parking Provided			**NA**		**NA**
Bicycle Parking Met?			**No**		**No**

Notes:
1. School population at buildout
2. Based on Oakland Municipal Code Sections 17.117.100

Source: Fehr & Peers, 2021.

Recommendation 3: While not required to address a CEQA impact, the Project should consider providing the minimum long-term and short-term bicycle parking required by the Oakland Municipal Code, Section 17.117 as part of the final design for the Project.

Pedestrian Access and Circulation

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Most streets in the vicinity of the Project site, including Lincoln Avenue, provide sidewalks along both sides of the street. The sidewalks on both sides of Lincoln Avenue along the School frontage provide concrete bollards at the edge of the sidewalk.

Two existing signals along the School frontage on Lincoln Avenue, at the Lot F Driveway on the east edge of the school campus and about 850 feet to the west at the main School gate provide for protected pedestrian crossing of Lincoln Avenue. The signal on Lincoln Avenue at the Lot F Driveway provides pedestrian signal heads, a ladder striped crosswalk, and curb-ramps without truncated domes at both sides of the crosswalk. The signal on Lincoln Avenue at the main School gate is a midblock signal that primarily serves pedestrian crossings, and provides a striped crosswalk with curb ramps and truncated domes on both sides of the street.

The Project would maintain the existing signal and pedestrian crossing on Lincoln Avenue and relocate the signalized midblock crossing at the school's main gate to the east side of the Lincoln Avenue/Loop Road Outbound Driveway intersection. The signalized Lincoln Avenue/Loop Road Inbound Driveway intersection would also provide a crosswalk on the west side of the intersection. Both crossings would be used by school population walking between the North and South Campuses and the bus stops on both sides of Lincoln Avenue.

Construction of the proposed underground pedestrian tunnel below Lincoln Avenue to connect the North and South Campuses would reduce at-grade pedestrian crossings across Lincoln Avenue. It is expected that most students would use the tunnel to walk between the North Campus and the designated passenger loading areas in the south Campus.

As shown in Table 6, about 30 people are expected to walk to and from the School on a typical weekday. These students would walk along Lincoln Avenue and enter either the North or South Campus at the main entrances on Lincoln Avenue. A secondary pedestrian entrance for the North Campus would continue to be provided on Whittle Avenue, which can be used by students and faculty/staff who live in the areas to north of the Project site.

> **Recommendation 4:** While not required to address a CEQA impact and at the discretion of the City of Oakland staff, the following improvements should be considered as part of the final design for the Project:
>
> - The crosswalks across Lincoln Avenue just east of the Loop Road Outbound Driveway and just west of the Loop Road Inbound Driveway should be at least 20 feet wide to accommodate the large number of students walking to and from buses.
> - At the three signalized pedestrian crossings across Lincoln Avenue along the Project frontage at the Loop Ramp Outbound, Loop Ramp Inbound, and Lot F driveways, provide:
>   - High-visibility crosswalk markings
>   - Leading pedestrian intervals, where the pedestrians can enter the roadway a few seconds before the automobiles
>   - Bulb-outs at both sides of the crosswalk to reduce the pedestrian crossing distance

Transit Access

Transit service providers in the vicinity of the proposed Project include Bay Area Rapid Transit (BART), the Alameda-Contra Costa Transit (AC Transit), and Head-Royce School's private school buses.

BART

BART provides regional rail service throughout the East Bay and across the Bay in San Francisco and northern San Mateo County. The average systemwide weekday ridership in 2019 was about 411,000. The BART station most likely to serve the Project site is the Fruitvale BART Station, about three miles southwest of the Project site. This station is served by the Dublin/Pleasanton-Daly City, Richmond- Berryessa/North San Jose, and Berryessa/North San Jose-Daly City lines. AC Transit Line 39 provides bus service between the Project site and the Fruitvale BART Station.

AC Transit

AC Transit is the primary bus service provider in the City of Oakland and surrounding communities. It provides local service as well as Transbay service to destinations in San Francisco, San Mateo and Santa Clara Counties. AC Transit reports serving about 175,000 riders on a typical weekday in fiscal year 2018-2019.

AC Transit Line 39/339, as well as five school lines, operate along Lincoln Avenue with bus stops adjacent to the Project site. **Table 12** summarizes the AC Transit bus lines that serve the Project site and Figure 5 shows these bus lines in the vicinity of the Project. Although Lines 643 and 653 are dedicated school lines with stops on Lincoln Avenue adjacent to the Head-Royce School, neither route serves the school population due to their operating hours. These routes primarily provide bus service for the students who live in the area and attend other schools.

The nearest bus stops to the Project site are on Lincoln Avenue adjacent to the School's main entrance. The bus stop on westbound Lincoln Avenue is just east of the current Head-Royce School main entrance and the signalized midblock crossing, and the bus stop on eastbound Lincoln Avenue is about 170 feet east of the signalized midblock crossing. Both bus stops are served by the bus lines listed in Table 12. The two existing bus stops on Lincoln Avenue serving the Project site do not provide any amenities.

The bus stops would remain near their current locations on Lincoln Avenue with the Project. The signalized crosswalk just east of the Loop Road Outbound Driveway would connect the North and South Campuses to the bus stop on the opposite side of the street.

As shown in Table 6, about 80 students currently take AC Transit buses to access the School. AC Transit ridership is estimated to increase to 110 riders based on current mode splits at the School. It is expected that the current (pre-COVID) bus service would accommodate the expected increase in AC Transit ridership.

> **Recommendation 5:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff and AC Transit staff, the following should be considered as part of the final design for the project:
>
> - Provide amenities, such as bus shelter, seating, trash receptacle, and/or pedestrian-scale lighting at the two bus stops on Lincoln Avenue adjacent to the proposed Loop Road Outbound Driveway. The provision of these amenities may require widening the existing sidewalks on Lincoln Avenue.

Table 12: AC Transit Service Summary

Line	Route	Weekday		Weekend	
		Hours	Frequency	Hours	Frequency
Local Routes					
39	Fruitvale BART to Skyline High School via Fruitvale Ave, Lincoln Ave, Joaquin Miller Rd, and Skyline Blvd	6:20 AM to 8:10 PM	60 minutes	No Weekend Service	
339	Fruitvale BART to Chabot Space and Science Center via Fruitvale Ave, Lincoln Ave, Joaquin Miller Rd, and Skyline Blvd	9:10 AM to 4:00 PM	60 to 150 minutes	9:00 AM to 10:30 PM	30 to 60 minutes
School Routes					
604	North Berkeley BART Station to Bentley School, Head-Royce School, and Hebrew Day School via College Ave, Ashby Ave, Tunnel Rd, SR 13, and Lincoln Ave	One morning bus at Head-Royce School at 8:03 AM and one afternoon bus at Head-Royce School at 3:30 PM (school days only)		No Weekend Service	
605	Downtown Berkeley to College Preparatory School and Head-Royce School via College Ave, Broadway, Broadway Terrace, Mountain Blvd, Monterey Blvd, and Lincoln Ave	One morning bus at Head-Royce School at 8:11 AM and one afternoon bus at Head-Royce School at 3:30 PM (school days only)		No Weekend Service	
606	Piedmont to Head-Royce School via Highland Ave, Crocker Ave, Mandana Blvd, Lakeshore Ave, I-580, and Lincoln Ave	One morning bus at Head-Royce School at 8:05 AM and one afternoon bus at Head-Royce School at 3:30 PM (school days only)		No Weekend Service	
643	Fruitvale Ave to Skyline High School via MacArthur Blvd, Coolidge Ave, Alida St, Lincoln Ave, Joaquin Miller Rd, and Skyline Blvd	One morning bus at Head-Royce School at 7:40 AM and one afternoon bus at Head-Royce School at 3:19 PM (school days only)		No Weekend Service	
653	Oakland Kaiser Hospital to Montera Middle School via MacArthur Blvd, Lincoln Ave, and Mountain Blvd	One morning bus at Head-Royce School at 8:34 AM and two afternoon buses at Head-Royce School at 2:13 and 3:43 PM (school days only)		No Weekend Service	

Source: AC Transit bus service as of November 2019; summarized by Fehr & Peers, 2021.

School Bus Service

Head-Royce School offers five dedicated school buses operated by a private contractor serving the following areas:

- "Local" Oakland areas including Montclair, Upper Rockridge, Piedmont Pines, Diamond Canyon Park District, and Redwood Heights
- City of Alameda and the Glenview District
- Contra Costa County
- North Berkeley and El Cerrito
- Southern Alameda County

The school buses generally arrive at the Head Royce School around 8:15 AM for the morning drop off and leave the School at around 3:40 PM for the afternoon pick-up. The School is expected to continue to provide similar bus service with the proposed Project.

Currently, the morning bus drop off is on the north side of Lincoln Avenue adjacent to the School's main gate and the afternoon pick-up is across the street on the south side of Lincoln Avenue. Similar to the AC Transit buses, the School bus stops would remain near their current locations and the proposed signalized crosswalk just east of the Loop Road Outbound Driveway would connect the North and South Campuses to the bus stop on the opposite side of Lincoln Avenue.

As shown in Table 6, about 300 students currently take the School buses on a typical weekday. Ridership of the School buses is estimated to increase to 420 riders at Project Buildout based on current mode splits at the School. The average number of riders per bus would increase from about 60 to 84 riders per bus, which would exceed the seating capacity of most buses.

> **Recommendation 6:** While not required to address a CEQA impact, the following should be included in the Project TDM Plan and considered as part of the final design for the project:
>
> - Annually monitor school bus ridership and provide additional bus service and/or reconfigure the bus service areas if and when ridership on any of the buses exceeds bus capacity.

Automobile Parking

As described in Project Description Section of this memorandum, Head-Royce School currently uses 283 off-street parking spaces across several parking lots. On most weekdays, these parking facilities are near or at capacity.

The proposed Project would increase the on-site parking supply from 283 to up to 328 parking spaces, which would be accommodated in the following facilities:

- Lot A on the east side of the South Campus would be a new parking lot accessed through the Loop Road and provide 131 parking spaces.
- The Lower School passenger loading area would provide seven parking spaces
- The existing Lot E on the north side of the North Campus would continue to be accessed through Whittle Avenue and provide 20 parking spaces.
- The existing Lot F on the east side of the North Campus would continue to be accessed through a signalized intersection on Lincoln Avenue. It would continue to provide 134 marked parking spaces. It may also accommodate up to 36 additional vehicles through stacked parking in the drive aisles. Lot F can accommodate up to 170 vehicles.

The City of Oakland Municipal Code does not have parking requirements for private K-12 schools. Currently, Head-Royce School is authorized to provide 157 spaces. The Project would more than double the on-site parking supply over the existing authorized parking.

Currently, the north side of Lincoln Avenue along the Project frontage is designated for passenger loading on school days from 8:00 AM to 4:00 PM with no stopping allowed for about 460 feet east of the existing signalized midblock crossing. Between the passenger loading area and the signalized Head Royce School Lot F driveway, on-street parking is allowed on the north side of Lincoln Avenue, except between 3:00 PM and 4:00 PM where the area is used to accommodate vehicle queues for the afternoon pick-up.

The south side of Lincoln Avenue along the Project frontage is currently designated for passenger loading on school days from 8:00 AM to 4:00 PM with no stopping allowed for about 260 feet east of the existing signalized midblock crossing. Between the passenger loading area and the signalized Head Royce School Lot F driveway, unregulated on-street parking is allowed on the south side of Lincoln Avenue.

As previously described, the Project would relocate all student drop offs and pick-ups by private vehicles off-site to the South Campus and the curb along Lincoln Avenue would no longer be used for drop offs and pick-ups. In addition, the proposed turn lanes on Lincoln Avenue along the Project frontage would require the removal of all on-street parking on the south side of Lincoln Avenue between the Loop Road Outbound Driveway and the Lot F Driveway.

On-street parking on most streets surrounding the Head-Royce School is currently controlled by Residential Parking Permit (RPP), which limits parking for non-residents without a permit to two-hours during the day on weekdays. The RPP program is expected to continue on these streets. Thus, use of on-street parking is not an option for most students and faculty/staff, who need to remain on-site for more than two hours further discouraging driving.

South Campus would provide 138 parking spaces. Of these, 128 would be in a parking lot on the east side of the South Campus with separate inbound and outbound driveways on the Loop Road. Three perpendicular parking spaces would be provided on the east side of the Loop Road

opposite the parking lot. Pedestrians walking between these parked vehicles and the Campus buildings would need to cross the Loop Road. In addition, vehicles maneuvering into and out of these parking spaces may result in additional queuing on the Loop Road. Therefore, it is recommended that these three parking spaces be eliminated.

> **Recommendation 7:** While not required to address a CEQA impact, the Project should coordinate with the City of Oakland to implement the following:
>
> - Prohibit stopping on the north side of Lincoln Avenue along the Project frontage during the morning drop off and afternoon pick-up times (8:00 AM to 9:00 AM and 3:00 PM to 4:00 PM) to discourage passenger loading on Lincoln Avenue.
> - Limit parking on the north side of Lincoln Avenue along the Project frontage to two-hours on school days from 9:00 AM to 3:00 PM to discourage faculty, staff, and students from driving.
> - Eliminate the three perpendicular parking spaces on the east side of the Loop Road

6. Collision Analysis

A five-year history (January 1, 2015 to December 31, 2019) of collision data in the study area was obtained from the Statewide Integrated Traffic Records System (SWITRS) and evaluated for this collision analysis. **Table 13** summarizes the collision data by type and location, and **Table 14** summarizes the collision data by severity and location.

As shown in Table 13, 16 collisions were reported at the study intersections or adjacent to the Project site during this five-year period. The most common collision type was rear-end collision (31 percent). The Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard intersection had the highest number of reported collisions with nine. As shown in Table 14, no pedestrians were involved in the reported collision and one bicyclist was involved in a collision at the Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard intersection. Of the 16 reported collisions, five (31 percent) collisions resulted in injuries, and none resulted in fatalities.

Table 13: Summary of Collisions by Type (2015 – 2019)

Intersections	Head-on	Sideswipe	Rear-End	Broadside	Hit Object	Pedestrian-Involved	Bicycle-Involved	Total
Study Intersections								
Lincoln Avenue/Potomac Street	1	0	0	0	0	0	0	1
Lincoln Avenue/Alida Street	0	0	0	0	0	0	0	0
Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway	0	0	0	0	0	0	0	0
Lincoln Avenue/Lincoln Way/ Oakland Mormon Temple Driveway	0	0	0	0	0	0	0	0
Lincoln Avenue/Maiden Lane	0	0	0	0	0	0	0	0
Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard	1	0	2	1	1	0	1	5
Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard	0	0	6	1	1	0	0	8
Study Street Segment								
Lincoln Avenue along the School Frontage	1	0	1	0	0	0	0	2
Total	**3**	**0**	**9**	**2**	**2**	**0**	**1**	**16**

Notes:
1. Based on five-year collision data reported from January 1, 2015 to December 31, 2019

Source: Fehr & Peers, 2021.

Table 14: Summary of Collision Severity (2015 – 2019)

Intersections	Property Damage Only	Injury Collisions	Fatality Collisions	Total	Person-Injuries			
					Bike	Ped	Driver/ Passenger	Total
Study Intersections								
Lincoln Avenue/Potomac Street	1	0	0	1	0	0	0	0
Lincoln Avenue/Alida Street	0	0	0	0	0	0	0	0
Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway	0	0	0	0	0	0	0	0
Lincoln Avenue/Lincoln Way/ Oakland Mormon Temple Driveway	0	0	0	0	0	0	0	0
Lincoln Avenue/Maiden Lane	0	0	0	0	0	0	0	0
Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard	4	1	0	5	1	0	0	1
Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard	5	3	0	8	0	0	4	4
Study Street Segment								
Lincoln Avenue along the School Frontage	1	1	0	2	0	0	1	4
Total	**11**	**5**	**0**	**16**	**1**	**0**	**5**	**6**

Notes:
1. Based on five-year collision data reported from January 1, 2015 to December 31, 2019

Source: Fehr & Peers, 2021.

The Highway Safety Manual (HSM, Predictive Method - Volume 2, Part C) provides a methodology to predict the number of collisions for intersections and street segments based on roadway and intersection characteristics like vehicle and pedestrian volumes, number of lanes, signal phasing, on-street parking, and number of driveways. **Table 15** presents the predicted collision frequencies for the study locations using the HSM Predictive Method for Urban and Suburban Arterials and compares the predicted collision frequencies to reported collision frequencies. As shown in Table 16, all study locations have a lower reported collision frequency than predicted by the HSM Predictive Method. **Appendix F** provides the detailed HSM predicted collision frequency calculation sheets. Intersections or street segments with collision frequencies greater than the predicted frequency are identified as locations that should be evaluated in greater detail for collision trends and potential modifications. As shown in Table 15, all study locations have lower reported collision frequency than predicted by the HSM.

Table 15: Predicted and Actual Collision Frequencies (2015 – 2019)

Location	Predicted Collision Frequency[1] (per year)	Actual Collision Frequency[2] (per year)	Difference	Higher Than Predicted?
Study Intersections				
Lincoln Avenue/ Potomac Street	0.4	0.2	0.2	No
Lincoln Avenue/Alida Street	0.5	0	0.5	No
Lincoln Avenue/United Cerebral Palsy Driveway/ Head-Royce Lot F Driveway	0.8	0	0.8	No
Lincoln Avenue/Lincoln Way/ Oakland Mormon Temple Driveway	1.4	0	1.4	No
Lincoln Avenue/Maiden Lane	0.2	0	0.2	No
Lincoln Avenue – Joaquin Miller Road Monterey Boulevard	2.3	1.0	1.3	No
Joaquin Miller Road/ SR 13 Northbound Off-Ramp – Mountain Boulevard	2.1	1.6	0.5	No
Study Street Segment				
Lincoln Avenue along the School Frontage	0.6	0.4	0.2	No

Notes:
1. Based on the Highway Safety Manual Predictive Method (Volume 2, Part C)
2. Based on five-year collision data reported from January 1, 2015 to December 31, 2019

Source: Fehr & Peers, 2021.

7. Conclusion and Summary of Recommendations

Based on the analysis described above and our review of the Project site plan and conditions on the surrounding streets, the Project would have adequate automobile, bicycle, pedestrian, and transit access and circulation with the inclusion of the following recommendations:

Recommendation 1: While not required to address a CEQA impact, the Project shall implement the following:

- Coordinate the signal timing parameters (i.e., cycle length, amount of green time for each approach, etc.) for the three traffic signals on Lincoln Avenue along the Project frontage to prioritize pedestrian crossings, improve traffic flow along the corridor, and minimize queue spillbacks.
- Continue to use traffic monitors during the morning drop off and afternoon pick-up periods to ensure effective and efficient passenger loading and that all passenger loading occurs at the appropriate locations.

Recommendation 2: While not required to address a CEQA impact, the Project shall conduct a full signal warrant study, and coordinate with the City of Oakland and Caltrans to determine if one or both of the following currently all-way stop-controlled intersections should be signalized:

- Lincoln Avenue – Joaquin Miller Road/Monterey Boulevard
- Joaquin Miller Road/SR 13 Northbound Off-Ramp – Mountain Boulevard

If City of Oakland and Caltrans determine that one or both intersections should be signalized, then the Project shall signalize one or both intersections.

Recommendation 3: While not required to address a CEQA impact, the Project should consider providing the minimum long-term and short-term bicycle parking required by the Oakland Municipal Code, Section 17.117 as part of the final design for the Project.

Recommendation 4: While not required to address a CEQA impact and at the discretion of the City of Oakland staff, the following improvements should be considered as part of the final design for the Project:

- The crosswalk across Lincoln Avenue just east of the Loop Road Outbound Driveway and just west of the Loop Road Inbound Driveway should be at least 20 feet wide to accommodate the large number of students walking to and from buses.
- At the three signalized pedestrian crossings across Lincoln Avenue along the Project frontage at the Loop Ramp Outbound, Loop Ramp Inbound, and Lot F driveways, provide:

- High-visibility crosswalk markings
- Leading pedestrian intervals, where the pedestrians can enter the roadway a few seconds before the automobiles
- Bulb-outs at both sides of the crosswalk to reduce the pedestrian crossing distance

Recommendation 5: While not required to address a CEQA impact, and at the discretion of City of Oakland staff and AC Transit staff, the following should be considered as part of the final design for the project:

- Provide amenities, such as bus shelter, seating, trash receptacle, and/or pedestrian-scale lighting at the two bus stops on Lincoln Avenue adjacent to the proposed Loop Road Outbound Driveway. The provision of these amenities may require widening the existing sidewalks on Lincoln Avenue to at least 12 feet.

Recommendation 6: While not required to address a CEQA impact, the following should be included in the Project TDM Plan and considered as part of the final design for the project:

- Annually monitor school bus ridership and provide additional bus service and/or reconfigure the bus service areas if and when ridership on any of the buses exceeds bus capacity.

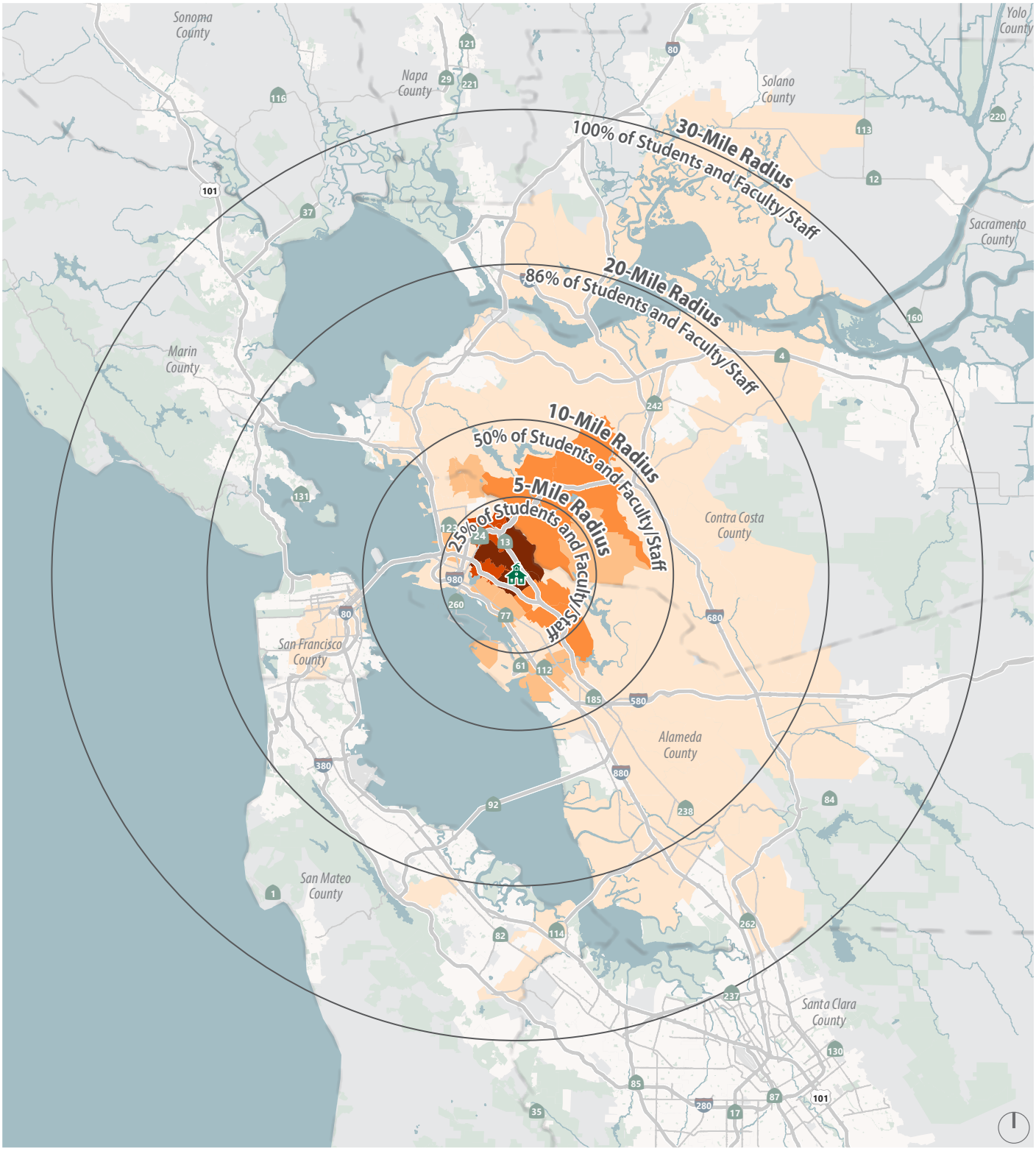
Recommendation 7: While not required to address a CEQA impact, the Project should coordinate with the City of Oakland to implement the following:

- Prohibit stopping on the north side of Lincoln Avenue along the Project frontage during the morning drop off and afternoon pick-up times (8:00 AM to 9:00 AM and 3:00 PM to 4:00 PM) to discourage passenger loading on Lincoln Avenue.
- Limit parking on the north side of Lincoln Avenue along the Project frontage to two-hours on school days from 9:00 AM to 3:00 PM to discourage faculty, staff, and students from driving.
- Eliminate the three perpendicular parking spaces on the east side of the Loop Road

Please contact Sam Tabibnia (s.tabibnia@fehrandpeers.com or 510-835-1943) with questions or comments.

ATTACHMENTS

Figure 1 - Student and Faculty/Staff Home Locations by ZIP Code



Head Royce School

5-, 10-, 20-, 30-Mile Radius

Number of Students and Faculty/Staff by ZIP Code

- 0% - 1%
- 1% - 2.5%
- 2.5% - 5%
- 5% - 10%
- 10% - 20%

Figure 1

Student and Faculty/Staff Home Locations by ZIP Code

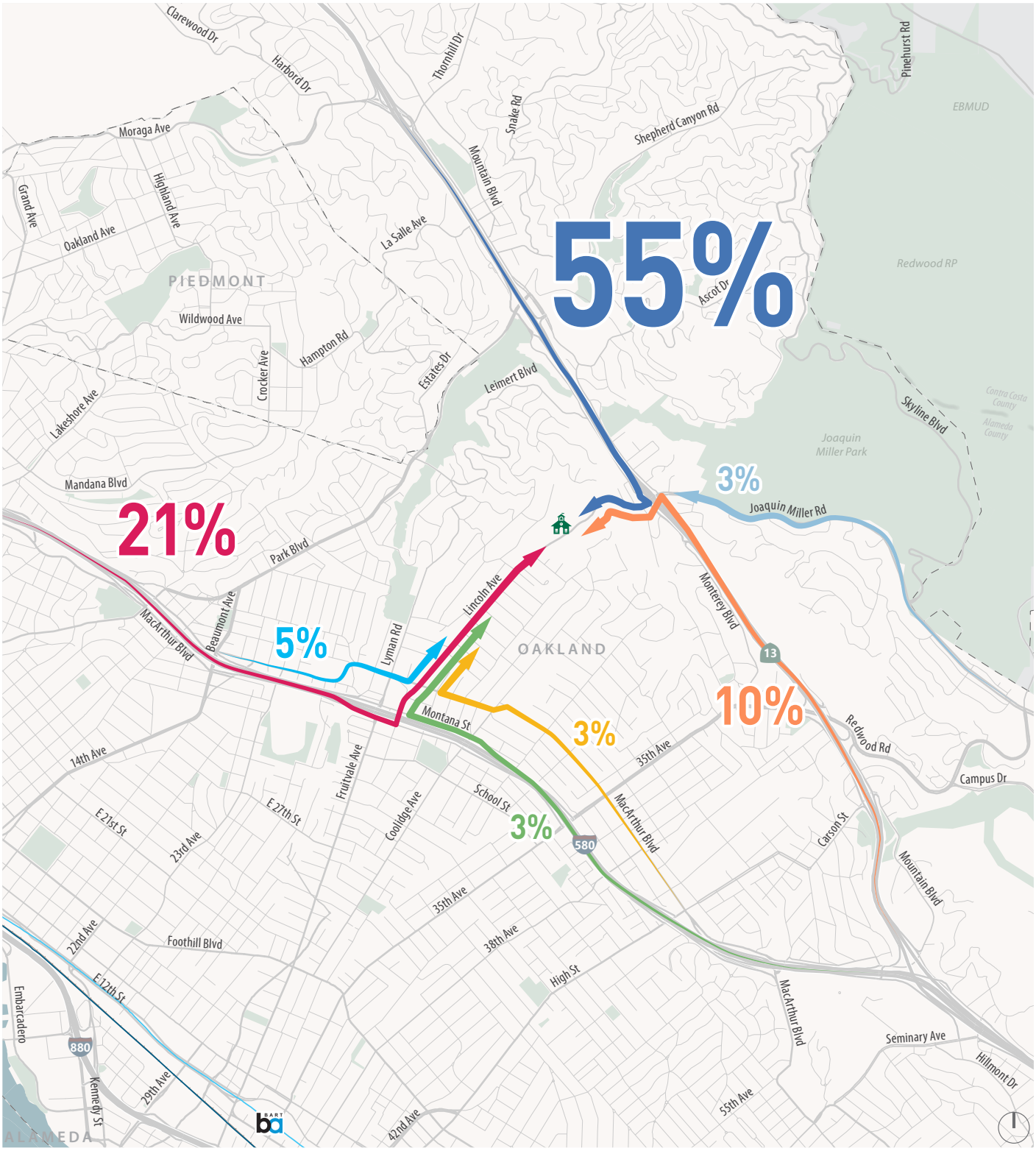
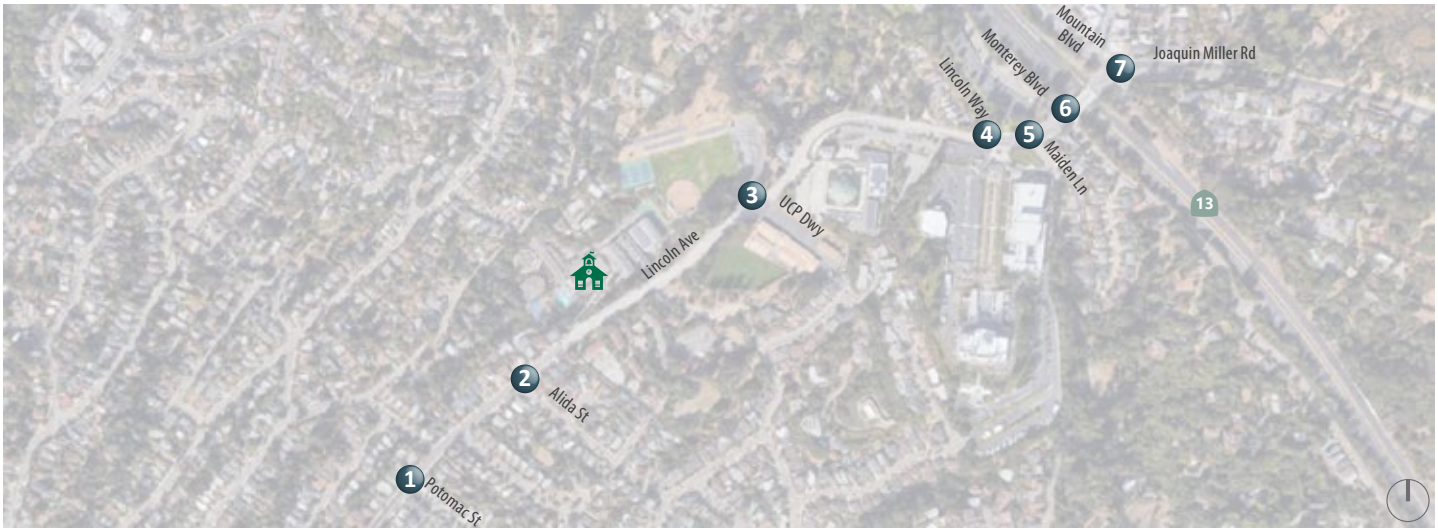
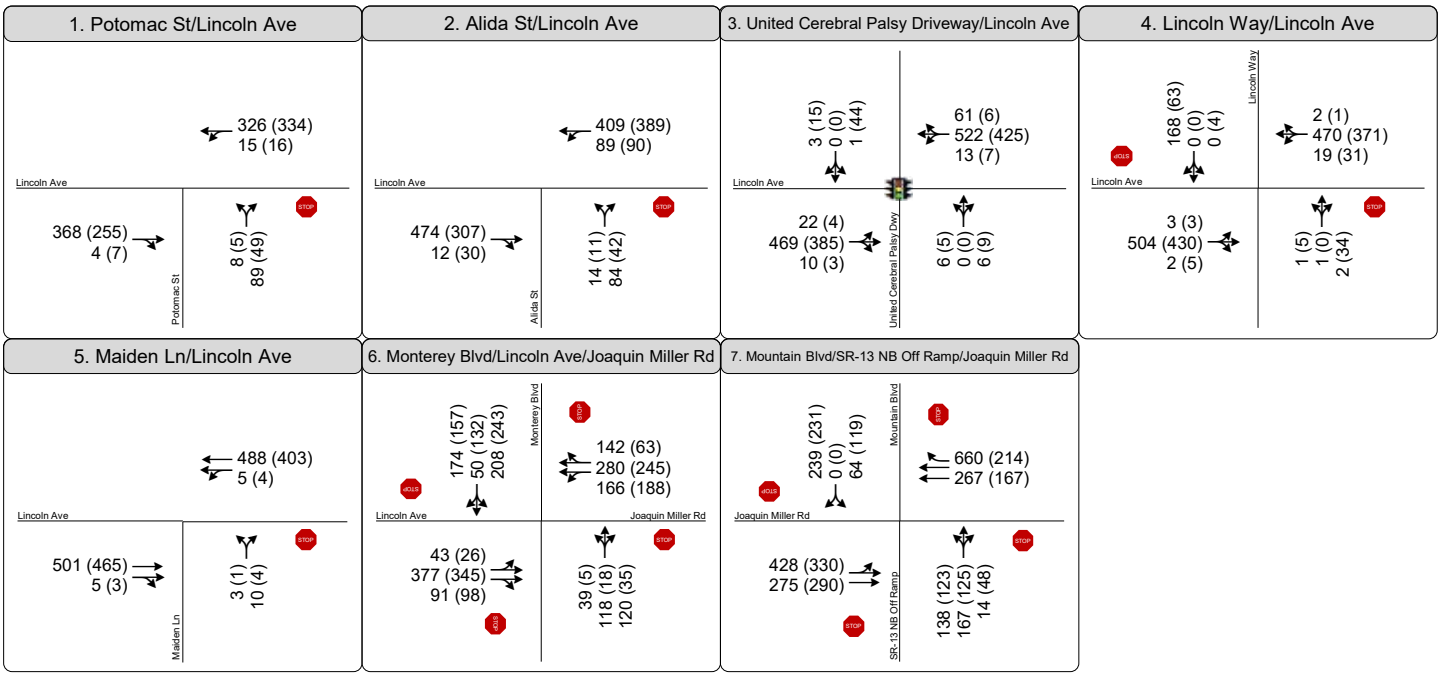


Figure 2

Project Trip Distribution

OK18-0287_2_TripDistro





XX (YY) Morning (Afternoon) Peak Hour Traffic Volume

Lane Configuration

Stop Sign

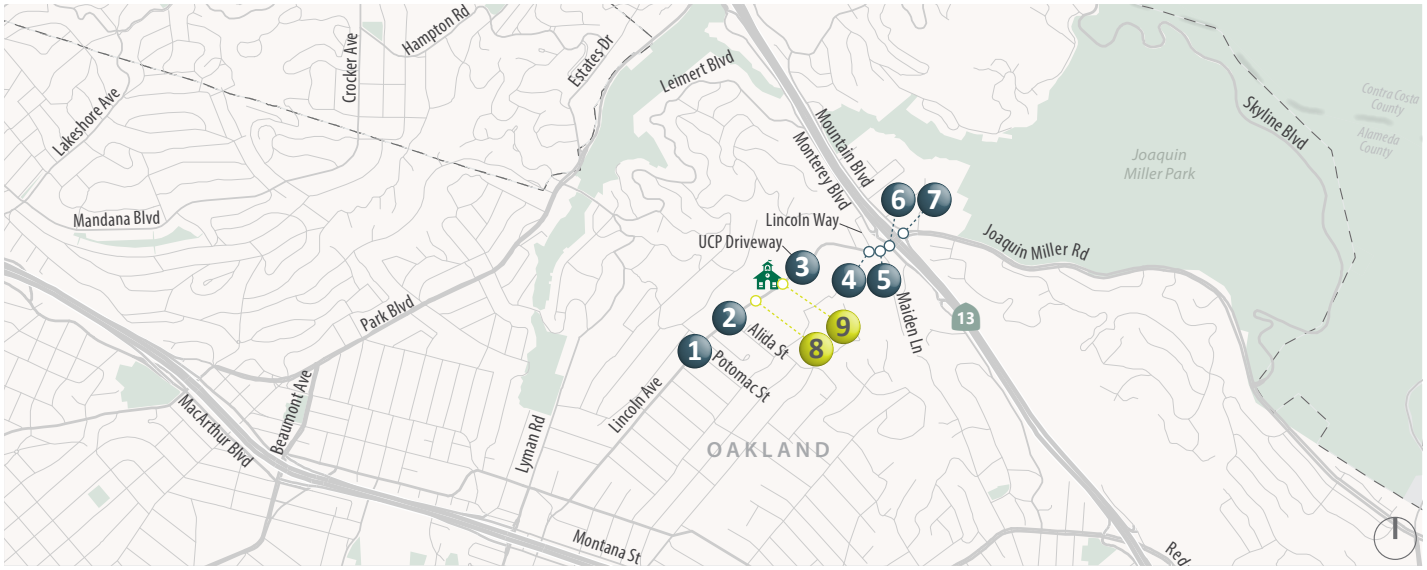
Signalized Intersection

Head Royce School

Study Intersection

Figure 3

Existing Conditions
Peak Hour Traffic Volumes and Lane Configurations



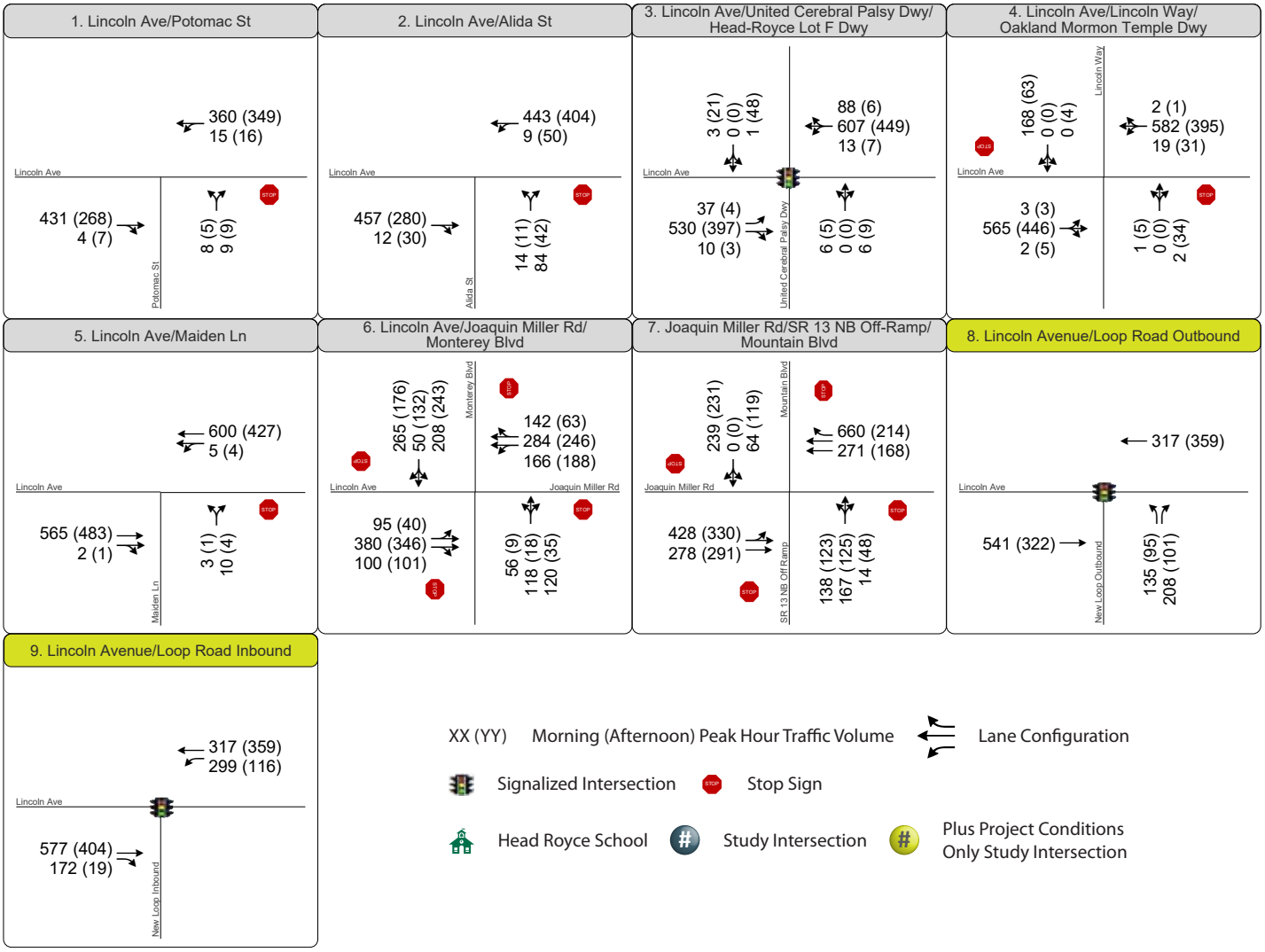


Figure 4

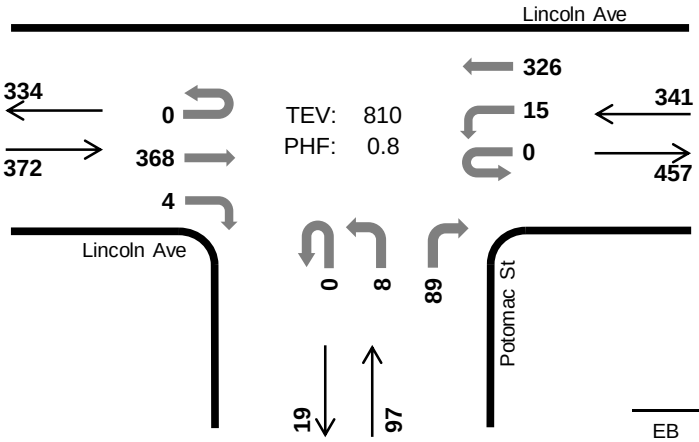
Existing Plus Project Conditions
Peak Hour Traffic Volumes and Lane Configurations

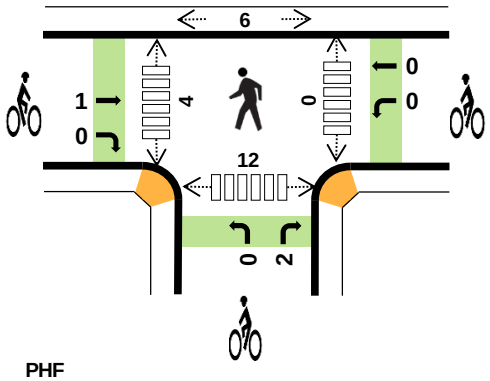
Appendix A
Traffic Counts

Potomac St
Lincoln Ave

Peak Hour

Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.7%	0.82
WB	3.5%	0.84
NB	1.0%	0.64
SB	-	-
TOTAL	2.8%	0.80

Two-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Potomac St Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	31	3	0	0	27	0	1	1	0	2	0	0	0	0	65	0
7:15 AM		0	0	63	5	1	2	29	0	0	0	0	5	0	0	0	0	105	0
7:30 AM		0	0	83	0	0	2	47	0	0	2	0	4	0	0	0	0	138	0
7:45 AM		**0**	**0**	**112**	**2**	**0**	**3**	**73**	**0**	**0**	**1**	**0**	**11**	**0**	**0**	**0**	**0**	**202**	510
8:00 AM		**0**	**0**	**113**	**1**	**0**	**1**	**101**	**0**	**0**	**3**	**0**	**35**	**0**	**0**	**0**	**0**	**254**	699
8:15 AM		**0**	**0**	**73**	**1**	**0**	**9**	**84**	**0**	**0**	**3**	**0**	**34**	**0**	**0**	**0**	**0**	**204**	798
8:30 AM		**0**	**0**	**70**	**0**	**0**	**2**	**68**	**0**	**0**	**1**	**0**	**9**	**0**	**0**	**0**	**0**	**150**	**810**
8:45 AM		0	0	65	2	0	2	91	0	0	4	0	1	0	0	0	0	165	773
Count Total		0	0	610	14	1	21	520	0	1	15	0	101	0	0	0	0	1,283	0
Peak Hour	**All**	**0**	**0**	**368**	**4**	**0**	**15**	**326**	**0**	**0**	**8**	**0**	**89**	**0**	**0**	**0**	**0**	**810**	**0**
	HV	**0**	**0**	**10**	**0**	**0**	**0**	**12**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**23**	**0**
	HV%	**-**	**-**	**3%**	**0%**	**-**	**0%**	**4%**	**-**	**-**	**0%**	**-**	**1%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	2	0	0	*3*	1	0	1	0	*2*	0	0	2	1	*3*
7:15 AM	0	0	0	0	*0*	0	1	0	0	*1*	0	1	2	1	*4*
7:30 AM	4	2	0	0	*6*	0	0	0	0	*0*	2	0	1	0	*3*
7:45 AM	**5**	**3**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:00 AM	**2**	**5**	**1**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**3**	**5**	*8*
8:15 AM	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**4**	*6*
8:30 AM	**2**	**1**	**0**	**0**	***3***	**1**	**0**	**2**	**0**	***3***	**0**	**3**	**2**	**2**	***7***
8:45 AM	3	0	0	0	*3*	0	0	1	0	*1*	0	0	1	1	*2*
Count Total	18	16	1	0	*35*	2	1	4	0	*7*	2	5	12	15	*34*
Peak Hr	**10**	**12**	**1**	**0**	***23***	**1**	**0**	**2**	**0**	***3***	**0**	**4**	**6**	**12**	***22***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				Potomac St				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
7:45 AM	**0**	**0**	**5**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	17
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**8**	22
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	26
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**23**
8:45 AM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	18
Count Total	0	0	17	1	0	0	16	0	0	0	0	1	0	0	0	0	35	0
Peak Hour	**0**	**0**	**10**	**0**	**0**	**0**	**12**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**23**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave			Lincoln Ave			Potomac St			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	1	0	0	0	2	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**3**
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	4
Count Total	0	2	0	0	1	0	0	0	4	0	0	0	7	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**

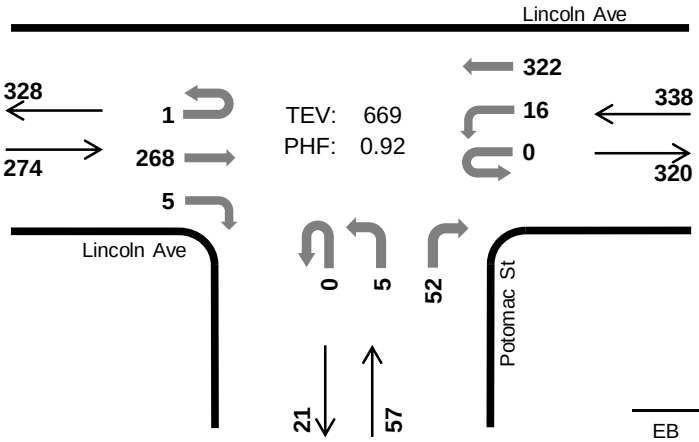
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

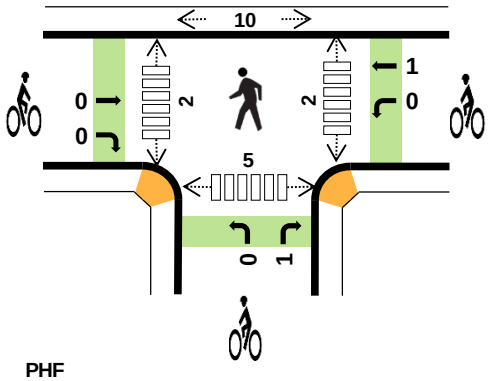
Potomac St
Lincoln Ave

N

Peak Hour

Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:00 PM to 4:00 PM





	HV %:	PHF
EB	1.8%	0.95
WB	4.1%	0.90
NB	3.5%	0.71
SB	-	-
TOTAL	3.1%	0.92

Four-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Potomac St Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:00 PM		1	0	67	0	0	2	71	0	0	1	0	9	0	0	0	0	151	0
3:15 PM		0	0	68	2	0	7	86	0	0	2	0	16	0	0	0	0	181	0
3:30 PM		0	0	70	2	0	2	76	0	0	0	0	20	0	0	0	0	170	0
3:45 PM		0	0	63	1	0	5	89	0	0	2	0	7	0	0	0	0	167	669
Peak Hour	All	1	0	268	5	0	16	322	0	0	5	0	52	0	0	0	0	669	0
	HV	0	0	5	0	0	0	14	0	0	0	0	2	0	0	0	0	21	0
	HV%	0%	-	2%	0%	-	0%	4%	-	-	0%	-	4%	-	-	-	-	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:00 PM	0	7	0	0	*7*	0	0	1	0	*1*	2	0	2	0	*4*
3:15 PM	2	0	0	0	*2*	0	1	0	0	*1*	0	0	1	2	*3*
3:30 PM	3	5	2	0	*10*	0	0	0	0	*0*	0	0	2	2	*4*
3:45 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	2	5	1	*8*
Peak Hour	5	14	2	0	*21*	0	1	1	0	*2*	2	2	10	5	*19*

Four-Hour Count Summaries

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Potomac St Northbound				n/a Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	34	2	0	1	49	0	0	1	0	3	0	0	0	0	90	0
2:15 PM	0	0	36	2	0	2	47	0	0	1	0	3	0	0	0	0	91	0
2:30 PM	0	0	47	0	0	4	62	0	0	1	0	5	0	0	0	0	119	0
2:45 PM	0	0	44	2	0	2	48	0	0	0	0	4	0	0	0	0	100	400
3:00 PM	**1**	**0**	**67**	**0**	**0**	**2**	**71**	**0**	**0**	**1**	**0**	**9**	**0**	**0**	**0**	**0**	**151**	461
3:15 PM	**0**	**0**	**68**	**2**	**0**	**7**	**86**	**0**	**0**	**2**	**0**	**16**	**0**	**0**	**0**	**0**	**181**	551
3:30 PM	**0**	**0**	**70**	**2**	**0**	**2**	**76**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**170**	602
3:45 PM	**0**	**0**	**63**	**1**	**0**	**5**	**89**	**0**	**0**	**2**	**0**	**7**	**0**	**0**	**0**	**0**	**167**	**669**
4:00 PM	0	0	54	2	0	2	83	0	0	1	0	6	0	0	0	0	148	666
4:15 PM	0	0	34	0	0	3	85	0	0	1	0	6	0	0	0	0	129	614
4:30 PM	0	0	44	1	0	4	91	0	0	3	0	8	0	0	0	0	151	595
4:45 PM	0	0	39	3	0	8	80	0	0	1	0	10	0	0	0	0	141	569
5:00 PM	0	0	56	0	0	1	77	0	0	1	0	8	0	0	0	0	143	564
5:15 PM	0	0	52	0	0	4	84	0	0	1	0	6	0	0	0	0	147	582
5:30 PM	0	0	44	2	0	5	80	0	0	1	0	4	0	0	0	0	136	567
5:45 PM	0	0	55	1	0	5	79	0	0	3	0	5	0	0	0	0	148	574
Count Total	1	0	807	20	0	57	1,187	0	0	20	0	120	0	0	0	0	2,212	0
Peak Hour All	**1**	**0**	**268**	**5**	**0**	**16**	**322**	**0**	**0**	**5**	**0**	**52**	**0**	**0**	**0**	**0**	**669**	**0**
Peak Hour HV	**0**	**0**	**5**	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**21**	**0**
Peak Hour HV%	**0%**	**-**	**2%**	**0%**	**-**	**0%**	**4%**	**-**	**-**	**0%**	**-**	**4%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	1	3	0	0	*4*	0	1	0	0	*1*	1	0	1	0	*2*
2:30 PM	4	1	0	0	*5*	0	0	0	0	*0*	0	0	1	0	*1*
2:45 PM	4	2	0	0	*6*	0	0	0	0	*0*	0	0	2	0	*2*
3:00 PM	**0**	**7**	**0**	**0**	***7***	**0**	**0**	**1**	**0**	***1***	**2**	**0**	**2**	**0**	*4*
3:15 PM	**2**	**0**	**0**	**0**	***2***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**1**	**2**	*3*
3:30 PM	**3**	**5**	**2**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**2**	*4*
3:45 PM	**0**	**2**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**5**	**1**	***8***
4:00 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	2	2	*4*
4:30 PM	3	0	0	0	*3*	0	1	0	0	*1*	0	0	0	1	*1*
4:45 PM	2	1	0	0	*3*	0	1	0	0	*1*	0	1	0	2	*3*
5:00 PM	0	0	0	0	*0*	2	1	0	0	*3*	0	3	0	0	*3*
5:15 PM	0	2	0	0	*2*	0	1	0	0	*1*	2	2	6	1	*11*
5:30 PM	0	1	0	0	*1*	0	1	0	0	*1*	0	1	0	1	*2*
5:45 PM	1	1	1	0	*3*	0	0	0	0	*0*	0	1	2	1	*4*
Count Total	21	30	3	0	*54*	2	7	1	0	*10*	5	10	24	13	*52*
Peak Hr	**5**	**14**	**2**	**0**	***21***	**0**	**1**	**1**	**0**	***2***	**2**	**2**	**10**	**5**	***19***

Four-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				Potomac St				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
2:15 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0
2:30 PM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0
2:45 PM	0	0	3	1	0	0	2	0	0	0	0	0	0	0	0	0	6	18
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	22
3:15 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	20
3:30 PM	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	25
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**21**
4:00 PM	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3	17
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
4:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	9
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	8
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
5:45 PM	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	3	6
Count Total	0	0	19	2	0	0	30	0	0	1	0	2	0	0	0	0	54	0
Peak Hour	**0**	**0**	**5**	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**21**	**0**

Four-Hour Count Summaries - Bikes

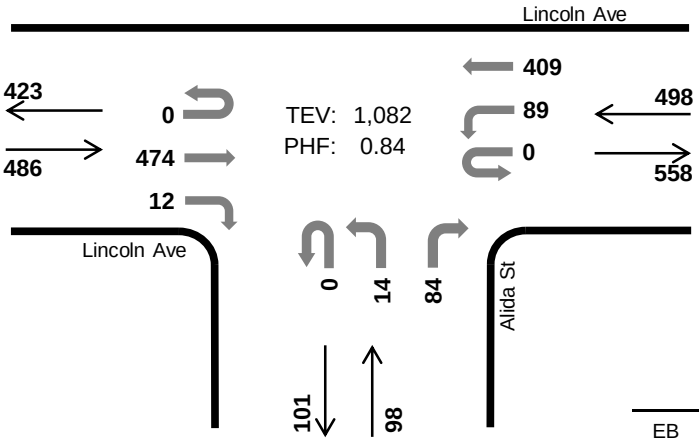
Interval Start	Lincoln Ave			Lincoln Ave			Potomac St			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	2
3:15 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	2
5:00 PM	0	2	0	0	1	0	0	0	0	0	0	0	3	5
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	6
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	2	0	1	6	0	0	0	1	0	0	0	10	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**

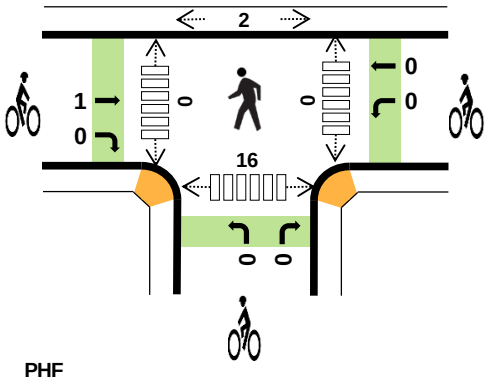
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Alida St
Lincoln Ave

Peak Hour

Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.3%	0.83
WB	2.8%	0.76
NB	1.0%	0.74
SB	-	-
TOTAL	2.4%	0.84

Two-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Alida St Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	41	2	0	3	20	0	0	6	0	11	0	0	0	0	83	0
7:15 AM		0	0	64	2	1	7	31	0	0	1	0	19	0	0	0	0	125	0
7:30 AM		0	0	93	5	0	4	37	0	0	9	0	22	0	0	0	0	170	0
7:45 AM		**0**	**0**	**120**	**2**	**0**	**9**	**92**	**0**	**0**	**3**	**0**	**20**	**0**	**0**	**0**	**0**	**246**	624
8:00 AM		**0**	**0**	**138**	**8**	**0**	**32**	**119**	**0**	**0**	**4**	**0**	**22**	**0**	**0**	**0**	**0**	**323**	864
8:15 AM		**0**	**0**	**126**	**1**	**0**	**34**	**129**	**0**	**0**	**3**	**0**	**30**	**0**	**0**	**0**	**0**	**323**	1,062
8:30 AM		**0**	**0**	**90**	**1**	**0**	**14**	**69**	**0**	**0**	**4**	**0**	**12**	**0**	**0**	**0**	**0**	**190**	**1,082**
8:45 AM		0	0	63	5	0	9	90	0	0	3	0	13	0	0	0	0	183	1,019
Count Total		0	0	735	26	1	112	587	0	0	33	0	149	0	0	0	0	1,643	0
Peak Hour	**All**	**0**	**0**	**474**	**12**	**0**	**89**	**409**	**0**	**0**	**14**	**0**	**84**	**0**	**0**	**0**	**0**	**1,082**	**0**
	HV	**0**	**0**	**11**	**0**	**0**	**2**	**12**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**26**	**0**
	HV%	**-**	**-**	**2%**	**0%**	**-**	**2%**	**3%**	**-**	**-**	**0%**	**-**	**1%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	1	0	0	*2*	0	0	0	0	*0*	1	0	0	1	*2*
7:15 AM	0	0	2	0	*2*	0	1	1	0	*2*	1	1	2	1	*5*
7:30 AM	5	1	1	0	*7*	0	0	0	0	*0*	0	0	0	2	*2*
7:45 AM	**5**	**3**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
8:00 AM	**3**	**6**	**0**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**8**	*9*
8:15 AM	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**6**	*7*
8:30 AM	**2**	**2**	**1**	**0**	***5***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
8:45 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	18	16	4	0	*38*	1	1	1	0	*3*	2	1	4	21	*28*
Peak Hr	**11**	**14**	**1**	**0**	***26***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**2**	**16**	***18***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				Alida St				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
7:30 AM	0	0	4	1	0	0	1	0	0	1	0	0	0	0	0	0	7	0
7:45 AM	**0**	**0**	**5**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	19
8:00 AM	**0**	**0**	**3**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	26
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	28
8:30 AM	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**26**
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	19
Count Total	0	0	16	2	0	2	14	0	0	1	0	3	0	0	0	0	38	0
Peak Hour	**0**	**0**	**11**	**0**	**0**	**2**	**12**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**26**	**0**

Two-Hour Count Summaries - Bikes

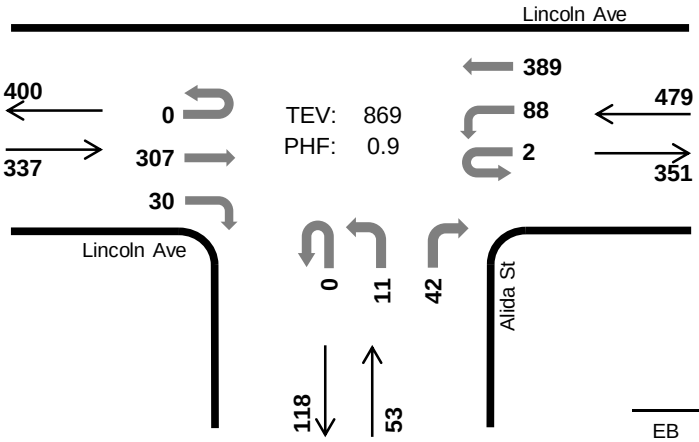
Interval Start	Lincoln Ave			Lincoln Ave			Alida St			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	2	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	1	0	1	0	0	0	0	0	3	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

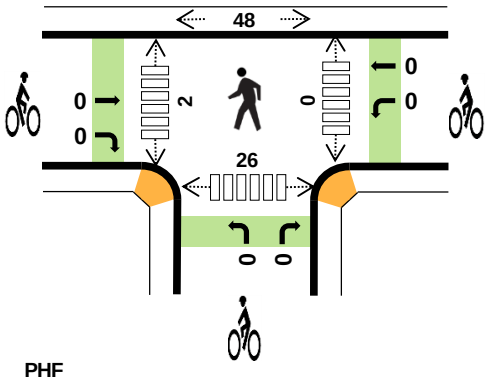
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Alida St
Lincoln Ave

Peak Hour

Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM





	HV %:	PHF
EB	2.1%	0.91
WB	2.5%	0.91
NB	1.9%	0.78
SB	-	-
TOTAL	2.3%	0.90

Four-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Alida St Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		0	0	82	11	1	26	105	0	0	4	0	13	0	0	0	0	242	0
3:30 PM		0	0	88	4	1	31	93	0	0	1	0	10	0	0	0	0	228	0
3:45 PM		0	0	68	6	0	16	102	0	0	1	0	14	0	0	0	0	207	0
4:00 PM		0	0	69	9	0	15	89	0	0	5	0	5	0	0	0	0	192	869
Peak Hour	All	0	0	307	30	2	88	389	0	0	11	0	42	0	0	0	0	869	0
	HV	0	0	7	0	0	3	9	0	0	1	0	0	0	0	0	0	20	0
	HV%	-	-	2%	0%	0%	3%	2%	-	-	9%	-	0%	-	-	-	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	2	0	1	0	*3*	0	0	0	0	*0*	0	1	34	19	*54*
3:30 PM	4	9	0	0	*13*	0	0	0	0	*0*	0	1	10	2	*13*
3:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	4	0	*4*
4:00 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	5	*5*
Peak Hour	7	12	1	0	*20*	0	0	0	0	*0*	0	2	48	26	*76*

Four-Hour Count Summaries

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Alida St Northbound				n/a Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	36	3	0	10	43	0	0	8	0	2	0	0	0	0	102	0
2:15 PM	0	0	31	4	0	12	52	0	0	4	0	6	0	0	0	0	109	0
2:30 PM	0	0	54	3	0	9	66	0	0	3	0	5	0	0	0	0	140	0
2:45 PM	0	0	44	3	0	16	51	0	0	2	0	8	0	0	0	0	124	475
3:00 PM	0	0	70	5	0	18	73	0	0	2	0	9	0	0	0	0	177	550
3:15 PM	**0**	**0**	**82**	**11**	**1**	**26**	**105**	**0**	**0**	**4**	**0**	**13**	**0**	**0**	**0**	**0**	**242**	683
3:30 PM	**0**	**0**	**88**	**4**	**1**	**31**	**93**	**0**	**0**	**1**	**0**	**10**	**0**	**0**	**0**	**0**	**228**	771
3:45 PM	**0**	**0**	**68**	**6**	**0**	**16**	**102**	**0**	**0**	**1**	**0**	**14**	**0**	**0**	**0**	**0**	**207**	854
4:00 PM	**0**	**0**	**69**	**9**	**0**	**15**	**89**	**0**	**0**	**5**	**0**	**5**	**0**	**0**	**0**	**0**	**192**	**869**
4:15 PM	0	0	38	5	0	19	88	0	0	3	0	17	0	0	0	0	170	797
4:30 PM	0	0	65	6	0	22	102	0	0	3	0	4	0	0	0	0	202	771
4:45 PM	0	0	57	4	0	20	90	0	0	2	0	8	0	0	0	0	181	745
5:00 PM	0	0	64	5	0	21	80	0	0	2	0	11	0	0	0	0	183	736
5:15 PM	0	0	60	5	0	26	90	0	0	6	0	7	0	0	0	0	194	760
5:30 PM	0	0	54	5	0	16	91	0	0	2	0	8	0	0	0	0	176	734
5:45 PM	0	0	60	6	1	21	78	0	0	2	0	8	0	0	0	0	176	729
Count Total	0	0	940	84	3	298	1,293	0	0	50	0	135	0	0	0	0	2,803	0
Peak Hour All	**0**	**0**	**307**	**30**	**2**	**88**	**389**	**0**	**0**	**11**	**0**	**42**	**0**	**0**	**0**	**0**	**869**	**0**
Peak Hour HV	**0**	**0**	**7**	**0**	**0**	**3**	**9**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**0**
Peak Hour HV%	**-**	**-**	**2%**	**0%**	**0%**	**3%**	**2%**	**-**	**-**	**9%**	**-**	**0%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	1	0	*1*
2:15 PM	0	3	3	0	*6*	0	1	0	0	*1*	0	0	1	0	*1*
2:30 PM	5	2	1	0	*8*	0	1	0	0	*1*	0	0	2	1	*3*
2:45 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	2	1	0	*3*
3:00 PM	0	6	0	0	*6*	1	0	0	0	*1*	1	0	4	2	*7*
3:15 PM	**2**	**0**	**1**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**34**	**19**	*54*
3:30 PM	**4**	**9**	**0**	**0**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**10**	**2**	*13*
3:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**4**	**0**	*4*
4:00 PM	**0**	**2**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**5**	***5***
4:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	4	1	*5*
4:30 PM	3	0	0	0	*3*	0	1	0	0	*1*	0	0	0	1	*1*
4:45 PM	2	1	0	0	*3*	0	0	0	0	*0*	1	0	3	0	*4*
5:00 PM	1	0	0	0	*1*	2	0	0	0	*2*	0	0	1	1	*2*
5:15 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	2	0	*2*
5:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	5	*5*
Count Total	22	32	5	0	*59*	3	3	0	0	*6*	2	4	67	37	*110*
Peak Hr	**7**	**12**	**1**	**0**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**48**	**26**	***76***

Four-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				Alida St				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
2:15 PM	0	0	0	0	0	1	2	0	0	1	0	2	0	0	0	0	6	0
2:30 PM	0	0	5	0	0	0	2	0	0	1	0	0	0	0	0	0	8	0
2:45 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	21
3:00 PM	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	6	24
3:15 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	21
3:30 PM	**0**	**0**	**4**	**0**	**0**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	26
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	24
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**20**
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
4:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	8
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	9
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
5:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	6
Count Total	0	0	22	0	0	4	28	0	0	3	0	2	0	0	0	0	59	0
Peak Hour	**0**	**0**	**7**	**0**	**0**	**3**	**9**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**0**

Four-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave			Lincoln Ave			Alida St			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	3
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	2	1	0	3	0	0	0	0	0	0	0	6	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

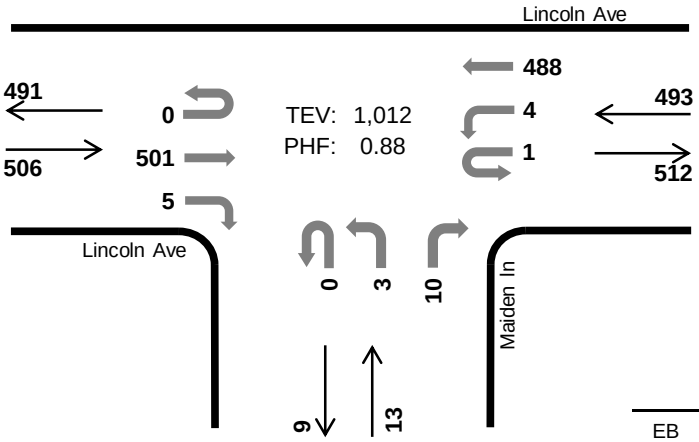
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

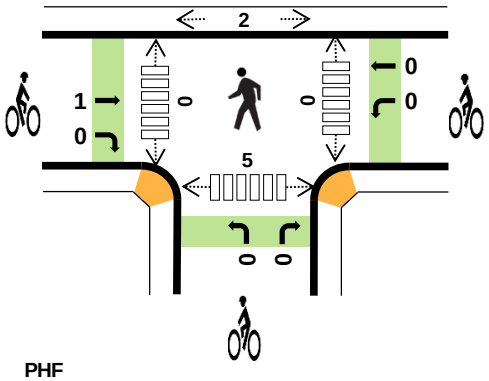
Maiden In
Lincoln Ave

N

Peak Hour

Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.4%	0.83
WB	3.2%	0.82
NB	0.0%	0.81
SB	-	-
TOTAL	2.8%	0.88

Two-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Maiden In Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	49	0	0	1	28	0	0	0	0	2	0	0	0	0	80	0
7:15 AM		0	0	83	1	0	0	44	0	0	2	0	1	0	0	0	0	131	0
7:30 AM		0	0	100	0	0	0	65	0	0	0	0	2	0	0	0	0	167	0
7:45 AM		**0**	**0**	**111**	**0**	**1**	**2**	**124**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**242**	620
8:00 AM		**0**	**0**	**130**	**1**	**0**	**1**	**150**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**286**	826
8:15 AM		**0**	**0**	**150**	**2**	**0**	**0**	**104**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**259**	954
8:30 AM		**0**	**0**	**110**	**2**	**0**	**1**	**110**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**225**	**1,012**
8:45 AM		0	0	79	1	0	3	117	0	0	0	0	1	0	0	0	0	201	971
Count Total		0	0	812	7	1	8	742	0	0	5	0	16	0	0	0	0	1,591	0
Peak Hour	**All**	**0**	**0**	**501**	**5**	**1**	**4**	**488**	**0**	**0**	**3**	**0**	**10**	**0**	**0**	**0**	**0**	**1,012**	**0**
	HV	**0**	**0**	**12**	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**
	HV%	**-**	**-**	**2%**	**0%**	**0%**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	1	2	*3*
7:15 AM	2	0	0	0	*2*	0	1	0	0	*1*	0	0	1	2	*3*
7:30 AM	3	1	0	0	*4*	0	1	0	0	*1*	0	0	0	3	*3*
7:45 AM	**2**	**4**	**0**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
8:00 AM	**7**	**9**	**0**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**4**	*4*
8:30 AM	**2**	**2**	**0**	**0**	***4***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	***1***
8:45 AM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	1	3	*4*
Count Total	19	21	0	0	*40*	1	2	0	0	*3*	0	0	5	15	*20*
Peak Hr	**12**	**16**	**0**	**0**	***28***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**2**	**5**	***7***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				Maiden ln				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	13
8:00 AM	**0**	**0**	**7**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	28
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	28
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**28**
8:45 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	27
Count Total	0	0	19	0	0	0	21	0	0	0	0	0	0	0	0	0	40	0
Peak Hour	**0**	**0**	**12**	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave			Lincoln Ave			Maiden ln			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	2	0	0	0	0	0	0	0	3	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

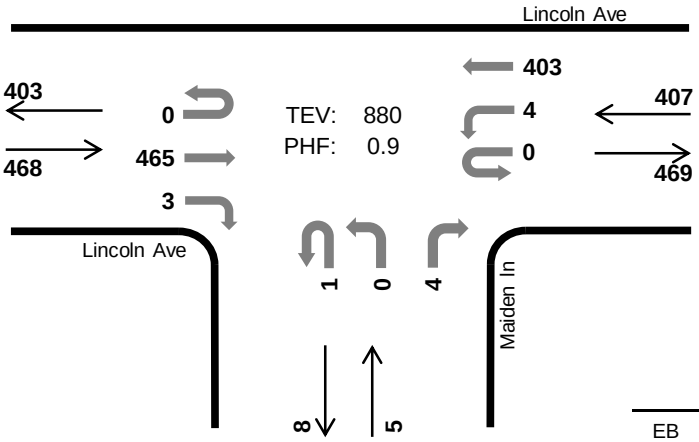
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

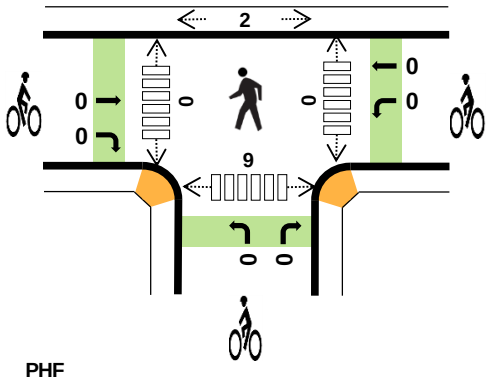
Maiden ln
Lincoln Ave

N

Peak Hour

Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM





	HV %:	PHF
EB	3.0%	0.77
WB	3.7%	0.86
NB	20.0%	0.42
SB	-	-
TOTAL	3.4%	0.90

Four-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Maiden ln Northbound				n/a Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		0	0	113	1	0	2	117	0	0	0	0	0	0	0	0	0	233	0
3:30 PM		0	0	152	0	0	1	90	0	0	0	0	1	0	0	0	0	244	0
3:45 PM		0	0	94	1	0	1	104	0	1	0	0	2	0	0	0	0	203	0
4:00 PM		0	0	106	1	0	0	92	0	0	0	0	1	0	0	0	0	200	880
Peak Hour	All	0	0	465	3	0	4	403	0	1	0	0	4	0	0	0	0	880	0
	HV	0	0	14	0	0	0	15	0	1	0	0	0	0	0	0	0	30	0
	HV%	-	-	3%	0%	-	0%	4%	-	100%	-	-	0%	-	-	-	-	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	4	4	0	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	8	6	0	0	*14*	0	0	0	0	*0*	0	0	2	0	*2*
3:45 PM	1	2	1	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	1	3	0	0	*4*	0	0	0	0	*0*	0	0	0	9	*9*
Peak Hour	14	15	1	0	*30*	0	0	0	0	*0*	0	0	2	9	*11*

Four-Hour Count Summaries

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Maiden ln Northbound				n/a Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	45	1	0	1	63	0	0	1	0	3	0	0	0	0	114	0
2:15 PM	0	0	50	0	0	1	63	0	0	1	0	3	0	0	0	0	118	0
2:30 PM	0	0	61	0	0	1	82	0	0	0	0	3	0	0	0	0	147	0
2:45 PM	0	0	69	0	0	1	93	0	0	0	0	0	0	0	0	0	163	542
3:00 PM	0	0	78	1	0	0	101	0	0	1	0	0	0	0	0	0	181	609
3:15 PM	**0**	**0**	**113**	**1**	**0**	**2**	**117**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**233**	724
3:30 PM	**0**	**0**	**152**	**0**	**0**	**1**	**90**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**244**	821
3:45 PM	**0**	**0**	**94**	**1**	**0**	**1**	**104**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**203**	861
4:00 PM	**0**	**0**	**106**	**1**	**0**	**0**	**92**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**200**	**880**
4:15 PM	0	0	76	2	0	2	102	0	0	0	0	1	0	0	0	0	183	830
4:30 PM	0	0	93	0	0	1	113	0	0	0	0	1	0	0	0	0	208	794
4:45 PM	0	0	96	2	0	1	104	0	0	0	0	1	0	0	0	0	204	795
5:00 PM	0	0	88	0	0	2	94	0	0	1	0	2	0	0	0	0	187	782
5:15 PM	0	0	83	3	0	0	102	0	0	0	0	1	0	0	0	0	189	788
5:30 PM	0	0	66	1	0	1	105	0	0	0	0	1	0	0	0	0	174	754
5:45 PM	0	0	80	0	0	1	107	0	0	0	0	1	0	0	0	0	189	739
Count Total	0	0	1,350	13	0	16	1,532	0	1	4	0	21	0	0	0	0	2,937	0
Peak Hour All	**0**	**0**	**465**	**3**	**0**	**4**	**403**	**0**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**880**	**0**
Peak Hour HV	**0**	**0**	**14**	**0**	**0**	**0**	**15**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**30**	**0**
Peak Hour HV%	**-**	**-**	**3%**	**0%**	**-**	**0%**	**4%**	**-**	**100%**	**-**	**-**	**0%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	0	0	1	*1*
2:15 PM	2	2	1	0	*5*	0	1	0	0	*1*	0	0	0	0	*0*
2:30 PM	4	2	0	0	*6*	0	0	0	0	*0*	0	0	0	1	*1*
2:45 PM	1	5	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	**4**	**4**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:30 PM	**8**	**6**	**0**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
3:45 PM	**1**	**2**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:00 PM	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**9**	***9***
4:15 PM	2	1	0	0	*3*	0	1	0	0	*1*	0	0	1	0	*1*
4:30 PM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
4:45 PM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	1	1	1	0	*3*	1	0	0	0	*1*	0	0	2	1	*3*
5:15 PM	0	1	0	0	*1*	1	0	0	0	*1*	0	0	0	6	*6*
5:30 PM	0	2	0	0	*2*	0	1	0	0	*1*	0	0	0	4	*4*
5:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	31	37	3	0	*71*	2	3	0	0	*5*	0	0	5	24	*29*
Peak Hr	**14**	**15**	**1**	**0**	***30***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**9**	***11***

Four-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				Maiden ln				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	5	0
2:15 PM	0	0	2	0	0	0	2	0	0	1	0	0	0	0	0	0	5	0
2:30 PM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
2:45 PM	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	6	22
3:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	20
3:15 PM	**0**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	23
3:30 PM	**0**	**0**	**8**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	31
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	29
4:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**30**
4:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	25
4:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	14
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	13
5:00 PM	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	3	12
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	10
5:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	9
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
Count Total	0	0	31	0	0	0	37	0	1	1	0	1	0	0	0	0	71	0
Peak Hour	**0**	**0**	**14**	**0**	**0**	**0**	**15**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**30**	**0**

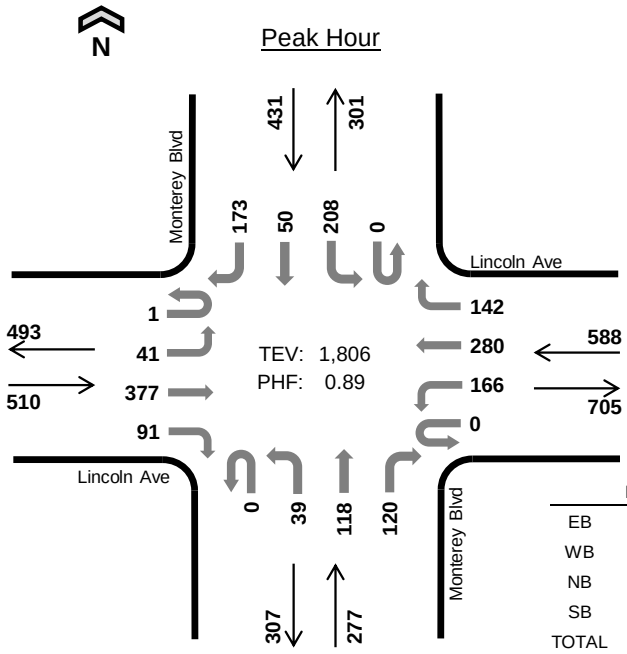
Four-Hour Count Summaries - Bikes

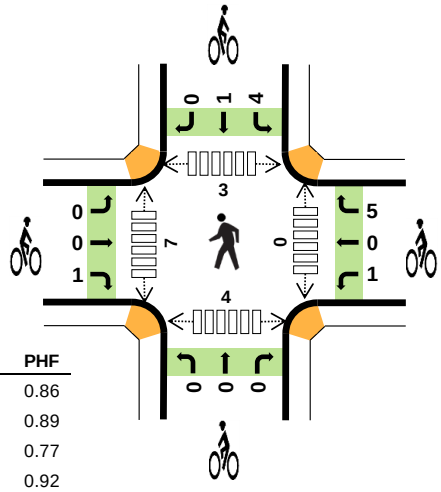
Interval Start	Lincoln Ave			Lincoln Ave			Maiden ln			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	2
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	2
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	2	0	0	3	0	0	0	0	0	0	0	5	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Monterey Blvd
Lincoln Ave

Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.4%	0.86
WB	1.9%	0.89
NB	1.1%	0.77
SB	3.7%	0.92
TOTAL	2.3%	0.89

Two-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Monterey Blvd Northbound				Monterey Blvd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	1	40	12	0	27	13	5	0	1	3	7	0	24	7	16	156	0
7:15 AM		0	3	67	13	0	25	27	3	0	2	4	11	0	36	10	14	215	0
7:30 AM		0	2	86	14	0	31	40	14	0	1	14	26	0	35	13	23	299	0
7:45 AM		**0**	**7**	**96**	**10**	**0**	**33**	**75**	**31**	**0**	**9**	**38**	**26**	**0**	**48**	**12**	**43**	**428**	1,098
8:00 AM		**0**	**10**	**94**	**32**	**0**	**42**	**80**	**44**	**0**	**16**	**42**	**32**	**0**	**48**	**11**	**55**	**506**	1,448
8:15 AM		**0**	**19**	**100**	**30**	**0**	**41**	**59**	**32**	**0**	**8**	**17**	**31**	**0**	**65**	**15**	**37**	**454**	1,687
8:30 AM		**1**	**5**	**87**	**19**	**0**	**50**	**66**	**35**	**0**	**6**	**21**	**31**	**0**	**47**	**12**	**38**	**418**	**1,806**
8:45 AM		0	9	61	12	0	57	73	22	0	7	24	24	0	67	8	41	405	1,783
Count Total		1	56	631	142	0	306	433	186	0	50	163	188	0	370	88	267	2,881	0
Peak Hour	**All**	**1**	**41**	**377**	**91**	**0**	**166**	**280**	**142**	**0**	**39**	**118**	**120**	**0**	**208**	**50**	**173**	**1,806**	**0**
	HV	**0**	**1**	**6**	**5**	**0**	**2**	**7**	**2**	**0**	**0**	**2**	**1**	**0**	**2**	**5**	**9**	**42**	**0**
	HV%	**0%**	**2%**	**2%**	**5%**	**-**	**1%**	**3%**	**1%**	**-**	**0%**	**2%**	**1%**	**-**	**1%**	**10%**	**5%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	1	*1*	0	0	1	1	*2*	0	3	0	2	*5*
7:15 AM	2	0	0	1	*3*	0	12	0	2	*14*	0	0	0	2	*2*
7:30 AM	3	1	0	0	*4*	0	1	1	1	*3*	0	3	1	2	*6*
7:45 AM	**2**	**3**	**2**	**3**	***10***	**0**	**1**	**0**	**2**	***3***	**0**	**6**	**1**	**2**	*9*
8:00 AM	**7**	**2**	**1**	**12**	***22***	**0**	**2**	**0**	**1**	***3***	**0**	**0**	**2**	**0**	*2*
8:15 AM	**1**	**1**	**0**	**0**	***2***	**0**	**2**	**0**	**2**	***4***	**0**	**1**	**0**	**1**	*2*
8:30 AM	**2**	**5**	**0**	**1**	***8***	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**1**	***1***
8:45 AM	2	5	0	1	*8*	0	2	1	3	*6*	0	2	1	3	*6*
Count Total	19	17	3	19	*58*	1	21	3	12	*37*	0	15	5	13	*33*
Peak Hour	**12**	**11**	**3**	**16**	***42***	**1**	**6**	**0**	**5**	***12***	**0**	**7**	**3**	**4**	***14***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Monterey Blvd Northbound				Monterey Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0
7:30 AM	0	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**1**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**1**	**10**	18
8:00 AM	**0**	**0**	**3**	**4**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**3**	**7**	**22**	39
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	38
8:30 AM	**0**	**0**	**1**	**1**	**0**	**2**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**8**	**42**
8:45 AM	0	0	2	0	0	2	3	0	0	0	0	0	0	1	0	0	8	40
Count Total	0	1	12	6	0	4	11	2	0	0	2	1	0	4	5	10	58	0
Peak Hour	**0**	**1**	**6**	**5**	**0**	**2**	**7**	**2**	**0**	**0**	**2**	**1**	**0**	**2**	**5**	**9**	**42**	**0**

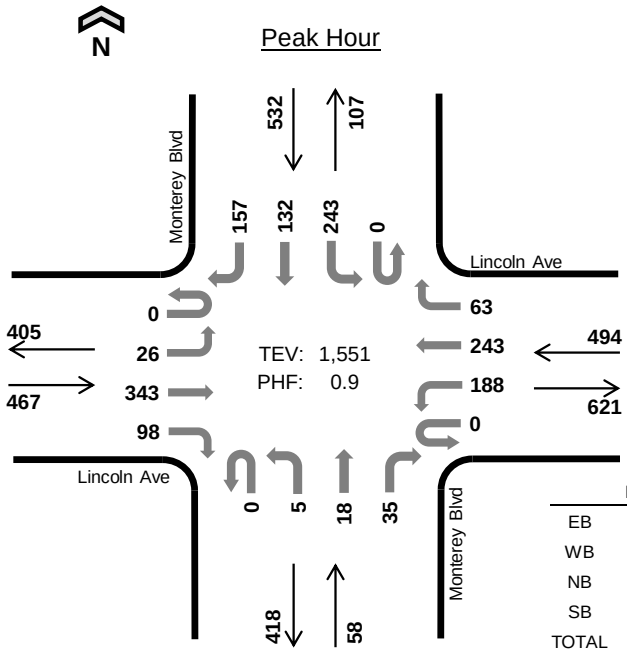
Two-Hour Count Summaries - Bikes

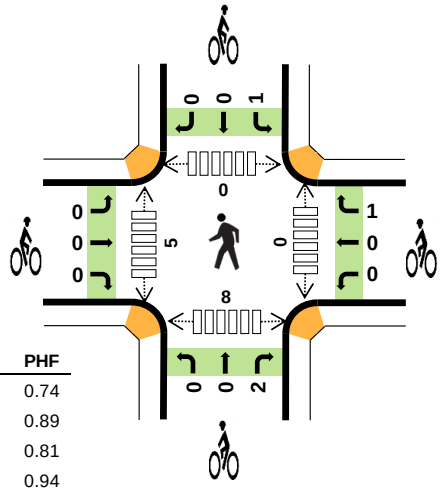
Interval Start	Lincoln Ave Eastbound			Lincoln Ave Westbound			Monterey Blvd Northbound			Monterey Blvd Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	2	0
7:15 AM	0	0	0	0	1	11	0	0	0	2	0	0	14	0
7:30 AM	0	0	0	0	0	1	0	1	0	0	0	1	3	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	22
8:00 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	23
8:15 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**4**	13
8:30 AM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**12**
8:45 AM	0	0	0	0	0	2	0	1	0	3	0	0	6	15
Count Total	0	0	1	1	1	19	0	3	0	10	1	1	37	0
Peak Hour	**0**	**0**	**1**	**1**	**0**	**5**	**0**	**0**	**0**	**4**	**1**	**0**	**12**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Monterey Blvd
Lincoln Ave

Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM





	HV %:	PHF
EB	3.0%	0.74
WB	2.8%	0.89
NB	1.7%	0.81
SB	2.1%	0.94
TOTAL	2.6%	0.90

Four-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Monterey Blvd Northbound				Monterey Blvd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		0	3	81	24	0	28	64	17	0	1	5	12	0	70	17	52	374	0
3:30 PM		0	14	113	30	0	61	62	16	0	1	6	11	0	57	30	28	429	0
3:45 PM		0	5	71	19	0	55	61	16	0	2	4	3	0	49	49	43	377	0
4:00 PM		0	4	78	25	0	44	56	14	0	1	3	9	0	67	36	34	371	1,551
Peak Hour	All	0	26	343	98	0	188	243	63	0	5	18	35	0	243	132	157	1,551	0
	HV	0	0	7	7	0	2	11	1	0	1	0	0	0	4	4	3	40	0
	HV%	-	0%	2%	7%	-	1%	5%	2%	-	20%	0%	0%	-	2%	3%	2%	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	4	3	1	2	*10*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	8	6	0	3	*17*	0	0	0	1	*1*	0	4	0	3	*7*
3:45 PM	1	1	0	3	*5*	0	0	0	0	*0*	0	0	0	1	*1*
4:00 PM	1	4	0	3	*8*	0	1	2	0	*3*	0	1	0	4	*5*
Peak Hour	14	14	1	11	*40*	0	1	2	1	*4*	0	5	0	8	*13*

Four-Hour Count Summaries

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Monterey Blvd Northbound				Monterey Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	2	31	16	0	59	30	7	0	1	4	7	0	56	10	33	256	0
2:15 PM	0	5	35	11	0	27	24	9	0	4	2	8	0	45	17	36	223	0
2:30 PM	0	4	48	14	0	27	36	8	0	3	3	10	0	46	16	45	260	0
2:45 PM	0	5	53	11	0	33	36	7	0	1	4	7	0	44	15	57	273	1,012
3:00 PM	0	3	65	10	0	26	47	9	0	2	4	11	0	52	14	53	296	1,052
3:15 PM	**0**	**3**	**81**	**24**	**0**	**28**	**64**	**17**	**0**	**1**	**5**	**12**	**0**	**70**	**17**	**52**	**374**	1,203
3:30 PM	**0**	**14**	**113**	**30**	**0**	**61**	**62**	**16**	**0**	**1**	**6**	**11**	**0**	**57**	**30**	**28**	**429**	1,372
3:45 PM	**0**	**5**	**71**	**19**	**0**	**55**	**61**	**16**	**0**	**2**	**4**	**3**	**0**	**49**	**49**	**43**	**377**	1,476
4:00 PM	**0**	**4**	**78**	**25**	**0**	**44**	**56**	**14**	**0**	**1**	**3**	**9**	**0**	**67**	**36**	**34**	**371**	**1,551**
4:15 PM	0	4	53	19	1	48	49	15	0	5	3	9	0	62	40	51	359	1,536
4:30 PM	0	0	64	32	0	38	54	7	0	1	4	7	0	49	42	58	356	1,463
4:45 PM	0	9	67	19	0	37	57	12	0	3	3	4	0	41	46	44	342	1,428
5:00 PM	0	4	61	21	0	32	52	13	0	4	8	3	0	55	44	40	337	1,394
5:15 PM	0	1	69	19	1	48	51	9	0	7	7	5	0	35	43	44	339	1,374
5:30 PM	0	6	49	12	0	45	49	10	0	5	4	8	0	47	42	50	327	1,345
5:45 PM	0	4	60	17	0	34	56	10	0	0	2	4	0	43	50	51	331	1,334
Count Total	0	73	998	299	2	642	784	179	0	41	66	118	0	818	511	719	5,250	0
Peak Hour All	**0**	**26**	**343**	**98**	**0**	**188**	**243**	**63**	**0**	**5**	**18**	**35**	**0**	**243**	**132**	**157**	**1,551**	**0**
Peak Hour HV	**0**	**0**	**7**	**7**	**0**	**2**	**11**	**1**	**0**	**1**	**0**	**0**	**0**	**4**	**4**	**3**	**40**	**0**
Peak Hour HV%	**-**	**0%**	**2%**	**7%**	**-**	**1%**	**5%**	**2%**	**-**	**20%**	**0%**	**0%**	**-**	**2%**	**3%**	**2%**	**3%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	1	2	0	4	*7*	0	1	0	1	*2*	0	0	0	1	*1*
2:15 PM	2	3	0	3	*8*	0	1	0	0	*1*	0	0	0	0	*0*
2:30 PM	4	2	0	3	*9*	0	1	1	0	*2*	0	0	2	0	*2*
2:45 PM	1	6	0	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	3	1	1	*5*	0	0	0	1	*1*	0	0	0	0	*0*
3:15 PM	**4**	**3**	**1**	**2**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:30 PM	**8**	**6**	**0**	**3**	***17***	**0**	**0**	**0**	**1**	***1***	**0**	**4**	**0**	**3**	*7*
3:45 PM	**1**	**1**	**0**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:00 PM	**1**	**4**	**0**	**3**	***8***	**0**	**1**	**2**	**0**	***3***	**0**	**1**	**0**	**4**	***5***
4:15 PM	2	2	0	0	*4*	0	0	0	2	*2*	0	0	2	3	*5*
4:30 PM	3	0	0	0	*3*	0	1	0	1	*2*	0	0	0	0	*0*
4:45 PM	2	2	0	0	*4*	0	0	0	1	*1*	0	1	0	0	*1*
5:00 PM	2	1	0	1	*4*	1	0	2	0	*3*	0	0	0	1	*1*
5:15 PM	0	1	0	1	*2*	1	1	0	1	*3*	0	0	0	2	*2*
5:30 PM	0	2	0	1	*3*	0	0	2	1	*3*	0	0	0	0	*0*
5:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	32	38	2	26	*98*	2	6	7	9	*24*	0	6	4	15	*25*
Peak Hour	**14**	**14**	**1**	**11**	***40***	**0**	**1**	**2**	**1**	***4***	**0**	**5**	**0**	**8**	***13***

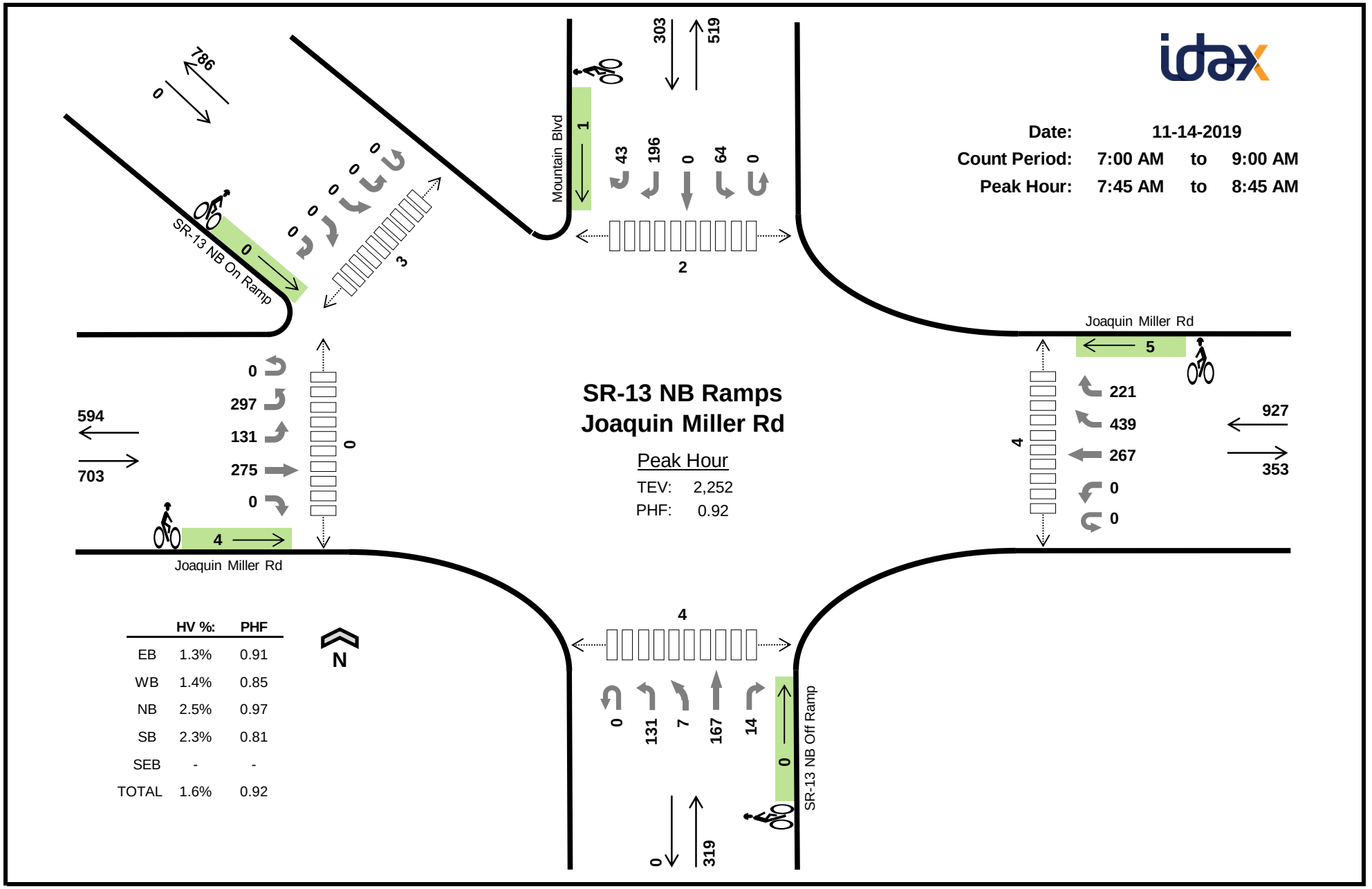
Four-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Monterey Blvd Northbound				Monterey Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	3	7	0
2:15 PM	0	0	1	1	0	2	0	1	0	0	0	0	0	0	1	2	8	0
2:30 PM	0	0	3	1	0	0	2	0	0	0	0	0	0	2	1	0	9	0
2:45 PM	0	0	0	1	0	0	5	1	0	0	0	0	0	1	0	0	8	32
3:00 PM	0	0	0	0	0	0	3	0	0	0	0	1	0	1	0	0	5	30
3:15 PM	**0**	**0**	**1**	**3**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**10**	32
3:30 PM	**0**	**0**	**5**	**3**	**0**	**1**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**17**	40
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**5**	37
4:00 PM	**0**	**0**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**8**	**40**
4:15 PM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	4	34
4:30 PM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	20
4:45 PM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	4	19
5:00 PM	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	4	15
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	13
5:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	3	13
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10
Count Total	0	0	18	14	0	7	27	4	0	1	0	1	0	10	7	9	98	0
Peak Hour	**0**	**0**	**7**	**7**	**0**	**2**	**11**	**1**	**0**	**1**	**0**	**0**	**0**	**4**	**4**	**3**	**40**	**0**

Four-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave Eastbound			Lincoln Ave Westbound			Monterey Blvd Northbound			Monterey Blvd Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	1	0	0	0	0	0	1	0	0	2	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	2	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5
3:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	4
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	2
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
4:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**4**
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	2	6
4:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	2	7
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	8
5:00 PM	0	1	0	0	0	0	0	2	0	0	0	0	3	8
5:15 PM	0	0	1	1	0	0	0	0	0	0	1	0	3	9
5:30 PM	0	0	0	0	0	0	1	1	0	1	0	0	3	10
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Count Total	0	1	1	3	1	2	2	3	2	5	3	1	24	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.


SR-13 NB Ramps
Joaquin Miller Rd
Peak Hour
TEV: 2,252
PHF: 0.92
Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM
Mountain Blvd
SR-13 NB On Ramp
SR-13 NB Off Ramp
Joaquin Miller Rd
Joaquin Miller Rd
786
0
303
519
1
43
196
0
64
0
2
0
0
0
0
0
0
3
0
297
131
275
0
0
594
703
4
Joaquin Miller Rd
4
5
221
439
267
0
0
927
353
4
0
131
7
167
14
0
0
319
4
SR-13 NB Off Ramp
N
HV %: PHF
EB 1.3% 0.91
WB 1.4% 0.85
NB 2.5% 0.97
SB 2.3% 0.81
SEB - -
TOTAL 1.6% 0.92

Two-Hour Count Summaries

Interval Start	Joaquin Miller Rd Eastbound					Joaquin Miller Rd Westbound					SR-13 NB Off Ramp Northbound					Mountain Blvd Southbound					SR-13 NB On Ramp Southeastbound					15-min Total	Rolling One Hour
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM	0	36	5	31	0	0	0	10	36	4	0	12	0	5	5	0	5	0	23	6	0	0	0	0	0	178	0
7:15 AM	0	64	10	39	0	0	0	13	54	6	0	16	0	9	8	0	8	0	25	3	0	0	0	0	0	255	0
7:30 AM	0	72	15	60	0	0	0	30	90	14	0	26	1	18	2	0	7	0	30	5	0	0	0	0	0	370	0
7:45 AM	**0**	**68**	**20**	**80**	**0**	**0**	**0**	**74**	**91**	**36**	**0**	**25**	**3**	**48**	**4**	**0**	**15**	**0**	**42**	**7**	**0**	**0**	**0**	**0**	**0**	**513**	1,316
8:00 AM	**0**	**74**	**36**	**65**	**0**	**0**	**0**	**82**	**130**	**60**	**0**	**38**	**2**	**39**	**1**	**0**	**14**	**0**	**49**	**11**	**0**	**0**	**0**	**0**	**0**	**601**	1,739
8:15 AM	**0**	**87**	**45**	**62**	**0**	**0**	**0**	**51**	**126**	**87**	**0**	**31**	**0**	**47**	**4**	**0**	**11**	**0**	**47**	**13**	**0**	**0**	**0**	**0**	**0**	**611**	2,095
8:30 AM	**0**	**68**	**30**	**68**	**0**	**0**	**0**	**60**	**92**	**38**	**0**	**37**	**2**	**33**	**5**	**0**	**24**	**0**	**58**	**12**	**0**	**0**	**0**	**0**	**0**	**527**	**2,252**
8:45 AM	0	43	31	76	0	0	0	39	54	29	0	50	3	34	6	0	20	0	63	7	0	0	0	0	0	455	2,194
Count Total	0	512	192	481	0	0	0	359	673	274	0	235	11	233	35	0	104	0	337	64	0	0	0	0	0	3,510	0
Peak Hour All	**0**	**297**	**131**	**275**	**0**	**0**	**0**	**267**	**439**	**221**	**0**	**131**	**7**	**167**	**14**	**0**	**64**	**0**	**196**	**43**	**0**	**0**	**0**	**0**	**0**	**2,252**	**0**
Peak Hour HV	**0**	**2**	**4**	**3**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**3**	**0**	**4**	**1**	**0**	**2**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**37**	**0**
Peak Hour HV%	**-**	**1%**	**3%**	**1%**	**-**	**-**	**-**	**2%**	**1%**	**2%**	**-**	**2%**	**0%**	**2%**	**7%**	**-**	**3%**	**-**	**2%**	**2%**	**-**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

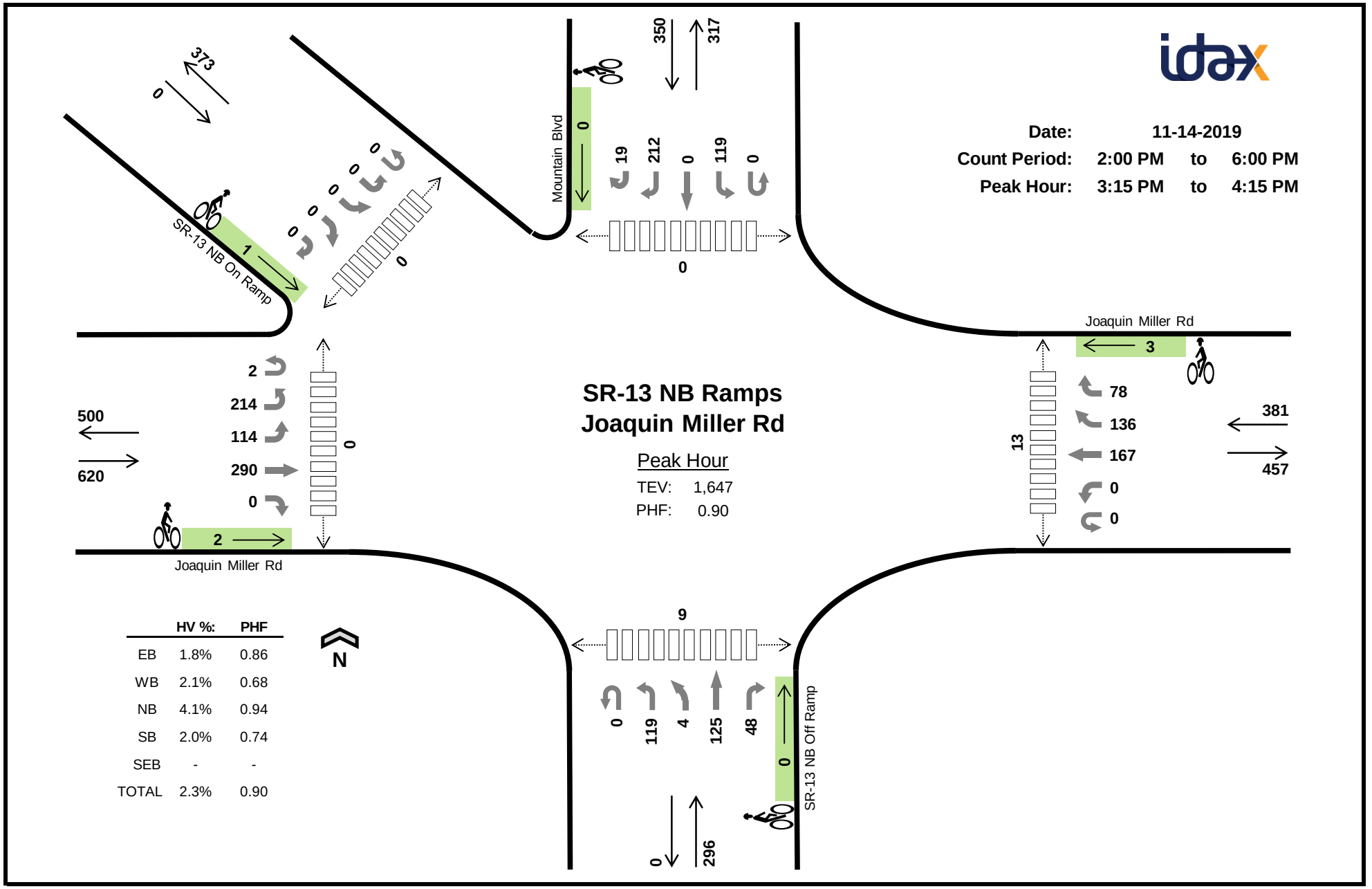
Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	SEB	Total	EB	WB	NB	SB	SEB	Total	East	West	North	South	Northwest	Total
7:00 AM	0	0	0	0	0	*0*	0	3	0	0	0	*3*	0	0	0	3	0	*3*
7:15 AM	3	0	0	4	0	*7*	2	11	0	0	0	*13*	2	0	0	3	0	*5*
7:30 AM	2	5	0	0	0	*7*	0	1	0	0	0	*1*	0	0	0	2	0	*2*
7:45 AM	**2**	**3**	**2**	**2**	**0**	***9***	**2**	**1**	**0**	**1**	**0**	***4***	**1**	**0**	**2**	**1**	**2**	***6***
8:00 AM	**5**	**2**	**4**	**1**	**0**	***12***	**0**	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	**1**	***1***
8:15 AM	**1**	**4**	**1**	**1**	**0**	***7***	**2**	**2**	**0**	**0**	**0**	***4***	**2**	**0**	**0**	**2**	**0**	***4***
8:30 AM	**1**	**4**	**1**	**3**	**0**	***9***	**0**	**1**	**0**	**0**	**0**	***1***	**1**	**0**	**0**	**1**	**0**	***2***
8:45 AM	3	2	4	1	0	*10*	3	3	0	0	0	*6*	1	0	0	3	1	*5*
Count Total	17	20	12	12	0	*61*	9	23	0	1	0	*33*	7	0	2	15	4	*28*
Peak Hr	**9**	**13**	**8**	**7**	**0**	***37***	**4**	**5**	**0**	**1**	**0**	***10***	**4**	**0**	**2**	**4**	**3**	*13*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Joaquin Miller Rd					Joaquin Miller Rd					SR-13 NB Off Ramp					Mountain Blvd					n/a					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southeastbound						
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM	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
7:15 AM	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	7	0
7:30 AM	0	1	0	1	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
7:45 AM	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	23
8:00 AM	**0**	**1**	**2**	**2**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**12**	35
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	35
8:30 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**37**
8:45 AM	0	1	0	2	0	0	0	2	0	0	0	2	0	1	1	0	0	0	1	0	0	0	0	0	0	10	38
Count Total	0	4	5	8	0	0	0	8	7	5	0	5	0	5	2	0	5	0	5	2	0	0	0	0	0	61	0
Peak Hour	**0**	**2**	**4**	**3**	**0**	**0**	**0**	**5**	**3**	**5**	**0**	**3**	**0**	**4**	**1**	**0**	**2**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	37	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Joaquin Miller Rd					Joaquin Miller Rd					SR-13 NB Off Ramp					Mountain Blvd					n/a					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southeastbound						
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	0	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	21
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	19
8:15 AM	**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**	**4**	10
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**10**
8:45 AM	0	0	0	3	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	12
Count Total	0	0	0	9	0	0	0	19	0	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	33	0
Peak Hour	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	10	**0**


SR-13 NB Ramps
Joaquin Miller Rd
Peak Hour
TEV: 1,647
PHF: 0.90
Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM
Mountain Blvd
SR-13 NB On Ramp
SR-13 NB Off Ramp
Joaquin Miller Rd
Joaquin Miller Rd
N
HV %: PHF
EB 1.8% 0.86
WB 2.1% 0.68
NB 4.1% 0.94
SB 2.0% 0.74
SEB - -
TOTAL 2.3% 0.90

Four-Hour Count Summaries

Interval Start	Joaquin Miller Rd Eastbound					Joaquin Miller Rd Westbound					SR-13 NB Off Ramp Northbound					Mountain Blvd Southbound					SR-13 NB On Ramp Southeastbound					15-min Total	Rolling One Hour
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
2:00 PM	0	28	15	51	0	0	0	54	31	12	0	16	0	15	3	0	20	0	23	4	0	0	0	0	0	272	0
2:15 PM	1	19	15	50	0	0	0	22	39	17	0	13	0	7	7	0	25	0	24	7	0	0	0	0	0	246	0
2:30 PM	0	37	17	52	0	0	0	30	41	8	0	12	0	10	6	0	8	0	28	8	0	0	0	0	0	257	0
2:45 PM	1	24	23	52	0	0	0	22	40	8	0	18	1	23	3	0	10	0	36	10	0	0	0	0	0	271	1,046
3:00 PM	0	37	20	73	0	0	0	32	23	16	0	26	1	30	12	0	21	0	25	11	0	0	0	0	0	327	1,101
3:15 PM	**2**	**56**	**27**	**79**	**0**	**0**	**0**	**54**	**51**	**36**	**0**	**29**	**3**	**38**	**6**	**0**	**15**	**0**	**26**	**5**	**0**	**0**	**0**	**0**	**0**	**427**	1,282
3:30 PM	**0**	**63**	**38**	**80**	**0**	**0**	**0**	**45**	**38**	**18**	**0**	**33**	**1**	**34**	**11**	**0**	**27**	**0**	**66**	**5**	**0**	**0**	**0**	**0**	**0**	**459**	1,484
3:45 PM	**0**	**45**	**17**	**60**	**0**	**0**	**0**	**37**	**26**	**11**	**0**	**25**	**0**	**25**	**14**	**0**	**48**	**0**	**65**	**6**	**0**	**0**	**0**	**0**	**0**	**379**	1,592
4:00 PM	**0**	**50**	**32**	**71**	**0**	**0**	**0**	**31**	**21**	**13**	**0**	**32**	**0**	**28**	**17**	**0**	**29**	**0**	**55**	**3**	**0**	**0**	**0**	**0**	**0**	**382**	**1,647**
4:15 PM	0	40	13	71	0	0	0	31	30	17	0	20	0	13	20	0	52	0	59	4	0	0	0	0	0	370	1,590
4:30 PM	0	39	16	62	0	0	0	29	30	14	0	28	0	26	12	1	35	0	41	2	0	0	0	0	0	335	1,466
4:45 PM	0	41	15	55	0	0	0	35	38	13	0	33	0	20	10	0	56	0	42	3	0	0	0	0	0	361	1,448
5:00 PM	0	36	14	69	0	0	0	26	29	20	0	35	1	16	18	0	48	0	40	6	0	0	0	0	0	358	1,424
5:15 PM	0	37	26	51	0	0	0	32	38	13	0	26	0	20	12	0	50	0	45	7	0	0	0	0	0	357	1,411
5:30 PM	0	34	20	52	0	0	0	31	25	6	0	26	0	22	13	0	51	0	50	19	0	0	0	0	0	349	1,425
5:45 PM	0	36	14	57	0	0	0	27	30	11	0	25	0	23	9	0	54	0	48	5	0	0	0	0	0	339	1,403
Count Total	4	622	322	985	0	0	0	538	530	233	0	397	7	350	173	1	549	0	673	105	0	0	0	0	0	5,489	0
Peak Hour All	**2**	**214**	**114**	**290**	**0**	**0**	**0**	**167**	**136**	**78**	**0**	**119**	**4**	**125**	**48**	**0**	**119**	**0**	**212**	**19**	**0**	**0**	**0**	**0**	**0**	**1,647**	**0**
Peak Hour HV	**0**	**5**	**0**	**6**	**0**	**0**	**0**	**6**	**0**	**2**	**0**	**5**	**0**	**7**	**0**	**0**	**4**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**38**	**0**
Peak Hour HV%	**0%**	**2%**	**0%**	**2%**	**-**	**-**	**-**	**4%**	**0%**	**3%**	**-**	**4%**	**0%**	**6%**	**0%**	**-**	**3%**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	SEB	Total	EB	WB	NB	SB	SEB	Total	East	West	North	South	Northwest	Total
2:00 PM	1	1	3	0	0	*5*	1	3	0	0	0	*4*	1	0	0	1	0	*2*
2:15 PM	1	1	0	3	0	*5*	0	1	0	0	0	*1*	0	0	0	0	0	*0*
2:30 PM	5	3	2	0	0	*10*	0	1	0	0	0	*1*	0	0	1	0	2	*3*
2:45 PM	1	2	4	2	0	*9*	0	0	0	0	0	*0*	0	0	0	0	0	*0*
3:00 PM	2	1	4	1	0	*8*	1	0	0	0	0	*1*	0	0	0	0	0	*0*
3:15 PM	**2**	**2**	**6**	**0**	**0**	***10***	**0**	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	**0**	***0***
3:30 PM	**6**	**3**	**4**	**3**	**0**	***16***	**1**	**0**	**0**	**0**	**0**	***1***	**9**	**0**	**0**	**6**	**0**	***15***
3:45 PM	**1**	**1**	**0**	**3**	**0**	***5***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	**0**	***1***
4:00 PM	**2**	**2**	**2**	**1**	**0**	***7***	**1**	**2**	**0**	**0**	**1**	***4***	**3**	**0**	**0**	**3**	**0**	***6***
4:15 PM	2	2	1	1	0	*6*	0	0	0	0	0	*0*	2	0	0	2	2	*6*
4:30 PM	2	2	0	1	0	*5*	0	1	0	0	0	*1*	0	0	0	0	0	*0*
4:45 PM	2	2	0	0	0	*4*	1	1	0	0	0	*2*	1	0	0	1	0	*2*
5:00 PM	0	1	1	0	0	*2*	0	0	0	0	0	*0*	2	0	0	1	0	*3*
5:15 PM	1	0	1	0	0	*2*	1	1	0	1	0	*3*	3	0	0	4	0	*7*
5:30 PM	0	2	0	0	0	*2*	0	0	0	0	0	*0*	2	0	0	2	0	*4*
5:45 PM	1	0	0	1	0	*2*	0	0	0	0	0	*0*	0	0	0	0	0	*0*
Count Total	29	25	28	16	0	*98*	6	11	0	1	1	*19*	24	0	1	20	4	*49*
Peak Hr	**11**	**8**	**12**	**7**	**0**	***38***	**2**	**3**	**0**	**0**	**1**	***6***	**13**	**0**	**0**	**9**	**0**	*22*

Four-Hour Count Summaries - Heavy Vehicles

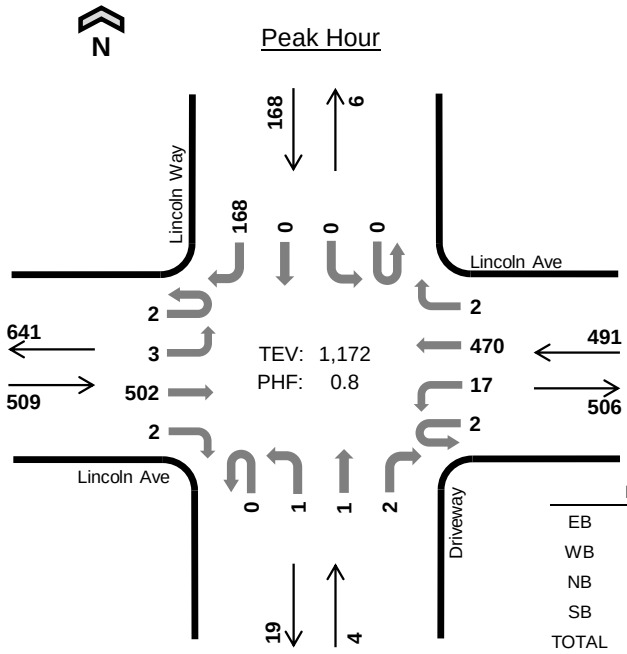
Interval Start	Joaquin Miller Rd					Joaquin Miller Rd					SR-13 NB Off Ramp					Mountain Blvd					n/a					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southeastbound						
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
2:00 PM	0	1	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	5	0
2:15 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	5	0
2:30 PM	0	0	1	4	0	0	0	2	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	10	0
2:45 PM	0	0	0	1	0	0	0	1	1	0	0	3	0	1	0	0	0	0	2	0	0	0	0	0	0	9	29
3:00 PM	0	0	1	1	0	0	0	1	0	0	0	2	0	2	0	0	1	0	0	0	0	0	0	0	0	8	32
3:15 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	37
3:30 PM	**0**	**4**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	43
3:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	39
4:00 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**38**
4:15 PM	0	2	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	6	34
4:30 PM	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5	23
4:45 PM	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	22
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	17
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	13
5:30 PM	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	2	10
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	8
Count Total	0	10	3	16	0	0	0	18	5	2	0	14	0	14	0	0	8	0	8	0	0	0	0	0	0	98	0
Peak Hour	**0**	**5**	**0**	**6**	**0**	**0**	**0**	**6**	**0**	**2**	**0**	**5**	**0**	**7**	**0**	**0**	**4**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	38	**0**

Four-Hour Count Summaries - Bikes

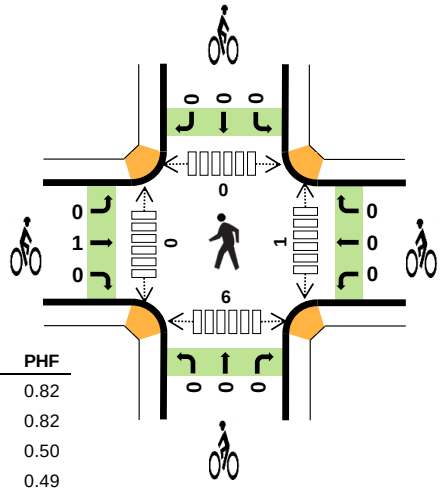
Interval Start	Joaquin Miller Rd					Joaquin Miller Rd					SR-13 NB Off Ramp					Mountain Blvd					n/a					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southeastbound						
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
2:00 PM	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
2:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2:45 PM	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	6
3:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
3:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
3:45 PM	**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
4:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	**6**
4:15 PM	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	5
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
4:45 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
5:00 PM	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
5:15 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	6
5:30 PM	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	5
5:45 PM	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
Count Total	0	0	1	5	0	0	0	6	0	5	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	19	0
Peak Hour	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	6	**0**

Lincoln Way
Lincoln Ave

Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	2.4%	0.82
WB	3.3%	0.82
NB	0.0%	0.50
SB	0.0%	0.49
TOTAL	2.4%	0.80



Two-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Driveway Northbound				Lincoln Way Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	49	0	0	1	27	0	0	0	0	1	0	0	0	1	79	0
7:15 AM		0	0	80	1	1	3	42	0	0	4	0	6	0	0	0	2	139	0
7:30 AM		0	0	98	0	0	0	65	0	0	1	0	0	0	0	0	2	166	0
7:45 AM		**0**	**1**	**110**	**0**	**1**	**4**	**118**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**15**	**253**	637
8:00 AM		**0**	**0**	**130**	**1**	**1**	**3**	**146**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**85**	**367**	925
8:15 AM		**2**	**2**	**151**	**0**	**0**	**1**	**104**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**65**	**325**	1,111
8:30 AM		**0**	**0**	**111**	**1**	**0**	**9**	**102**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**227**	**1,172**
8:45 AM		1	0	76	1	0	10	107	0	0	1	0	4	0	0	1	3	204	1,123
Count Total		3	3	805	4	3	31	711	2	0	7	1	13	0	0	1	176	1,760	0
Peak Hour	**All**	**2**	**3**	**502**	**2**	**2**	**17**	**470**	**2**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**168**	**1,172**	**0**
	HV	**0**	**0**	**12**	**0**	**0**	**1**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**
	HV%	**0%**	**0%**	**2%**	**0%**	**0%**	**6%**	**3%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**-**	**-**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	2	*2*
7:15 AM	2	0	0	0	*2*	0	1	0	0	*1*	2	0	0	0	*2*
7:30 AM	4	1	0	0	*5*	0	1	0	0	*1*	1	1	0	0	*2*
7:45 AM	**2**	**4**	**0**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	*2*
8:00 AM	**7**	**9**	**0**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**4**	*4*
8:30 AM	**2**	**2**	**0**	**0**	***4***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	***1***
8:45 AM	2	3	1	0	*6*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	20	21	1	0	*42*	1	2	0	0	*3*	4	1	0	9	*14*
Peak Hour	**12**	**16**	**0**	**0**	***28***	**1**	**0**	**0**	**0**	***1***	**1**	**0**	**0**	**6**	***7***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Driveway Northbound				Lincoln Way Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	14
8:00 AM	**0**	**0**	**7**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	29
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	29
8:30 AM	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**28**
8:45 AM	0	0	2	0	0	0	3	0	0	1	0	0	0	0	0	0	6	28
Count Total	0	0	20	0	0	1	20	0	0	1	0	0	0	0	0	0	42	0
Peak Hour	**0**	**0**	**12**	**0**	**0**	**1**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**

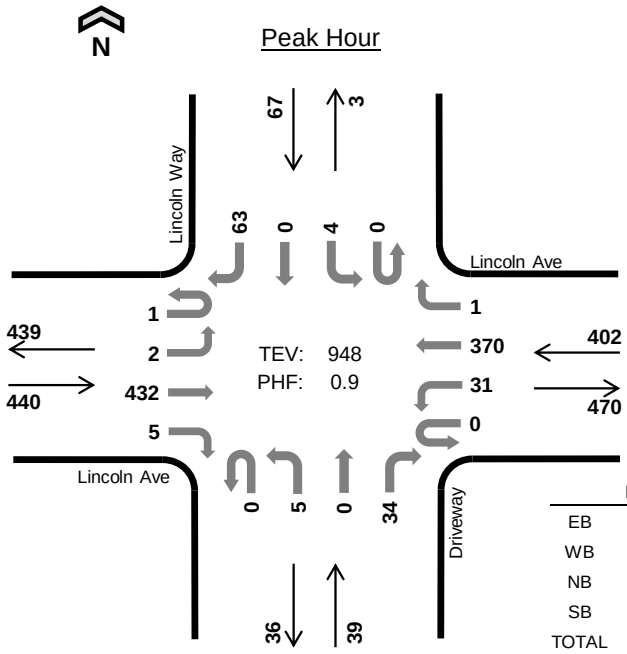
Two-Hour Count Summaries - Bikes

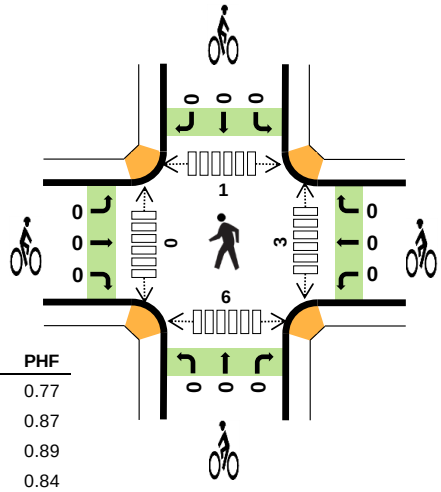
Interval Start	Lincoln Ave Eastbound			Lincoln Ave Westbound			Driveway Northbound			Lincoln Way Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	2	0	0	0	0	0	0	0	3	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Lincoln Way
Lincoln Ave

Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM





	HV %:	PHF
EB	3.2%	0.77
WB	3.7%	0.87
NB	0.0%	0.89
SB	0.0%	0.84
TOTAL	3.1%	0.90

Four-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				Driveway Northbound				Lincoln Way Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		1	0	111	2	0	7	108	0	0	2	0	5	0	0	0	17	253	0
3:30 PM		0	1	139	3	0	10	81	0	0	1	0	10	0	1	0	16	262	0
3:45 PM		0	0	87	0	0	7	95	1	0	1	0	9	0	0	0	13	213	0
4:00 PM		0	1	95	0	0	7	86	0	0	1	0	10	0	3	0	17	220	948
Peak Hour	All	1	2	432	5	0	31	370	1	0	5	0	34	0	4	0	63	948	0
	HV	0	0	14	0	0	0	15	0	0	0	0	0	0	0	0	0	29	0
	HV%	0%	0%	3%	0%	-	0%	4%	0%	-	0%	-	0%	-	0%	-	0%	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	4	4	0	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	8	6	0	0	*14*	0	0	0	0	*0*	2	0	1	0	*3*
3:45 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
4:00 PM	1	3	0	0	*4*	0	0	0	0	*0*	1	0	0	5	*6*
Peak Hour	14	15	0	0	*29*	0	0	0	0	*0*	3	0	1	6	*10*

Four-Hour Count Summaries

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Driveway Northbound				Lincoln Way Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	39	0	0	3	61	0	0	1	0	7	0	0	0	0	111	0
2:15 PM	0	0	42	0	2	5	56	1	0	1	0	6	0	0	0	0	113	0
2:30 PM	0	0	54	2	0	6	75	0	0	2	0	7	0	0	0	2	148	0
2:45 PM	0	0	59	0	1	9	84	0	0	3	0	9	0	0	0	7	172	544
3:00 PM	0	0	72	2	0	8	94	0	0	0	0	5	0	1	0	2	184	617
3:15 PM	**1**	**0**	**111**	**2**	**0**	**7**	**108**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**17**	**253**	757
3:30 PM	**0**	**1**	**139**	**3**	**0**	**10**	**81**	**0**	**0**	**1**	**0**	**10**	**0**	**1**	**0**	**16**	**262**	871
3:45 PM	**0**	**0**	**87**	**0**	**0**	**7**	**95**	**1**	**0**	**1**	**0**	**9**	**0**	**0**	**0**	**13**	**213**	912
4:00 PM	**0**	**1**	**95**	**0**	**0**	**7**	**86**	**0**	**0**	**1**	**0**	**10**	**0**	**3**	**0**	**17**	**220**	**948**
4:15 PM	0	0	70	1	0	4	97	0	0	3	0	6	0	2	0	4	187	882
4:30 PM	0	0	84	0	0	4	110	0	0	0	0	7	0	1	0	12	218	838
4:45 PM	0	0	84	0	0	4	100	0	0	3	0	13	0	1	0	12	217	842
5:00 PM	0	0	84	1	0	1	93	1	0	1	0	5	0	0	0	10	196	818
5:15 PM	0	0	82	1	0	2	99	0	0	2	0	2	0	1	0	14	203	834
5:30 PM	0	0	63	1	0	4	100	0	0	2	0	3	0	1	0	12	186	802
5:45 PM	0	0	77	1	0	6	101	0	0	0	0	2	0	0	1	12	200	785
Count Total	1	2	1,242	14	3	87	1,440	3	0	23	0	106	0	11	1	150	3,083	0
Peak Hour All	**1**	**2**	**432**	**5**	**0**	**31**	**370**	**1**	**0**	**5**	**0**	**34**	**0**	**4**	**0**	**63**	**948**	**0**
Peak Hour HV	**0**	**0**	**14**	**0**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**
Peak Hour HV%	**0%**	**0%**	**3%**	**0%**	**-**	**0%**	**4%**	**0%**	**-**	**0%**	**-**	**0%**	**-**	**0%**	**-**	**0%**	**3%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	2	3	0	0	*5*	0	1	0	0	*1*	0	0	0	0	*0*
2:30 PM	3	2	1	0	*6*	0	1	0	0	*1*	0	0	0	0	*0*
2:45 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	**4**	**4**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:30 PM	**8**	**6**	**0**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	*3*
3:45 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:00 PM	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**5**	***6***
4:15 PM	2	1	0	0	*3*	0	1	0	0	*1*	1	0	0	1	*2*
4:30 PM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	1	1	0	0	*2*	1	0	0	0	*1*	0	0	1	1	*2*
5:15 PM	0	1	0	0	*1*	1	0	0	0	*1*	0	0	0	3	*3*
5:30 PM	0	2	0	0	*2*	0	1	0	0	*1*	0	0	0	4	*4*
5:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	30	37	1	0	*68*	2	4	0	0	*6*	4	0	2	16	*22*
Peak Hour	**14**	**15**	**0**	**0**	***29***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**1**	**6**	***10***

Four-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				Driveway Northbound				Lincoln Way Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	5	0
2:15 PM	0	0	2	0	0	1	2	0	0	0	0	0	0	0	0	0	5	0
2:30 PM	0	0	3	0	0	0	2	0	0	0	0	1	0	0	0	0	6	0
2:45 PM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	5	21
3:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	19
3:15 PM	**0**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	22
3:30 PM	**0**	**0**	**8**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	30
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	28
4:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**29**
4:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	24
4:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	13
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	13
5:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	11
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	9
5:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	8
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	30	0	0	1	36	0	0	0	0	1	0	0	0	0	68	0
Peak Hour	**0**	**0**	**14**	**0**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**

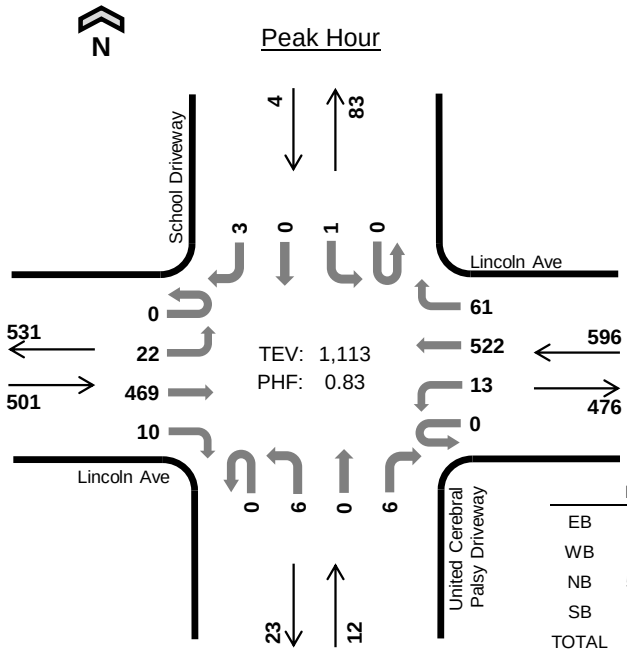
Four-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave Eastbound			Lincoln Ave Westbound			Driveway Northbound			Lincoln Way Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	2
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	2
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	2	0	0	4	0	0	0	0	0	0	0	6	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

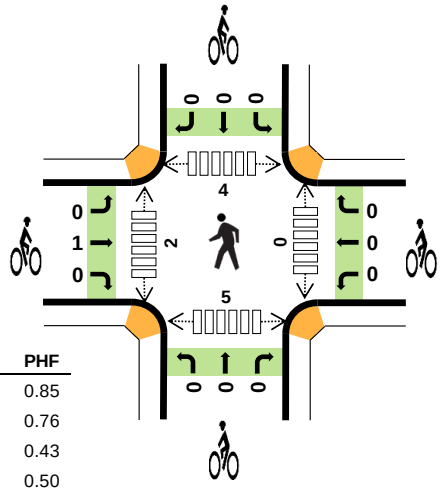
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

United Cerebral Palsy Driveway
Lincoln Ave

Date: 11-14-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	2.2%	0.85
WB	2.5%	0.76
NB	58.3%	0.43
SB	0.0%	0.50
TOTAL	3.0%	0.83



Two-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				United Cerebral Palsy Driveway Northbound				School Driveway Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		1	0	48	1	0	1	25	0	0	0	0	0	0	0	0	0	76	0
7:15 AM		0	0	79	0	0	0	43	1	0	1	0	0	0	0	0	0	124	0
7:30 AM		0	1	99	0	0	0	55	6	0	0	0	0	0	0	0	0	161	0
7:45 AM		**0**	**7**	**111**	**3**	**0**	**2**	**115**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**244**	605
8:00 AM		**0**	**9**	**118**	**5**	**0**	**2**	**167**	**28**	**0**	**3**	**0**	**4**	**0**	**0**	**0**	**1**	**337**	866
8:15 AM		**0**	**5**	**142**	**1**	**0**	**5**	**150**	**24**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**331**	1,073
8:30 AM		**0**	**1**	**98**	**1**	**0**	**4**	**90**	**3**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1**	**201**	**1,113**
8:45 AM		0	0	72	5	0	7	94	5	0	0	0	1	0	0	0	0	184	1,053
Count Total		1	23	767	16	0	21	739	73	0	7	0	7	0	1	0	3	1,658	0
Peak Hour	**All**	**0**	**22**	**469**	**10**	**0**	**13**	**522**	**61**	**0**	**6**	**0**	**6**	**0**	**1**	**0**	**3**	**1,113**	**0**
	HV	**0**	**0**	**7**	**4**	**0**	**3**	**12**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**33**	**0**
	HV%	**-**	**0%**	**1%**	**40%**	**-**	**23%**	**2%**	**0%**	**-**	**33%**	**-**	**83%**	**-**	**0%**	**-**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	1	2	*3*
7:15 AM	2	0	0	0	*2*	0	1	0	0	*1*	0	1	0	0	*1*
7:30 AM	3	1	0	0	*4*	0	1	0	0	*1*	0	0	1	2	*3*
7:45 AM	**5**	**4**	**0**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**4**	**8**	**5**	**0**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**4**	**4**	*10*
8:30 AM	**1**	**1**	**2**	**0**	***4***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	***1***
8:45 AM	3	3	1	0	*7*	0	0	0	0	*0*	0	0	0	2	*2*
Count Total	19	20	8	0	*47*	1	2	0	0	*3*	0	3	6	11	*20*
Peak Hour	**11**	**15**	**7**	**0**	***33***	**1**	**0**	**0**	**0**	***1***	**0**	**2**	**4**	**5**	***11***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				United Cerebral Palsy Driveway				School Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**2**	**3**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	16
8:00 AM	**0**	**0**	**3**	**1**	**0**	**1**	**7**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**17**	32
8:15 AM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	33
8:30 AM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**33**
8:45 AM	0	0	2	1	0	3	0	0	0	0	0	1	0	0	0	0	7	31
Count Total	0	0	14	5	0	6	14	0	0	2	0	6	0	0	0	0	47	0
Peak Hour	**0**	**0**	**7**	**4**	**0**	**3**	**12**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**33**	**0**

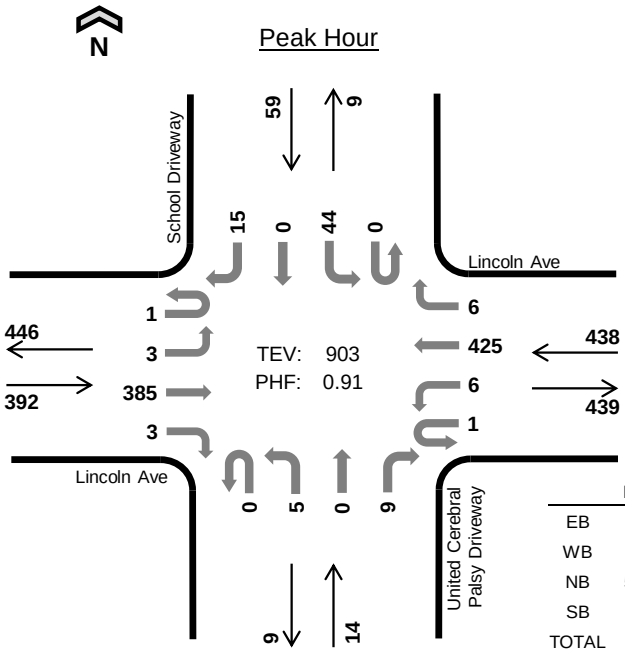
Two-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave			Lincoln Ave			United Cerebral Palsy Driveway			School Driveway			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	2	0	0	0	0	0	0	0	3	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

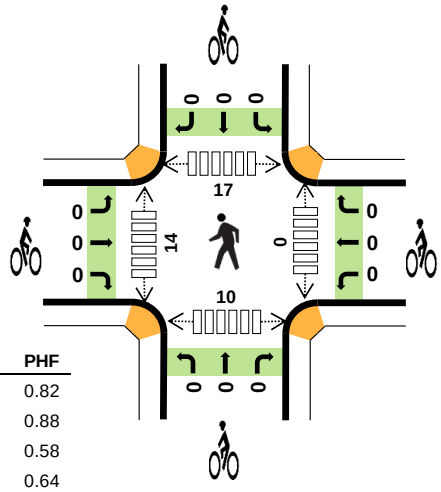
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

United Cerebral Palsy Driveway
Lincoln Ave

Date: 11-14-2019
Count Period: 2:00 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM



	HV %:	PHF
EB	2.6%	0.82
WB	3.4%	0.88
NB	50.0%	0.58
SB	0.0%	0.64
TOTAL	3.5%	0.91



Four-Hour Count Summaries

Interval Start		Lincoln Ave Eastbound				Lincoln Ave Westbound				United Cerebral Palsy Driveway Northbound				School Driveway Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		0	2	99	0	0	1	122	1	0	1	0	2	0	14	0	6	248	0
3:30 PM		1	1	115	2	1	2	95	2	0	2	0	4	0	17	0	6	248	0
3:45 PM		0	0	92	1	0	0	110	2	0	0	0	1	0	6	0	1	213	0
4:00 PM		0	0	79	0	0	3	98	1	0	2	0	2	0	7	0	2	194	903
Peak Hour	All	1	3	385	3	1	6	425	6	0	5	0	9	0	44	0	15	903	0
	HV	0	0	8	2	0	4	11	0	0	2	0	5	0	0	0	0	32	0
	HV%	0%	0%	2%	67%	0%	67%	3%	0%	-	40%	-	56%	-	0%	-	0%	4%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	1	3	3	0	*7*	0	0	0	0	*0*	0	6	8	2	*16*
3:30 PM	8	7	3	0	*18*	0	0	0	0	*0*	0	6	6	2	*14*
3:45 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	2	3	3	*8*
4:00 PM	0	3	1	0	*4*	0	0	0	0	*0*	0	0	0	3	*3*
Peak Hour	10	15	7	0	*32*	0	0	0	0	*0*	0	14	17	10	*41*

Four-Hour Count Summaries

Interval Start	Lincoln Ave Eastbound				Lincoln Ave Westbound				United Cerebral Palsy Driveway Northbound				School Driveway Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	40	0	0	0	56	0	0	0	0	1	0	0	0	2	99	0
2:15 PM	0	0	35	1	0	1	57	1	0	1	0	1	0	5	0	1	103	0
2:30 PM	0	0	52	3	0	1	77	1	0	1	0	4	0	3	0	0	142	0
2:45 PM	0	0	51	2	0	4	81	0	0	0	0	1	0	1	0	1	141	485
3:00 PM	0	0	68	1	0	2	94	0	0	5	0	2	0	2	0	0	174	560
3:15 PM	**0**	**2**	**99**	**0**	**0**	**1**	**122**	**1**	**0**	**1**	**0**	**2**	**0**	**14**	**0**	**6**	**248**	705
3:30 PM	**1**	**1**	**115**	**2**	**1**	**2**	**95**	**2**	**0**	**2**	**0**	**4**	**0**	**17**	**0**	**6**	**248**	811
3:45 PM	**0**	**0**	**92**	**1**	**0**	**0**	**110**	**2**	**0**	**0**	**0**	**1**	**0**	**6**	**0**	**1**	**213**	883
4:00 PM	**0**	**0**	**79**	**0**	**0**	**3**	**98**	**1**	**0**	**2**	**0**	**2**	**0**	**7**	**0**	**2**	**194**	**903**
4:15 PM	0	0	61	0	0	1	102	1	0	3	0	3	0	3	0	0	174	829
4:30 PM	0	2	70	1	0	0	112	6	0	5	0	5	0	4	0	2	207	788
4:45 PM	0	1	71	0	0	0	104	6	0	0	0	0	0	3	0	1	186	761
5:00 PM	0	0	74	0	0	0	94	2	0	1	0	2	0	6	0	2	181	748
5:15 PM	0	2	66	0	0	0	104	4	0	0	0	0	0	7	0	10	193	767
5:30 PM	0	4	57	1	0	0	95	8	0	2	0	0	0	5	0	0	172	732
5:45 PM	1	3	69	0	0	0	97	10	0	1	0	1	0	0	0	2	184	730
Count Total	2	15	1,099	12	1	15	1,498	45	0	24	0	29	0	83	0	36	2,859	0
Peak Hour All	**1**	**3**	**385**	**3**	**1**	**6**	**425**	**6**	**0**	**5**	**0**	**9**	**0**	**44**	**0**	**15**	**903**	**0**
Peak Hour HV	**0**	**0**	**8**	**2**	**0**	**4**	**11**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**32**	**0**
Peak Hour HV%	**0%**	**0%**	**2%**	**67%**	**0%**	**67%**	**3%**	**0%**	**-**	**40%**	**-**	**56%**	**-**	**0%**	**-**	**0%**	**4%**	**0**

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	4	1	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	2	2	2	0	*6*	0	1	0	0	*1*	1	1	1	3	*6*
2:30 PM	4	2	3	0	*9*	0	1	0	0	*1*	0	0	2	0	*2*
2:45 PM	1	5	1	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	3	5	0	*8*	0	0	0	0	*0*	0	1	1	1	*3*
3:15 PM	**1**	**3**	**3**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**6**	**8**	**2**	*16*
3:30 PM	**8**	**7**	**3**	**0**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**6**	**6**	**2**	*14*
3:45 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**3**	**3**	*8*
4:00 PM	**0**	**3**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	***3***
4:15 PM	0	1	2	0	*3*	0	1	0	0	*1*	2	2	2	0	*6*
4:30 PM	2	0	1	0	*3*	0	0	0	0	*0*	0	1	1	0	*2*
4:45 PM	3	2	0	0	*5*	0	0	0	0	*0*	0	2	0	2	*4*
5:00 PM	1	1	0	0	*2*	2	0	0	0	*2*	0	0	0	2	*2*
5:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	3	*3*
5:30 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	1	2	2	*5*
5:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	6	2	*8*
Count Total	24	38	22	0	*84*	2	3	0	0	*5*	3	22	32	25	*82*
Peak Hour	**10**	**15**	**7**	**0**	***32***	**0**	**0**	**0**	**0**	***0***	**0**	**14**	**17**	**10**	***41***

Four-Hour Count Summaries - Heavy Vehicles

Interval Start	Lincoln Ave				Lincoln Ave				United Cerebral Palsy Driveway				School Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	5	0
2:15 PM	0	0	1	1	0	1	1	0	0	1	0	1	0	0	0	0	6	0
2:30 PM	0	0	1	3	0	1	1	0	0	1	0	2	0	0	0	0	9	0
2:45 PM	0	0	1	0	0	4	1	0	0	0	0	1	0	0	0	0	7	27
3:00 PM	0	0	0	0	0	1	2	0	0	4	0	1	0	0	0	0	8	30
3:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**7**	31
3:30 PM	**0**	**0**	**6**	**2**	**0**	**1**	**6**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**18**	40
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	36
4:00 PM	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**32**
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	3	28
4:30 PM	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	3	13
4:45 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5	15
5:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	13
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	11
5:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	10
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	18	6	0	12	26	0	0	8	0	14	0	0	0	0	84	0
Peak Hour	**0**	**0**	**8**	**2**	**0**	**4**	**11**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**32**	**0**

Four-Hour Count Summaries - Bikes

Interval Start	Lincoln Ave			Lincoln Ave			United Cerebral Palsy Driveway			School Driveway			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	2	0	0	3	0	0	0	0	0	0	0	5	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix B
Intersection Level of Service Analysis Methods

APPENDIX B – INTERSECTION LEVEL OF SERVICE ANALYSIS METHODS

Intersection operations are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic operations from the vehicle driver perspective and consists of the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. Different methods are used to assess signalized and unsignalized (stop-controlled) intersections.

Signalized Intersections

Signalized intersection operations are evaluated using the method provided in the 2010 Highway Capacity Manual (HCM). This method uses intersection characteristics to estimate average control delay and then assigns a LOS value. Control delay is defined as the delay associated with deceleration, stopping, moving up in the queue, and acceleration experienced by drivers at a signalized intersection. **Table 1** provides descriptions of various LOS and the corresponding ranges of delays for signalized intersections.

Unsignalized Intersections

Unsignalized intersections operations are evaluated using the method from Chapter 19 and 20 of the 2010 *Highway Capacity Manual*. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, as well as the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. **Table 1** summarizes the relationship between delay and LOS for unsignalized intersections.

TABLE 1

INTERSECTION LEVEL OF SERVICE DEFINITIONS

Unsignalized Intersections		Level of Service Grade	Signalized Intersections	
Description	**Average Total Vehicle Delay (Seconds)**		**Average Control Vehicle Delay (Seconds)**	**Description**
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

Source: *Highway Capacity Manual* (Transportation Research Board, 2010).

Appendix C
Level of Service Calculations (Synchro)

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	368	4	15	326	8	89
Future Vol, veh/h	368	4	15	326	8	89
Conflicting Peds, #/hr	0	12	12	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	428	5	17	379	9	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	445	0	860	443
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	417	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1110	-	325	613
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	663	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1097	-	314	606
Mov Cap-2 Maneuver	-	-	-	-	314	-
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	647	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	563	-	-	1097	-
HCM Lane V/C Ratio	0.2	-	-	0.016	-
HCM Control Delay (s)	13	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	474	12	89	409	14	84
Future Vol, veh/h	474	12	89	409	14	84
Conflicting Peds, #/hr	0	16	16	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	551	14	103	476	16	98

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	581	0	1256	574
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	993	-	189	518
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	502	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	978	-	160	510
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	389	-	-	978	-
HCM Lane V/C Ratio	0.293	-	-	0.106	-
HCM Control Delay (s)	18	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.4	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	469	10	13	522	61	6	0	6	1	0	3
Future Volume (vph)	22	469	10	13	522	61	6	0	6	1	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.93			0.90	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1834			1813			1675			1608	
Flt Permitted		0.96			0.98			0.94			0.98	
Satd. Flow (perm)		1758			1786			1607			1589	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	26	545	12	15	607	71	7	0	7	1	0	3
RTOR Reduction (vph)	0	1	0	0	7	0	0	11	0	0	3	0
Lane Group Flow (vph)	0	582	0	0	686	0	0	4	0	0	1	0
Confl. Peds. (#/hr)	4		5	5		4	2					2
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		35.0			35.0			15.0			15.0	
Effective Green, g (s)		35.0			35.0			15.0			15.0	
Actuated g/C Ratio		0.58			0.58			0.25			0.25	
Clearance Time (s)		7.0			7.0			3.0			3.0	
Vehicle Extension (s)		0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)		1025			1041			401			397	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.38			c0.00			0.00	
v/c Ratio		0.57			0.66			0.01			0.00	
Uniform Delay, d1		7.8			8.5			16.9			16.9	
Progression Factor		2.43			1.00			1.00			1.00	
Incremental Delay, d2		1.8			3.3			0.0			0.0	
Delay (s)		20.7			11.7			17.0			16.9	
Level of Service		C			B			B			B	
Approach Delay (s)		20.7			11.7			17.0			16.9	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	504	2	19	470	2	1	1	2	0	0	168
Future Vol, veh/h	3	504	2	19	470	2	1	1	2	0	0	168
Conflicting Peds, #/hr	0	0	6	6	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	586	2	22	547	2	1	1	2	0	0	195

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	549	0	0	594	0	0	1289	1192	594	1188	1192	548
Stage 1	-	-	-	-	-	-	599	599	-	592	592	-
Stage 2	-	-	-	-	-	-	690	593	-	596	600	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1021	-	-	982	-	-	141	187	505	165	187	536
Stage 1	-	-	-	-	-	-	488	490	-	493	494	-
Stage 2	-	-	-	-	-	-	435	493	-	490	490	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1021	-	-	976	-	-	87	179	502	159	179	536
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	179	-	159	179	-
Stage 1	-	-	-	-	-	-	483	485	-	491	478	-
Stage 2	-	-	-	-	-	-	268	477	-	484	485	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	24.4	15.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	190	1021	-	-	976	-	-	536
HCM Lane V/C Ratio	0.024	0.003	-	-	0.023	-	-	0.364
HCM Control Delay (s)	24.4	8.5	0	-	8.8	0	-	15.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.7

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	501	5	5	488	3	10
Future Vol, veh/h	501	5	5	488	3	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	583	6	6	567	3	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	594	0	887	300
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	296	-
Critical Hdwy	-	-	4.16	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.23	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	971	-	282	693
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	726	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	966	-	278	690
Mov Cap-2 Maneuver	-	-	-	-	278	-
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	719	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	514	-	-	966	-
HCM Lane V/C Ratio	0.029	-	-	0.006	-
HCM Control Delay (s)	12.2	-	-	8.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	74.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	377	91	166	280	142	39	118	120	208	50	174
Future Vol, veh/h	43	377	91	166	280	142	39	118	120	208	50	174
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	438	106	193	326	165	45	137	140	242	58	202
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	40	55.3	46.2	160.7
HCM LOS	E	F	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	14%	19%	0%	54%	0%	48%
Vol Thru, %	43%	81%	67%	46%	50%	12%
Vol Right, %	43%	0%	33%	0%	50%	40%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	277	232	280	306	282	432
LT Vol	39	43	0	166	0	208
Through Vol	118	189	189	140	140	50
RT Vol	120	0	91	0	142	174
Lane Flow Rate	322	269	325	356	328	502
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.823	0.704	0.822	0.94	0.809	1.254
Departure Headway (Hd)	10.088	10.226	9.887	10.33	9.672	8.988
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	361	355	371	352	377	407
Service Time	8.088	7.926	7.587	8.03	7.372	7.057
HCM Lane V/C Ratio	0.892	0.758	0.876	1.011	0.87	1.233
HCM Control Delay	46.2	33.9	45.1	67	42.7	160.7
HCM Lane LOS	E	D	E	F	E	F
HCM 95th-tile Q	7.3	5.1	7.3	9.9	7.1	21.4

Intersection	
Intersection Delay, s/veh	204.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	428	275	0	0	267	660	138	167	14	64	0	239
Future Vol, veh/h	428	275	0	0	267	660	138	167	14	64	0	239
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	498	320	0	0	310	767	160	194	16	74	0	278
Number of Lanes	0	2	0	0	2	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	2
HCM Control Delay	321.4	196.5	97.2	70
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	43%	82%	0%	0%	0%	0%	21%
Vol Thru, %	52%	18%	100%	100%	100%	0%	0%
Vol Right, %	4%	0%	0%	0%	0%	100%	79%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	319	520	183	134	134	660	303
LT Vol	138	428	0	0	0	0	64
Through Vol	167	92	183	134	134	0	0
RT Vol	14	0	0	0	0	660	239
Lane Flow Rate	371	604	213	155	155	767	352
Geometry Grp	7	8	8	7	7	7	7
Degree of Util (X)	1.037	1.852	0.629	0.413	0.413	1.523	0.936
Departure Headway (Hd)	11.74	12.244	11.801	10.631	10.631	8.049	11.274
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	312	302	309	342	342	460	324
Service Time	9.44	9.944	9.501	8.331	8.331	5.749	8.974
HCM Lane V/C Ratio	1.189	2	0.689	0.453	0.453	1.667	1.086
HCM Control Delay	97.2	423.3	32.6	20.6	20.6	267.6	70
HCM Lane LOS	F	F	D	C	C	F	F
HCM 95th-tile Q	11.7	36.9	4	2	2	36.3	9.4

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	7	16	334	5	49
Future Vol, veh/h	255	7	16	334	5	49
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	280	8	18	367	5	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	293	0	694	289
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	405	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1263	-	407	748
Stage 1	-	-	-	-	758	-
Stage 2	-	-	-	-	671	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1257	-	397	744
Mov Cap-2 Maneuver	-	-	-	-	397	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	688	-	-	1257	-
HCM Lane V/C Ratio	0.086	-	-	0.014	-
HCM Control Delay (s)	10.7	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

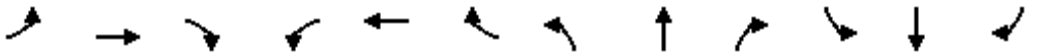
Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	307	30	90	389	11	42
Future Vol, veh/h	307	30	90	389	11	42
Conflicting Peds, #/hr	0	26	26	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	337	33	99	427	12	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	396	0	1007	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	627	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1157	-	266	665
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	531	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1128	-	229	649
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	672	-
Stage 2	-	-	-	-	469	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	470	-	-	1128	-
HCM Lane V/C Ratio	0.124	-	-	0.088	-
HCM Control Delay (s)	13.7	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.3	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	385	3	7	425	6	5	0	9	44	0	15
Future Volume (vph)	4	385	3	7	425	6	5	0	9	44	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		1.00			1.00			0.91			0.97	
Flt Protected		1.00			1.00			0.98			0.96	
Satd. Flow (prot)		1842			1838			1636			1697	
Flt Permitted		1.00			0.99			0.95			0.83	
Satd. Flow (perm)		1835			1826			1581			1467	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	4	423	3	8	467	7	5	0	10	48	0	16
RTOR Reduction (vph)	0	0	0	0	1	0	0	11	0	0	48	0
Lane Group Flow (vph)	0	430	0	0	481	0	0	4	0	0	16	0
Confl. Peds. (#/hr)	17		10	10		17	14					14
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		35.0			35.0			15.0			15.0	
Effective Green, g (s)		35.0			35.0			15.0			15.0	
Actuated g/C Ratio		0.58			0.58			0.25			0.25	
Clearance Time (s)		7.0			7.0			3.0			3.0	
Vehicle Extension (s)		0.2			0.2			0.2			0.2	
Lane Grp Cap (vph)		1070			1065			395			366	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.26			0.00			c0.01	
v/c Ratio		0.40			0.45			0.01			0.04	
Uniform Delay, d1		6.8			7.1			16.9			17.1	
Progression Factor		0.87			1.00			1.00			1.00	
Incremental Delay, d2		1.1			1.4			0.0			0.2	
Delay (s)		7.0			8.5			17.0			17.3	
Level of Service		A			A			B			B	
Approach Delay (s)		7.0			8.5			17.0			17.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	430	5	31	371	1	5	0	34	4	0	63
Future Vol, veh/h	3	430	5	31	371	1	5	0	34	4	0	63
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	473	5	34	408	1	5	0	37	4	0	69

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	484	0	0	999	966	485	981	968	410
Stage 1	-	-	-	-	-	-	488	488	-	478	478	-
Stage 2	-	-	-	-	-	-	511	478	-	503	490	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1143	-	-	1074	-	-	221	254	580	228	253	639
Stage 1	-	-	-	-	-	-	559	548	-	566	554	-
Stage 2	-	-	-	-	-	-	543	554	-	549	547	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1142	-	-	1068	-	-	189	241	575	205	240	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	189	241	-	205	240	-
Stage 1	-	-	-	-	-	-	553	543	-	563	531	-
Stage 2	-	-	-	-	-	-	464	531	-	510	542	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	13.7	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	456	1142	-	-	1068	-	-	567
HCM Lane V/C Ratio	0.094	0.003	-	-	0.032	-	-	0.13
HCM Control Delay (s)	13.7	8.2	0	-	8.5	0	-	12.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	465	3	4	403	1	4
Future Vol, veh/h	465	3	4	403	1	4
Conflicting Peds, #/hr	0	9	9	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	511	3	4	443	1	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	523	0	752	266
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	-	-	4.16	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.23	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	1033	-	344	729
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1024	-	339	723
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	-	-	1024	-
HCM Lane V/C Ratio	0.009	-	-	0.004	-
HCM Control Delay (s)	11.2	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	49.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	345	98	188	245	63	5	18	35	243	132	157
Future Vol, veh/h	26	345	98	188	245	63	5	18	35	243	132	157
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	379	108	207	269	69	5	20	38	267	145	173
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	21	26.9	13.4	100
HCM LOS	C	D	B	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	9%	13%	0%	61%	0%	46%
Vol Thru, %	31%	87%	64%	39%	66%	25%
Vol Right, %	60%	0%	36%	0%	34%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	199	271	311	186	532
LT Vol	5	26	0	188	0	243
Through Vol	18	173	173	123	123	132
RT Vol	35	0	98	0	63	157
Lane Flow Rate	64	218	297	341	204	585
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.149	0.475	0.62	0.757	0.422	1.114
Departure Headway (Hd)	8.849	8.331	7.999	8.487	7.925	6.857
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	408	436	455	430	457	526
Service Time	6.849	6.031	5.699	6.187	5.625	4.952
HCM Lane V/C Ratio	0.157	0.5	0.653	0.793	0.446	1.112
HCM Control Delay	13.4	18.3	22.9	33.2	16.3	100
HCM Lane LOS	B	C	C	D	C	F
HCM 95th-tile Q	0.5	2.5	4.1	6.3	2.1	18.9

Intersection	
Intersection Delay, s/veh	71
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	330	290	0	0	167	214	123	125	48	119	0	231
Future Vol, veh/h	330	290	0	0	167	214	123	125	48	119	0	231
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	363	319	0	0	184	235	135	137	53	131	0	254
Number of Lanes	0	2	0	0	2	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	2
HCM Control Delay	127.4	15.2	43.2	55.3
HCM LOS	F	C	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	42%	77%	0%	0%	0%	0%	34%
Vol Thru, %	42%	23%	100%	100%	100%	0%	0%
Vol Right, %	16%	0%	0%	0%	0%	100%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	296	427	193	84	84	214	350
LT Vol	123	330	0	0	0	0	119
Through Vol	125	97	193	84	84	0	0
RT Vol	48	0	0	0	0	214	231
Lane Flow Rate	325	469	212	92	92	235	385
Geometry Grp	7	8	8	7	7	7	7
Degree of Util (X)	0.815	1.282	0.557	0.234	0.234	0.437	0.908
Departure Headway (Hd)	9.615	9.846	9.438	9.692	9.692	7.112	9.053
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	381	370	385	373	373	510	404
Service Time	7.315	7.546	7.138	7.392	7.392	4.812	6.753
HCM Lane V/C Ratio	0.853	1.268	0.551	0.247	0.247	0.461	0.953
HCM Control Delay	43.2	174.5	23.4	15.3	15.3	15.2	55.3
HCM Lane LOS	E	F	C	C	C	C	F
HCM 95th-tile Q	7.2	21.2	3.3	0.9	0.9	2.2	9.6

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	431	4	15	360	8	9
Future Vol, veh/h	431	4	15	360	8	9
Conflicting Peds, #/hr	0	12	12	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	501	5	17	419	9	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	518	0	973	516
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	457	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1043	-	278	557
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1031	-	268	551
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	590	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	368	-	-	1031	-
HCM Lane V/C Ratio	0.054	-	-	0.017	-
HCM Control Delay (s)	15.3	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	457	12	9	443	14	84
Future Vol, veh/h	457	12	9	443	14	84
Conflicting Peds, #/hr	0	16	16	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	531	14	10	515	16	98

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	561	0	1089	554
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1010	-	238	532
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	995	-	231	524
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	579	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	444	-	-	995	-
HCM Lane V/C Ratio	0.257	-	-	0.011	-
HCM Control Delay (s)	15.9	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	565	2	19	582	2	1	0	2	0	0	168
Future Vol, veh/h	3	565	2	19	582	2	1	0	2	0	0	168
Conflicting Peds, #/hr	0	0	6	6	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	657	2	22	677	2	1	0	2	0	0	195

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	679	0	0	665	0	0	1490	1393	665	1388	1393	678
Stage 1	-	-	-	-	-	-	670	670	-	722	722	-
Stage 2	-	-	-	-	-	-	820	723	-	666	671	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	913	-	-	924	-	-	102	142	460	120	142	452
Stage 1	-	-	-	-	-	-	446	455	-	418	431	-
Stage 2	-	-	-	-	-	-	369	431	-	449	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	913	-	-	919	-	-	56	135	457	115	135	452
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	135	-	115	135	-
Stage 1	-	-	-	-	-	-	441	450	-	416	415	-
Stage 2	-	-	-	-	-	-	202	415	-	444	450	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	32.4	18.9
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	135	913	-	-	919	-	-	452
HCM Lane V/C Ratio	0.026	0.004	-	-	0.024	-	-	0.432
HCM Control Delay (s)	32.4	9	0	-	9	0	-	18.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	2.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	565	2	5	600	3	10
Future Vol, veh/h	565	2	5	600	3	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	657	2	6	698	3	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	664	0	1024	335
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	-	-	4.16	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.23	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	914	-	230	658
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	910	-	226	655
Mov Cap-2 Maneuver	-	-	-	-	226	-
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	666	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	455	-	-	910	-
HCM Lane V/C Ratio	0.033	-	-	0.006	-
HCM Control Delay (s)	13.2	-	-	9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	120
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	380	100	166	284	142	56	118	120	208	50	265
Future Vol, veh/h	95	380	100	166	284	142	56	118	120	208	50	265
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	110	442	116	193	330	165	65	137	140	242	58	308
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	57	63.5	60.3	286.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	19%	33%	0%	54%	0%	40%
Vol Thru, %	40%	67%	66%	46%	50%	10%
Vol Right, %	41%	0%	34%	0%	50%	51%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	294	285	290	308	284	523
LT Vol	56	95	0	166	0	208
Through Vol	118	190	190	142	142	50
RT Vol	120	0	100	0	142	265
Lane Flow Rate	342	331	337	358	330	608
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.89	0.888	0.866	0.968	0.836	1.557
Departure Headway (Hd)	11.055	11.066	10.631	11.155	10.496	9.216
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	332	331	344	329	347	395
Service Time	9.055	8.766	8.331	8.855	8.196	7.26
HCM Lane V/C Ratio	1.03	1	0.98	1.088	0.951	1.539
HCM Control Delay	60.3	59.7	54.3	76.7	49.2	286.6
HCM Lane LOS	F	F	F	F	E	F
HCM 95th-tile Q	8.4	8.4	8	10.2	7.4	33.8

Intersection	
Intersection Delay, s/veh	204.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	428	278	0	0	271	660	138	167	14	64	0	239
Future Vol, veh/h	428	278	0	0	271	660	138	167	14	64	0	239
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	498	323	0	0	315	767	160	194	16	74	0	278
Number of Lanes	0	2	0	0	2	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	2
HCM Control Delay	322.9	196	97.6	70
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	43%	82%	0%	0%	0%	0%	21%
Vol Thru, %	52%	18%	100%	100%	100%	0%	0%
Vol Right, %	4%	0%	0%	0%	0%	100%	79%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	319	521	185	136	136	660	303
LT Vol	138	428	0	0	0	0	64
Through Vol	167	93	185	136	136	0	0
RT Vol	14	0	0	0	0	660	239
Lane Flow Rate	371	605	216	158	158	767	352
Geometry Grp	7	8	8	7	7	7	7
Degree of Util (X)	1.038	1.858	0.637	0.419	0.419	1.524	0.936
Departure Headway (Hd)	11.75	12.251	11.809	10.623	10.623	8.042	11.286
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	312	303	308	342	342	460	324
Service Time	9.45	9.951	9.509	8.323	8.323	5.742	8.986
HCM Lane V/C Ratio	1.189	1.997	0.701	0.462	0.462	1.667	1.086
HCM Control Delay	97.6	426	33.1	20.8	20.8	268	70
HCM Lane LOS	F	F	D	C	C	F	F
HCM 95th-tile Q	11.7	37	4.1	2	2	36.4	9.4

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	268	7	16	349	5	9
Future Vol, veh/h	268	7	16	349	5	9
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	295	8	18	384	5	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	308	0	726	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	422	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1247	-	390	733
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1241	-	380	730
Mov Cap-2 Maneuver	-	-	-	-	380	-
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	646	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	549	-	-	1241	-
HCM Lane V/C Ratio	0.028	-	-	0.014	-
HCM Control Delay (s)	11.7	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	280	30	50	404	11	42
Future Vol, veh/h	280	30	50	404	11	42
Conflicting Peds, #/hr	0	26	26	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	308	33	55	444	12	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	367	0	907	351
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	556	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1186	-	305	690
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1157	-	278	673
Mov Cap-2 Maneuver	-	-	-	-	278	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	535	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	520	-	-	1157	-
HCM Lane V/C Ratio	0.112	-	-	0.047	-
HCM Control Delay (s)	12.8	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	446	5	31	395	1	5	0	34	4	0	63
Future Vol, veh/h	3	446	5	31	395	1	5	0	34	4	0	63
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	490	5	34	434	1	5	0	37	4	0	69

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	436	0	0	501	0	0	1042	1009	502	1024	1011	436
Stage 1	-	-	-	-	-	-	505	505	-	504	504	-
Stage 2	-	-	-	-	-	-	537	504	-	520	507	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1118	-	-	1058	-	-	207	239	567	213	239	618
Stage 1	-	-	-	-	-	-	548	539	-	548	539	-
Stage 2	-	-	-	-	-	-	526	539	-	537	538	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1117	-	-	1052	-	-	176	226	562	191	226	617
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	226	-	191	226	-
Stage 1	-	-	-	-	-	-	543	534	-	545	515	-
Stage 2	-	-	-	-	-	-	447	515	-	498	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	14.1	12.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	439	1117	-	-	1052	-	-	544
HCM Lane V/C Ratio	0.098	0.003	-	-	0.032	-	-	0.135
HCM Control Delay (s)	14.1	8.2	0	-	8.5	0	-	12.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	483	1	4	427	1	4
Future Vol, veh/h	483	1	4	427	1	4
Conflicting Peds, #/hr	0	9	9	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	531	1	4	469	1	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	541	0	784	275
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	243	-
Critical Hdwy	-	-	4.16	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.23	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	1017	-	328	719
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1008	-	323	713
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	768	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	574	-	-	1008	-
HCM Lane V/C Ratio	0.01	-	-	0.004	-
HCM Control Delay (s)	11.3	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	56.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	346	101	188	246	63	9	18	35	243	132	176
Future Vol, veh/h	40	346	101	188	246	63	9	18	35	243	132	176
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	44	380	111	207	270	69	10	20	38	267	145	193
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	22	27.8	13.8	117.8
HCM LOS	C	D	B	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	15%	19%	0%	60%	0%	44%
Vol Thru, %	29%	81%	63%	40%	66%	24%
Vol Right, %	56%	0%	37%	0%	34%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	213	274	311	186	551
LT Vol	9	40	0	188	0	243
Through Vol	18	173	173	123	123	132
RT Vol	35	0	101	0	63	176
Lane Flow Rate	68	234	301	342	204	605
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.16	0.514	0.631	0.764	0.427	1.164
Departure Headway (Hd)	9.07	8.504	8.137	8.652	8.091	6.923
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	398	426	446	420	448	521
Service Time	7.07	6.204	5.837	6.352	5.791	4.999
HCM Lane V/C Ratio	0.171	0.549	0.675	0.814	0.455	1.161
HCM Control Delay	13.8	19.9	23.7	34.4	16.7	117.8
HCM Lane LOS	B	C	C	D	C	F
HCM 95th-tile Q	0.6	2.9	4.2	6.4	2.1	21.2

Intersection	
Intersection Delay, s/veh	71.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	330	291	0	0	168	214	123	125	48	119	0	231
Future Vol, veh/h	330	291	0	0	168	214	123	125	48	119	0	231
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	363	320	0	0	185	235	135	137	53	131	0	254
Number of Lanes	0	2	0	0	2	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	2
HCM Control Delay	127.9	15.2	43.2	55.3
HCM LOS	F	C	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	42%	77%	0%	0%	0%	0%	34%
Vol Thru, %	42%	23%	100%	100%	100%	0%	0%
Vol Right, %	16%	0%	0%	0%	0%	100%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	296	427	194	84	84	214	350
LT Vol	123	330	0	0	0	0	119
Through Vol	125	97	194	84	84	0	0
RT Vol	48	0	0	0	0	214	231
Lane Flow Rate	325	469	213	92	92	235	385
Geometry Grp	7	8	8	7	7	7	7
Degree of Util (X)	0.815	1.284	0.559	0.235	0.235	0.437	0.908
Departure Headway (Hd)	9.619	9.848	9.44	9.692	9.692	7.113	9.057
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	381	371	384	373	373	510	404
Service Time	7.319	7.548	7.14	7.392	7.392	4.813	6.757
HCM Lane V/C Ratio	0.853	1.264	0.555	0.247	0.247	0.461	0.953
HCM Control Delay	43.2	175.3	23.5	15.3	15.3	15.2	55.3
HCM Lane LOS	E	F	C	C	C	C	F
HCM 95th-tile Q	7.2	21.3	3.3	0.9	0.9	2.2	9.6

Appendix D
Signal Warrant Calculations

FEHR & PEERS

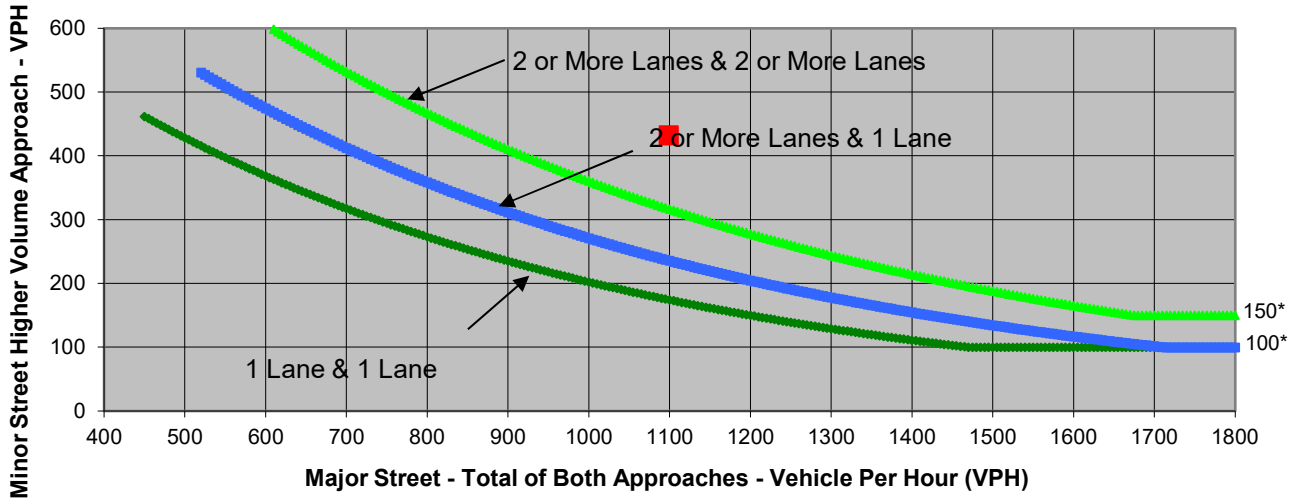
Major Street	Lincoln Ave/Joaquin Miller Rd	Project	Sample Project Title
Minor Street	Monterey Blvd	Scenario	Existing Conditions
		Peak Hour	AM Peak Hour

Turn Movement Volumes

	NB	SB	EB	WB
Left	39	208	43	166
Through	118	50	377	280
Right	120	174	91	142
Total	277	432	511	588

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Lincoln Ave/Joaquin Miller Rd	Monterey Blvd	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,099**	**432**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Joaquin Miller Rd
Minor Street	SR-13 NB Off Ramp/Mountain Blvd

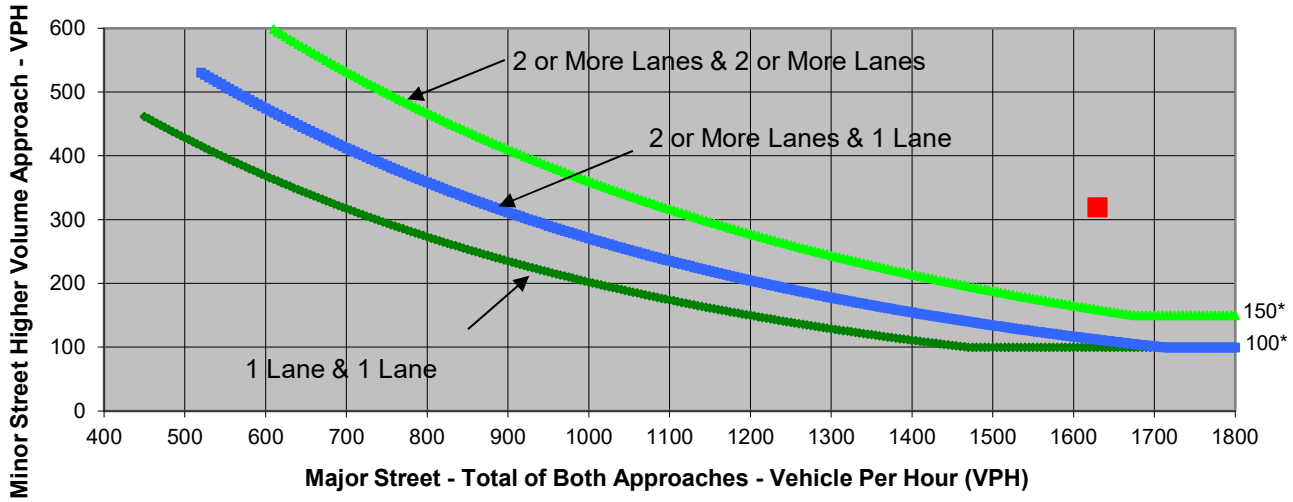
Project	Sample Project Title
Scenario	Existing Conditions
Peak Hour	AM Peak Hour

Turn Movement Volumes

	NB	SB	EB	WB
Left	138	64	428	0
Through	167	0	275	267
Right	14	239	0	660
Total	319	303	703	927

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Joaquin Miller Rd	SR-13 NB Off Ramp/Mountain Blvd	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,630**	**319**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Lincoln Ave/Joaquin Miller Rd
Minor Street	Monterey Blvd

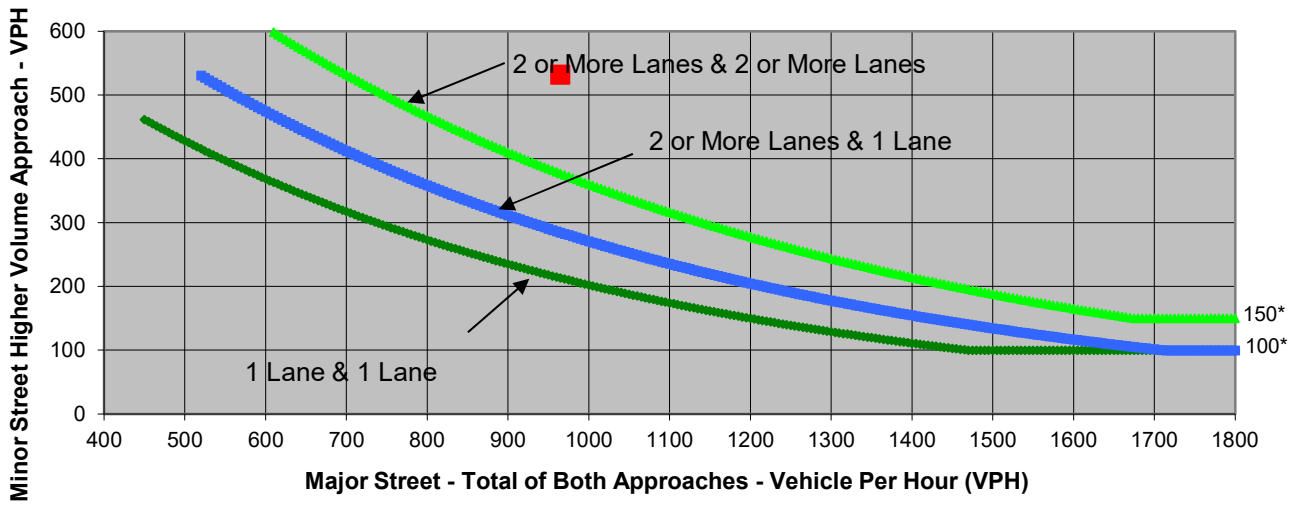
Project	Sample Project Title
Scenario	Existing Conditions
Peak Hour	Afternoon Peak Hour

Turn Movement Volumes

	NB	SB	EB	WB
Left	5	243	26	188
Through	18	132	345	245
Right	35	157	98	63
Total	58	532	469	496

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Lincoln Ave/Joaquin Miller Rd	Monterey Blvd	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**965**	**532**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Joaquin Miller Rd
Minor Street	SR-13 NB Off Ramp/Mountain Blvd

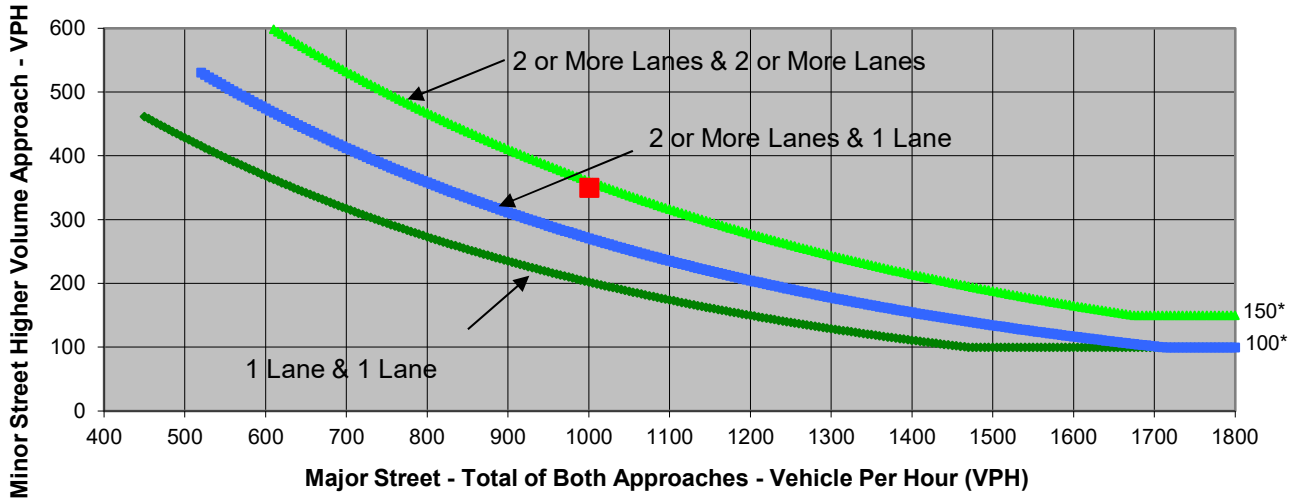
Project	Sample Project Title
Scenario	Existing Conditions
Peak Hour	Afternoon Peak Hour

Turn Movement Volumes

	NB	SB	EB	WB
Left	123	119	330	0
Through	125	0	290	167
Right	48	231	0	214
Total	296	350	620	381

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Joaquin Miller Rd	SR-13 NB Off Ramp/Mountain Blvd	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,001**	**350**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix E
VISSIM Model Outputs

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 10 Runs | **Existing Plus Project Conditions**
Volume and Delay by Movement | **AM Peak Hour**

Lincoln Avenue/Alida Street | **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	101.4%	18.5	6.5	C
	Through						
	Right Turn	84	81	96.1%	20.4	5.2	C
	Subtotal	98	95	96.8%	20.2	5.5	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	457	462	101.1%	10.8	4.7	B
	Right Turn	12	12	96.7%	7.8	6.3	A
	Subtotal	469	473	100.9%	10.7	4.6	B
WB	Left Turn	9	10	107.8%	9.0	8.2	A
	Through	443	443	99.9%	1.2	0.9	A
	Right Turn						
	Subtotal	452	452	100.0%	1.4	1.0	A
Total		1,019	1,021	100.1%	7.7	2.8	A

Lincoln Avenue/Loop Road Outbound | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	135	138	102.4%	85.0	39.1	F
	Through						
	Right Turn	208	206	99.2%	104.0	41.4	F
	Subtotal	343	345	100.5%	96.8	40.8	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	541	544	100.5%	28.7	6.3	C
	Right Turn						
	Subtotal	541	544	100.5%	28.7	6.3	C
WB	Left Turn						
	Through	317	314	99.1%	14.7	3.0	B
	Right Turn						
	Subtotal	317	314	99.1%	14.7	3.0	B
Total		1,201	1,203	100.1%	47.6	15.0	D

Vissim Post-Processor **Head Royce Expansion**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Lincoln Avenue/Loop Road Inbound **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	577	576	99.8%	9.7	1.3	A
	Right Turn	172	174	100.9%	7.7	2.3	A
	Subtotal	749	749	100.0%	9.1	1.3	A
WB	Left Turn	299	299	100.1%	42.0	6.4	D
	Through	317	315	99.5%	2.6	1.7	A
	Right Turn						
	Subtotal	616	615	99.8%	27.6	5.2	C
Total		1,365	1,364	99.9%	17.5	2.8	B

Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	6	6	95.0%	78.9	98.4	E
	Through						
	Right Turn	6	6	95.0%	51.1	17.1	D
	Subtotal	12	11	95.0%	77.5	50.5	E
SB	Left Turn	1	2	150.0%	6.2	19.5	A
	Through						
	Right Turn	3	3	83.3%	35.1	26.4	D
	Subtotal	4	4	100.0%	41.2	24.4	D
EB	Left Turn	37	39	106.5%	13.4	7.4	B
	Through	530	529	99.8%	1.3	0.4	A
	Right Turn	10	9	88.0%	2.2	2.5	A
	Subtotal	577	577	100.0%	2.5	1.0	A
WB	Left Turn						
	Through	607	606	99.9%	20.4	11.2	C
	Right Turn	88	92	104.4%	24.1	12.2	C
	Subtotal	695	698	100.4%	21.0	11.3	C
Total		1,288	1,291	100.2%	14.1	6.5	B

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 10 Runs | **Existing Plus Project Conditions**
Queue Length | **AM Peak Hour**

Lincoln Avenue/Alida Street | **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn	800	4	1	3	5	90	15	60	109	NO
	Through										
	Right Turn	800	7	1	5	9	103	15	73	122	NO
SB	Left Turn										
	Through										
	Right Turn										
EB	Left Turn										
	Through	500	7	6	2	22	251	109	120	423	NO
	Right Turn	500	7	6	2	22	251	109	120	423	NO
WB	Left Turn	350	1	1	0	3	142	85	20	311	NO
	Through	350	1	1	0	2	107	84	0	275	NO
	Right Turn										

Lincoln Avenue/Loop Road Outbound | **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn	150	29	8	18	43	282	31	239	342	MAX
	Through										
	Right Turn	800	43	10	29	59	296	30	271	363	NO
SB	Left Turn										
	Through										
	Right Turn										
EB	Left Turn										
	Through	350	44	8	34	56	360	12	352	387	MAX
	Right Turn										
WB	Left Turn										
	Through	500	22	5	17	31	236	47	197	352	NO
	Right Turn										

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 10 Runs | **Existing Plus Project Conditions**
Queue Length | **AM Peak Hour**

Lincoln Avenue/Loop Road Inbound — **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn										
	Through										
	Right Turn										
SB	Left Turn										
	Through										
	Right Turn										
EB	Left Turn										
	Through	500	23	5	18	33	420	83	311	485	NO
	Right Turn	500	31	6	27	42	454	83	345	520	NO
WB	Left Turn	280	74	6	66	82	405	28	371	436	MAX
	Through	460	0	0	0	0	0	0	0	0	NO
	Right Turn										

Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway — **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn										
	Through										
	Right Turn										
SB	Left Turn	250	1	0	0	1	22	1	21	23	NO
	Through										
	Right Turn	250	1	0	0	1	22	1	21	23	NO
EB	Left Turn	80	1	1	0	2	46	16	28	72	NO
	Through	460	1	2	0	5	120	101	24	338	NO
	Right Turn	460	1	2	0	5	120	101	24	338	NO
WB	Left Turn										
	Through	1,100	75	37	33	134	853	138	508	933	NO
	Right Turn	1,100	75	37	33	134	853	138	508	933	NO

Vissim Post-Processor **Head Royce Expansion**
Average Results from 10 Runs **Existing Plus Project Conditions**
Queue Length **AM Peak Hour**

Lincoln Avenue/Lincoln Way/Oakland Mormon Temple Driveway **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft)				Maximum Queue (ft)				Exceeds Storage?
			Average	Std. Dev.	Minimum	Maximum	Average	Std. Dev.	Minimum	Maximum	
NB	Left Turn	200	0	0	0	0	28	1	26	30	NO
	Through										
	Right Turn	200	0	0	0	0	27	1	25	28	NO
SB	Left Turn										
	Through										
	Right Turn	560	28	16	15	63	189	59	112	284	NO
EB	Left Turn	1,100	0	1	0	2	70	83	0	237	NO
	Through	1,100	0	0	0	1	52	74	0	209	NO
	Right Turn	1,100	0	0	0	1	52	74	0	209	NO
WB	Left Turn	260	6	4	2	14	162	14	151	190	NO
	Through	260	3	3	1	8	116	14	104	144	NO
	Right Turn	260	3	3	1	8	116	14	104	144	NO

Vissim Post-Processor **Head Royce Expansion**
Average Results from 10 Runs **Existing Plus Project Conditions**
Queue Length **AM Peak Hour**

Entrance or Exit of the South Campus Parking Lot

Direction	Movement	Storage (ft)	Average Queue (ft)				Maximum Queue (ft)				Exceeds Storage?
			Average	Std. Dev.	Minimum	Maximum	Average	Std. Dev.	Minimum	Maximum	
NB	U Turn Second Left Left Turn Through Right Turn Second Right										
SB	U Turn Second Left Left Turn Through Right Turn Second Right	360	9	6	0	19	325	153	0	421	NO
EB	U Turn Second Left Left Turn Through Right Turn Second Right										
WB	U Turn Second Left Left Turn Through Right Turn Second Right										

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 11 Runs | **Existing Plus Project Conditions**
Volume and Delay by Movement | **Afternoon Peak Hour**

Lincoln Avenue/Alida Street | **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	10	93.6%	12.4	6.1	B
	Through						
	Right Turn	42	41	96.4%	8.1	1.0	A
	Subtotal	53	51	95.8%	9.0	1.4	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	280	290	103.7%	1.4	0.4	A
	Right Turn	30	28	93.0%	1.3	0.6	A
	Subtotal	310	318	102.6%	1.4	0.4	A
WB	Left Turn	50	49	98.0%	3.4	1.3	A
	Through	404	386	95.5%	1.7	0.8	A
	Right Turn						
	Subtotal	454	435	95.8%	1.9	0.8	A
Total		817	804	98.4%	2.1	0.5	A

Lincoln Avenue/Loop Road Outbound | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	95	78	82.5%	32.0	4.5	C
	Through						
	Right Turn	101	104	103.0%	15.3	2.9	B
	Subtotal	196	182	93.1%	22.3	3.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	322	332	103.0%	11.5	2.0	B
	Right Turn						
	Subtotal	322	332	103.0%	11.5	2.0	B
WB	Left Turn						
	Through	359	357	99.5%	8.8	2.3	A
	Right Turn						
	Subtotal	359	357	99.5%	8.8	2.3	A
Total		877	871	99.3%	13.3	1.4	B

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 11 Runs | **Existing Plus Project Conditions**
Volume and Delay by Movement | **Afternoon Peak Hour**

Lincoln Avenue/Loop Road Inbound **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	404	417	103.1%	12.0	2.5	B
	Right Turn	19	19	99.5%	7.2	5.4	A
	Subtotal	423	435	102.9%	11.7	2.4	B
WB	Left Turn	116	113	97.8%	32.6	3.7	C
	Through	359	357	99.6%	0.9	0.4	A
	Right Turn						
	Subtotal	475	471	99.1%	11.4	1.1	B
Total		898	906	100.9%	11.5	1.1	B

Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	6	110.0%	57.3	30.5	E
	Through						
	Right Turn	9	7	74.4%	37.7	29.5	D
	Subtotal	14	12	87.1%	53.4	19.6	D
SB	Left Turn	48	50	103.1%	36.9	3.0	D
	Through						
	Right Turn	21	26	125.7%	36.7	9.9	D
	Subtotal	69	76	110.0%	36.9	4.4	D
EB	Left Turn	4	4	102.5%	5.9	5.6	A
	Through	397	409	102.9%	7.7	2.5	A
	Right Turn	3	3	103.3%	2.4	4.1	A
	Subtotal	404	416	102.9%	7.7	2.5	A
WB	Left Turn	7	8	111.4%	5.8	5.6	A
	Through	449	440	98.1%	7.3	1.1	A
	Right Turn	6	7	111.7%	8.7	6.1	A
	Subtotal	462	455	98.4%	7.3	1.2	A
Total		949	959	101.0%	11.2	1.4	B

Vissim Post-Processor **Head Royce Expansion**
Average Results from 10 Runs **Existing Plus Project Conditions**
Queue Length **Afternoon Peak Hour**

Lincoln Avenue/Alida Street **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn	800	2	0	1	3	65	11	58	94	NO
	Through										
	Right Turn	800	3	0	2	3	78	11	72	107	NO
SB	Left Turn										
	Through										
	Right Turn										
EB	Left Turn										
	Through	500	2	2	0	5	86	88	0	225	NO
	Right Turn	500	2	2	0	5	86	88	0	225	NO
WB	Left Turn	350	1	1	1	2	129	43	67	213	NO
	Through	350	1	0	0	1	93	43	31	177	NO
	Right Turn										

Lincoln Avenue/Loop Road Outbound **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn	150	14	2	11	17	230	56	173	349	MAX
	Through										
	Right Turn	800	4	1	3	7	145	60	82	257	NO
SB	Left Turn										
	Through										
	Right Turn										
EB	Left Turn										
	Through	350	17	5	11	27	298	77	187	387	NO
	Right Turn										
WB	Left Turn										
	Through	500	13	1	12	16	246	57	161	330	NO
	Right Turn										

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 10 Runs | **Existing Plus Project Conditions**
Queue Length | **Afternoon Peak Hour**

Lincoln Avenue/Loop Road Inbound — **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn										
	Through										
	Right Turn										
SB	Left Turn										
	Through										
	Right Turn										
EB	Left Turn										
	Through	500	82	3	78	90	473	23	440	492	NO
	Right Turn	500	76	17	39	94	489	36	409	518	NO
WB	Left Turn	280	20	1	18	21	191	18	168	227	NO
	Through	460	0	0	0	0	6	14	0	43	NO
	Right Turn										

Lincoln Avenue/United Cerebral Palsy Driveway/Head-Royce Lot F Driveway — **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Minimum	Maximum	Maximum Queue (ft) Average	Std. Dev.	Minimum	Maximum	Exceeds Storage?
NB	Left Turn										
	Through										
	Right Turn										
SB	Left Turn	250	14	1	12	16	135	23	106	167	NO
	Through										
	Right Turn	250	14	1	12	16	135	23	106	167	NO
EB	Left Turn	80	0	0	0	0	5	10	0	23	NO
	Through	460	5	3	2	12	280	87	188	473	NO
	Right Turn	460	5	3	2	12	280	87	188	473	NO
WB	Left Turn										
	Through	1,100	14	2	11	18	270	59	217	407	NO
	Right Turn	1,100	14	2	11	18	270	59	217	407	NO

Vissim Post-Processor | **Head Royce Expansion**
Average Results from 10 Runs | **Existing Plus Project Conditions**
Queue Length | **Afternoon Peak Hour**

Lincoln Avenue/Lincoln Way/Oakland Mormon Temple Driveway | **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft)				Maximum Queue (ft)				Exceeds Storage?
			Average	Std. Dev.	Minimum	Maximum	Average	Std. Dev.	Minimum	Maximum	
NB	Left Turn	200	1	0	1	2	68	21	49	106	NO
	Through										
	Right Turn	200	1	0	1	1	66	21	48	104	NO
SB	Left Turn										
	Through										
	Right Turn	560	3	0	3	4	81	6	70	88	NO
EB	Left Turn	1,100	0	1	0	3	89	131	0	412	NO
	Through	1,100	0	1	0	3	71	123	0	383	NO
	Right Turn	1,100	0	1	0	3	71	123	0	383	NO
WB	Left Turn	260	1	1	0	2	115	53	38	176	NO
	Through	260	0	0	0	1	69	53	0	130	NO
	Right Turn	260	0	0	0	1	69	53	0	130	NO

Vissim Post-Processor
Average Results from 10 Runs
Queue Length

Head Royce Expansion
Existing Plus Project Conditions
Afternoon Peak Hour

Entrance or Exit of the South Campus Parking Lot

Direction	Movement	Storage (ft)	Average Queue (ft)				Maximum Queue (ft)				Exceeds Storage?
			Average	Std. Dev.	Minimum	Maximum	Average	Std. Dev.	Minimum	Maximum	
NB	U Turn										
	Second Left										
	Left Turn										
	Through										
	Right Turn										
	Second Right										
SB	U Turn										
	Second Left										
	Left Turn										
	Through										
	Right Turn										
	Second Right										
EB	U Turn										
	Second Left										
	Left Turn										
	Through										
	Right Turn	880	2	1	1	2	135	55	65	251	NO
	Second Right										
WB	U Turn										
	Second Left										
	Left Turn										
	Through										
	Right Turn										
	Second Right										

Appendix F
HSM Predicted Collision Frequency Worksheets

Worksheet 1A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Intersection	Potomac St & Lincoln Ave
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data				Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)				--	3ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ =	45,700	(veh/day)	--	6,120
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ =	9,300	(veh/day)	--	540
Intersection lighting (present/not present)				Not Present	Present
Calibration factor, C_i				1.00	1.00
Data for unsignalized intersections only:				--	--
Number of major-road approaches with left-turn lanes (0,1,2)				0	0
Number of major-road approaches with right-turn lanes (0,1,2)				0	0
Data for signalized intersections only:				--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]				0	
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]				0	
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]				--	
Type of left-turn signal phasing for Leg #1				Permissive	
Type of left-turn signal phasing for Leg #2				--	
Type of left-turn signal phasing for Leg #3				--	
Type of left-turn signal phasing for Leg #4 (if applicable)				--	
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]				0	
Intersection red light cameras (present/not present)				Not Present	
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only					
Maximum number of lanes crossed by a pedestrian (n_{lanesx})				--	
Number of bus stops within 300 m (1,000 ft) of the intersection				0	
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present	
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0	

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	1.00	0.91

Worksheet 1C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b	c							
Total	-13.36	1.11	0.41	0.80	0.332	1.000	0.332	0.91	1.00	0.302
Fatal and Injury (FI)	-14.01	1.16	0.30	0.69	0.134	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.426	0.141	0.91	1.00	0.129
Property Damage Only (PDO)	-15.38	1.20	0.51	0.77	0.181	$(5)_{TOTAL}-(5)_{FI}$ = 0.574	0.191	0.91	1.00	0.174

Worksheet 1D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	(9)FI from Worksheet 1C	from Table 12-11	(9)PDO from Worksheet 1C	(9)PDO from Worksheet 1C
Total	1.000	0.129	1.000	0.174	0.302
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.421	0.054	0.440	0.076	0.131
Head-on collision	0.045	0.006	0.023	0.004	0.010
Angle collision	0.343	0.044	0.262	0.045	0.090
Sideswipe	0.126	0.016	0.040	0.007	0.023
Other multiple-vehicle collision	0.065	0.008	0.235	0.041	0.049

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 1B		(6)*(7)*(8)
	a	b	c							
Total	-6.81	0.16	0.51	1.14	0.110	1.000	0.110	0.91	1.00	0.100
Fatal and Injury (FI)	--	--	--	--	0.034	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.341	0.038	0.91	1.00	0.034
Property Damage Only (PDO)	-8.36	0.25	0.55	1.29	0.066	$(5)_{TOTAL}-(5)_{FI}$ = 0.659	0.073	0.91	1.00	0.066

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)FI from Worksheet 1E	from Table 12-13	(9)PDO from Worksheet 1E	(9)PDO from Worksheet 1E
Total	1.000	0.034	1.000	0.066	0.100
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.003	0.000	0.000
Collision with animal	0.003	0.000	0.018	0.001	0.001
Collision with fixed object	0.762	0.026	0.834	0.055	0.081
Collision with other object	0.090	0.003	0.092	0.006	0.009
Other single-vehicle collision	0.039	0.001	0.023	0.002	0.003
Single-vehicle noncollision	0.105	0.004	0.030	0.002	0.006

Worksheet 1G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.302	0.100	0.403	0.021	1.00	0.008
Fatal and injury (FI)	--	--	--	--	1.00	0.008

Worksheet 1H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 1H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.302	0.100	0.403	0.016	1.00	0.006
Fatal and injury (FI)	--	--	--	--	1.00	0.006

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 1D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 1D and 2F	(6) from Worksheet 1D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.054	0.076	0.131
Head-on collisions (from Worksheet 1D)	0.006	0.004	0.010
Angle collisions (from Worksheet 1D)	0.044	0.045	0.090
Sideswipe (from Worksheet 1D)	0.016	0.007	0.023
Other multiple-vehicle collision (from Worksheet 1D)	0.008	0.041	0.049
Subtotal	0.129	0.174	0.302
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 1F)	0.000	0.000	0.000
Collision with animal (from Worksheet 1F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 1F)	0.026	0.055	0.081
Collision with other object (from Worksheet 1F)	0.003	0.006	0.009
Other single-vehicle collision (from Worksheet 1F)	0.001	0.002	0.003
Single-vehicle noncollision (from Worksheet 1F)	0.004	0.002	0.006
Collision with pedestrian (from Worksheet 1G or 2I)	0.008	0.000	0.008
Collision with bicycle (from Worksheet 1J)	0.006	0.000	0.006
Subtotal	0.049	0.066	0.115
Total	0.178	0.240	0.417

Worksheet 1L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 1K
Total	0.4
Fatal and injury (FI)	0.2
Property damage only (PDO)	0.2

Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Intersection	Alida St & Lincoln Ave
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3ST
$AADT_{major}$ (veh/day)	$AADT_{MAX}$ = 45,700 (veh/day)	--	8,160
$AADT_{minor}$ (veh/day)	$AADT_{MAX}$ = 9,300 (veh/day)	--	530
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	
Type of left-turn signal phasing for Leg #1		Permissive	
Type of left-turn signal phasing for Leg #2		--	
Type of left-turn signal phasing for Leg #3		--	
Type of left-turn signal phasing for Leg #4 (if applicable)		--	
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	
Intersection red light cameras (present/not present)		Not Present	
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	
Number of bus stops within 300 m (1,000 ft) of the intersection		0	
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	

Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	CMF_{COMB}
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	1.00	0.91

Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-13.36	1.11	0.41	0.80	0.454	1.000	0.454	0.91	1.00	0.413
Fatal and Injury (FI)	-14.01	1.16	0.30	0.69	0.186	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.424	0.192	0.91	1.00	0.175
Property Damage Only (PDO)	-15.38	1.20	0.51	0.77	0.253	$(5)_{TOTAL}-(5)_{FI}$ = 0.576	0.261	0.91	1.00	0.238

Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	$(9)_{FI}$ from Worksheet 2C	from Table 12-11	$(9)_{PDO}$ from Worksheet 2C	$(9)_{PDO}$ from Worksheet 2C
Total	1.000	0.175	1.000	0.238	0.413
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.421	0.074	0.440	0.105	0.178
Head-on collision	0.045	0.008	0.023	0.005	0.013
Angle collision	0.343	0.060	0.262	0.062	0.122
Sideswipe	0.126	0.022	0.040	0.010	0.032
Other multiple-vehicle collision	0.065	0.011	0.235	0.056	0.067

Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 2B		(6)*(7)*(8)
	a	b	c							
Total	-6.81	0.16	0.51	1.14	0.114	1.000	0.114	0.91	1.00	0.104
Fatal and Injury (FI)	--	--	--	--	0.035	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.336	0.038	0.91	1.00	0.035
Property Damage Only (PDO)	-8.36	0.25	0.55	1.29	0.070	$(5)_{TOTAL}-(5)_{FI}$ = 0.664	0.076	0.91	1.00	0.069

Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)$_{FI}$ from Worksheet 2E	from Table 12-13	(9)$_{PDO}$ from Worksheet 2E	(9)$_{PDO}$ from Worksheet 2E
Total	1.000	0.035	1.000	0.069	0.104
		(2)*(3)$_{FI}$		(4)*(5)$_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.003	0.000	0.000
Collision with animal	0.003	0.000	0.018	0.001	0.001
Collision with fixed object	0.762	0.027	0.834	0.058	0.084
Collision with other object	0.090	0.003	0.092	0.006	0.009
Other single-vehicle collision	0.039	0.001	0.023	0.002	0.003
Single-vehicle noncollision	0.105	0.004	0.030	0.002	0.006

Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.413	0.104	0.517	0.021	1.00	0.011
Fatal and injury (FI)	--	--	--	--	1.00	0.011

Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 2H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 2C	(9) from Worksheet 2E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.413	0.104	0.517	0.016	1.00	0.008
Fatal and injury (FI)	--	--	--	--	1.00	0.008

Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 2D and 2F	(6) from Worksheet 2D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 2D)	0.074	0.105	0.178
Head-on collisions (from Worksheet 2D)	0.008	0.005	0.013
Angle collisions (from Worksheet 2D)	0.060	0.062	0.122
Sideswipe (from Worksheet 2D)	0.022	0.010	0.032
Other multiple-vehicle collision (from Worksheet 2D)	0.011	0.056	0.067
Subtotal	0.175	0.238	0.413
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 2F)	0.000	0.000	0.000
Collision with animal (from Worksheet 2F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 2F)	0.027	0.058	0.084
Collision with other object (from Worksheet 2F)	0.003	0.006	0.009
Other single-vehicle collision (from Worksheet 2F)	0.001	0.002	0.003
Single-vehicle noncollision (from Worksheet 2F)	0.004	0.002	0.006
Collision with pedestrian (from Worksheet 2G or 2I)	0.011	0.000	0.011
Collision with bicycle (from Worksheet 2J)	0.008	0.000	0.008
Subtotal	0.054	0.069	0.123
Total	0.229	0.307	0.536

Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 2K
Total	0.5
Fatal and injury (FI)	0.2
Property damage only (PDO)	0.3

Worksheet 3A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Intersection	United Cerebral Palsy Driveway & Lincoln Ave
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	3SG
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 58,100 (veh/day)	--	8,300
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 16,400 (veh/day)	--	730
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	
Number of major-road approaches with right-turn lanes (0,1,2)		0	
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	0
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	0
Type of left-turn signal phasing for Leg #1		Permissive	Permissive
Type of left-turn signal phasing for Leg #2		--	Permissive
Type of left-turn signal phasing for Leg #3		--	Permissive
Type of left-turn signal phasing for Leg #4 (if applicable)		--	Permissive
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	0
Intersection red light cameras (present/not present)		Not Present	Not Present
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			410
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	2
Number of bus stops within 300 m (1,000 ft) of the intersection		0	6
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	Present
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	0

Worksheet 3B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	1.00	0.91

Worksheet 3C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 3B		(6)*(7)*(8)
	a	b	c							
Total	-12.13	1.11	0.26	0.33	0.671	1.000	0.671	0.91	1.00	0.611
Fatal and Injury (FI)	-11.58	1.02	0.17	0.30	0.285	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.430	0.289	0.91	1.00	0.263
Property Damage Only (PDO)	-13.24	1.14	0.30	0.36	0.377	$(5)_{TOTAL}-(5)_{FI}$ = 0.570	0.382	0.91	1.00	0.348

Worksheet 3D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	(9)FI from Worksheet 3C	from Table 12-11	(9)PDO from Worksheet 3C	(9)PDO from Worksheet 3C
Total	1.000	0.263	1.000	0.348	0.611
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.549	0.144	0.546	0.190	0.334
Head-on collision	0.038	0.010	0.020	0.007	0.017
Angle collision	0.280	0.074	0.204	0.071	0.145
Sideswipe	0.076	0.020	0.032	0.011	0.031
Other multiple-vehicle collision	0.057	0.015	0.198	0.069	0.084

Worksheet 3E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 3B		(6)*(7)*(8)
	a	b	c							
Total	-9.02	0.42	0.40	0.36	0.075	1.000	0.075	0.91	1.00	0.068
Fatal and Injury (FI)	-9.75	0.27	0.51	0.24	0.019	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.248	0.019	0.91	1.00	0.017
Property Damage Only (PDO)	-9.08	0.45	0.33	0.53	0.058	$(5)_{TOTAL}-(5)_{FI}$ = 0.752	0.056	0.91	1.00	0.051

Worksheet 3F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)FI from Worksheet 3E	from Table 12-13	(9)PDO from Worksheet 3E	(9)PDO from Worksheet 3E
Total	1.000	0.017	1.000	0.051	0.068
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.003	0.000	0.000
Collision with fixed object	0.653	0.011	0.895	0.046	0.057
Collision with other object	0.091	0.002	0.069	0.004	0.005
Other single-vehicle collision	0.045	0.001	0.018	0.001	0.002
Single-vehicle noncollision	0.209	0.004	0.014	0.001	0.004

Worksheet 3G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 3C	(9) from Worksheet 3E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	--	--	--	--	1.00	--
Fatal and injury (FI)	--	--	--	--	1.00	--

Worksheet 3H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
4.15	1.35	1.00	5.60

Worksheet 3I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 3H		(4)*(5)*(6)
	a	b	c	d	e					
Total	-6.60	0.05	0.24	0.41	0.09	0.52	0.017	5.60	1.00	0.095
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	0.095

Worksheet 3J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 3C	(9) from Worksheet 3E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.611	0.068	0.679	0.011	1.00	0.007
Fatal and injury (FI)	--	--	--	--	1.00	0.007

Worksheet 3K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 3D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 3D and 2F	(6) from Worksheet 3D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 3D)	0.144	0.190	0.334
Head-on collisions (from Worksheet 3D)	0.010	0.007	0.017
Angle collisions (from Worksheet 3D)	0.074	0.071	0.145
Sideswipe (from Worksheet 3D)	0.020	0.011	0.031
Other multiple-vehicle collision (from Worksheet 3D)	0.015	0.069	0.084
Subtotal	0.263	0.348	0.611
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 3F)	0.000	0.000	0.000
Collision with animal (from Worksheet 3F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 3F)	0.011	0.046	0.057
Collision with other object (from Worksheet 3F)	0.002	0.004	0.005
Other single-vehicle collision (from Worksheet 3F)	0.001	0.001	0.002
Single-vehicle noncollision (from Worksheet 3F)	0.004	0.001	0.004
Collision with pedestrian (from Worksheet 3G or 2I)	0.095	0.000	0.095
Collision with bicycle (from Worksheet 3J)	0.007	0.000	0.007
Subtotal	0.119	0.051	0.170
Total	0.382	0.399	0.781

Worksheet 3L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 3K
Total	0.8
Fatal and injury (FI)	0.4
Property damage only (PDO)	0.4

Worksheet 4A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Intersection	Lincoln Way & Lincoln Ave
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	8,410
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	1,060
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	
Type of left-turn signal phasing for Leg #1		Permissive	
Type of left-turn signal phasing for Leg #2		--	
Type of left-turn signal phasing for Leg #3		--	
Type of left-turn signal phasing for Leg #4 (if applicable)		--	
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	
Intersection red light cameras (present/not present)		Not Present	
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	
Number of bus stops within 300 m (1,000 ft) of the intersection		0	
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	

Worksheet 4B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	0.97	0.89

Worksheet 4C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 4B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	1.287	1.000	1.287	0.89	1.00	1.143
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.461	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.355	0.457	0.89	1.00	0.406
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	0.836	$(5)_{TOTAL}-(5)_{FI}$ = 0.645	0.829	0.89	1.00	0.737

Worksheet 4D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	(9)FI from Worksheet 4C	from Table 12-11	(9)PDO from Worksheet 4C	(9)PDO from Worksheet 4C
Total	1.000	0.406	1.000	0.737	1.143
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.137	0.374	0.276	0.413
Head-on collision	0.041	0.017	0.030	0.022	0.039
Angle collision	0.440	0.179	0.335	0.247	0.425
Sideswipe	0.121	0.049	0.044	0.032	0.082
Other multiple-vehicle collision	0.060	0.024	0.217	0.160	0.184

Worksheet 4E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 4B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.221	1.000	0.221	0.89	1.00	0.196
Fatal and Injury (FI)	--	--	--	--	0.062	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.323	0.071	0.89	1.00	0.063
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.129	$(5)_{TOTAL}-(5)_{FI}$ = 0.677	0.149	0.89	1.00	0.133

Worksheet 4F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)FI from Worksheet 4E	from Table 12-13	(9)PDO from Worksheet 4E	(9)PDO from Worksheet 4E
Total	1.000	0.063	1.000	0.133	0.196
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.003	0.004
Collision with fixed object	0.679	0.043	0.847	0.112	0.155
Collision with other object	0.089	0.006	0.070	0.009	0.015
Other single-vehicle collision	0.051	0.003	0.007	0.001	0.004
Single-vehicle noncollision	0.179	0.011	0.049	0.006	0.018

Worksheet 4G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 4C	(9) from Worksheet 4E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	1.143	0.196	1.339	0.022	1.00	0.029
Fatal and injury (FI)	--	--	--	--	1.00	0.029

Worksheet 4H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 4I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 4H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 4J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 4C	(9) from Worksheet 4E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.143	0.196	1.339	0.018	1.00	0.024
Fatal and injury (FI)	--	--	--	--	1.00	0.024

Worksheet 4K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 4D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 4D and 2F	(6) from Worksheet 4D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 4D)	0.137	0.276	0.413
Head-on collisions (from Worksheet 4D)	0.017	0.022	0.039
Angle collisions (from Worksheet 4D)	0.179	0.247	0.425
Sideswipe (from Worksheet 4D)	0.049	0.032	0.082
Other multiple-vehicle collision (from Worksheet 4D)	0.024	0.160	0.184
Subtotal	0.406	0.737	1.143
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 4F)	0.000	0.000	0.000
Collision with animal (from Worksheet 4F)	0.000	0.003	0.004
Collision with fixed object (from Worksheet 4F)	0.043	0.112	0.155
Collision with other object (from Worksheet 4F)	0.006	0.009	0.015
Other single-vehicle collision (from Worksheet 4F)	0.003	0.001	0.004
Single-vehicle noncollision (from Worksheet 4F)	0.011	0.006	0.018
Collision with pedestrian (from Worksheet 4G or 2I)	0.029	0.000	0.029
Collision with bicycle (from Worksheet 4J)	0.024	0.000	0.024
Subtotal	0.117	0.133	0.249
Total	0.523	0.869	1.392

Worksheet 4L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 4K
Total	1.4
Fatal and injury (FI)	0.5
Property damage only (PDO)	0.9

Worksheet 5A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Intersection	Maiden Ln & Lincoln Ave
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data				Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)				--	3ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ =	45,700	(veh/day)	--	8,750
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ =	9,300	(veh/day)	--	50
Intersection lighting (present/not present)				Not Present	Present
Calibration factor, C_i				1.00	1.00
Data for unsignalized intersections only:				--	--
Number of major-road approaches with left-turn lanes (0,1,2)				0	0
Number of major-road approaches with right-turn lanes (0,1,2)				0	0
Data for signalized intersections only:				--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]				0	
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]				0	
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]				--	
Type of left-turn signal phasing for Leg #1				Permissive	
Type of left-turn signal phasing for Leg #2				--	
Type of left-turn signal phasing for Leg #3				--	
Type of left-turn signal phasing for Leg #4 (if applicable)				--	
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]				0	
Intersection red light cameras (present/not present)				Not Present	
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only					
Maximum number of lanes crossed by a pedestrian (n_{lanesx})				--	
Number of bus stops within 300 m (1,000 ft) of the intersection				0	
Schools within 300 m (1,000 ft) of the intersection (present/not present)				Not Present	
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection				0	

Worksheet 5B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	1.00	0.91

Worksheet 5C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 5B		(6)*(7)*(8)
	a	b	c							
Total	-13.36	1.11	0.41	0.80	0.186	1.000	0.186	0.91	1.00	0.169
Fatal and Injury (FI)	-14.01	1.16	0.30	0.69	0.100	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.546	0.102	0.91	1.00	0.092
Property Damage Only (PDO)	-15.38	1.20	0.51	0.77	0.083	$(5)_{TOTAL}-(5)_{FI}$ = 0.454	0.085	0.91	1.00	0.077

Worksheet 5D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	(9)FI from Worksheet 5C	from Table 12-11	(9)PDO from Worksheet 5C	(9)PDO from Worksheet 5C
Total	1.000	0.092	1.000	0.077	0.169
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.421	0.039	0.440	0.034	0.073
Head-on collision	0.045	0.004	0.023	0.002	0.006
Angle collision	0.343	0.032	0.262	0.020	0.052
Sideswipe	0.126	0.012	0.040	0.003	0.015
Other multiple-vehicle collision	0.065	0.006	0.235	0.018	0.024

Worksheet 5E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 5B		(6)*(7)*(8)
	a	b	c							
Total	-6.81	0.16	0.51	1.14	0.035	1.000	0.035	0.91	1.00	0.031
Fatal and Injury (FI)	--	--	--	--	0.011	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.356	0.012	0.91	1.00	0.011
Property Damage Only (PDO)	-8.36	0.25	0.55	1.29	0.019	$(5)_{TOTAL}-(5)_{FI}$ = 0.644	0.022	0.91	1.00	0.020

Worksheet 5F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)FI from Worksheet 5E	from Table 12-13	(9)PDO from Worksheet 5E	(9)PDO from Worksheet 5E
Total	1.000	0.011	1.000	0.020	0.031
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.003	0.000	0.000
Collision with animal	0.003	0.000	0.018	0.000	0.000
Collision with fixed object	0.762	0.009	0.834	0.017	0.025
Collision with other object	0.090	0.001	0.092	0.002	0.003
Other single-vehicle collision	0.039	0.000	0.023	0.000	0.001
Single-vehicle noncollision	0.105	0.001	0.030	0.001	0.002

Worksheet 5G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 5C	(9) from Worksheet 5E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	0.169	0.031	0.201	0.021	1.00	0.004
Fatal and injury (FI)	--	--	--	--	1.00	0.004

Worksheet 5H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 5I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 5H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 5J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 5C	(9) from Worksheet 5E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	0.169	0.031	0.201	0.016	1.00	0.003
Fatal and injury (FI)	--	--	--	--	1.00	0.003

Worksheet 5K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 5D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 5D and 2F	(6) from Worksheet 5D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 5D)	0.039	0.034	0.073
Head-on collisions (from Worksheet 5D)	0.004	0.002	0.006
Angle collisions (from Worksheet 5D)	0.032	0.020	0.052
Sideswipe (from Worksheet 5D)	0.012	0.003	0.015
Other multiple-vehicle collision (from Worksheet 5D)	0.006	0.018	0.024
Subtotal	0.092	0.077	0.169
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 5F)	0.000	0.000	0.000
Collision with animal (from Worksheet 5F)	0.000	0.000	0.000
Collision with fixed object (from Worksheet 5F)	0.009	0.017	0.025
Collision with other object (from Worksheet 5F)	0.001	0.002	0.003
Other single-vehicle collision (from Worksheet 5F)	0.000	0.000	0.001
Single-vehicle noncollision (from Worksheet 5F)	0.001	0.001	0.002
Collision with pedestrian (from Worksheet 5G or 2I)	0.004	0.000	0.004
Collision with bicycle (from Worksheet 5J)	0.003	0.000	0.003
Subtotal	0.019	0.020	0.039
Total	0.111	0.097	0.208

Worksheet 5L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 5K
Total	0.2
Fatal and injury (FI)	0.1
Property damage only (PDO)	0.1

Worksheet 6A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Intersection	Joaquin Miller Rd & Monterey Blvd & Lincoln Ave
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
$AADT_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	9,650
$AADT_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	5,900
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	0
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	
Type of left-turn signal phasing for Leg #1		Permissive	
Type of left-turn signal phasing for Leg #2		--	
Type of left-turn signal phasing for Leg #3		--	
Type of left-turn signal phasing for Leg #4 (if applicable)		--	
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	
Intersection red light cameras (present/not present)		Not Present	
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	
Number of bus stops within 300 m (1,000 ft) of the intersection		0	
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	

Worksheet 6B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	CMF_{COMB}
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	1.00	1.00	0.91	0.97	0.89

Worksheet 6C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 6B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.212	1.000	2.212	0.89	1.00	1.961
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.847	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.380	0.841	0.89	1.00	0.746
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.379	$(5)_{TOTAL}-(5)_{FI}$ = 0.620	1.371	0.89	1.00	1.215

Worksheet 6D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	(9)FI from Worksheet 6C	from Table 12-11	(9)PDO from Worksheet 6C	(9)PDO from Worksheet 6C
Total	1.000	0.746	1.000	1.215	1.961
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.252	0.374	0.454	0.707
Head-on collision	0.041	0.031	0.030	0.036	0.067
Angle collision	0.440	0.328	0.335	0.407	0.735
Sideswipe	0.121	0.090	0.044	0.053	0.144
Other multiple-vehicle collision	0.060	0.045	0.217	0.264	0.308

Worksheet 6E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 6B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.284	1.000	0.284	0.89	1.00	0.251
Fatal and Injury (FI)	--	--	--	--	0.079	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.275	0.078	0.89	1.00	0.069
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.209	$(5)_{TOTAL}-(5)_{FI}$ = 0.725	0.205	0.89	1.00	0.182

Worksheet 6F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)FI from Worksheet 6E	from Table 12-13	(9)PDO from Worksheet 6E	(9)PDO from Worksheet 6E
Total	1.000	0.069	1.000	0.182	0.251
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.005	0.005
Collision with fixed object	0.679	0.047	0.847	0.154	0.201
Collision with other object	0.089	0.006	0.070	0.013	0.019
Other single-vehicle collision	0.051	0.004	0.007	0.001	0.005
Single-vehicle noncollision	0.179	0.012	0.049	0.009	0.021

Worksheet 6G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 6C	(9) from Worksheet 6E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	1.961	0.251	2.213	0.022	1.00	0.049
Fatal and injury (FI)	--	--	--	--	1.00	0.049

Worksheet 6H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 6I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 6H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 6J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 6C	(9) from Worksheet 6E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.961	0.251	2.213	0.018	1.00	0.040
Fatal and injury (FI)	--	--	--	--	1.00	0.040

Worksheet 6K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 6D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 6D and 2F	(6) from Worksheet 6D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 6D)	0.252	0.454	0.707
Head-on collisions (from Worksheet 6D)	0.031	0.036	0.067
Angle collisions (from Worksheet 6D)	0.328	0.407	0.735
Sideswipe (from Worksheet 6D)	0.090	0.053	0.144
Other multiple-vehicle collision (from Worksheet 6D)	0.045	0.264	0.308
Subtotal	0.746	1.215	1.961
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 6F)	0.000	0.000	0.000
Collision with animal (from Worksheet 6F)	0.000	0.005	0.005
Collision with fixed object (from Worksheet 6F)	0.047	0.154	0.201
Collision with other object (from Worksheet 6F)	0.006	0.013	0.019
Other single-vehicle collision (from Worksheet 6F)	0.004	0.001	0.005
Single-vehicle noncollision (from Worksheet 6F)	0.012	0.009	0.021
Collision with pedestrian (from Worksheet 6G or 2I)	0.049	0.000	0.049
Collision with bicycle (from Worksheet 6J)	0.040	0.000	0.040
Subtotal	0.158	0.182	0.340
Total	0.904	1.397	2.301

Worksheet 6L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 6K
Total	2.3
Fatal and injury (FI)	0.9
Property damage only (PDO)	1.4

Worksheet 7A -- General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Joaquin Miller Rd
Agency or Company	Fehr and Peers	Intersection	Joaquin Miller Rd & Mountain Blvd
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data		Base Conditions	Site Conditions
Intersection type (3ST, 3SG, 4ST, 4SG)		--	4ST
AADT $_{major}$ (veh/day)	$AADT_{MAX}$ = 46,800 (veh/day)	--	10,010
AADT $_{minor}$ (veh/day)	$AADT_{MAX}$ = 5,900 (veh/day)	--	**6,460**
Intersection lighting (present/not present)		Not Present	Present
Calibration factor, C_i		1.00	1.00
Data for unsignalized intersections only:		--	--
Number of major-road approaches with left-turn lanes (0,1,2)		0	0
Number of major-road approaches with right-turn lanes (0,1,2)		0	1
Data for signalized intersections only:		--	--
Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3]		0	
Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3]		--	
Type of left-turn signal phasing for Leg #1		Permissive	
Type of left-turn signal phasing for Leg #2		--	
Type of left-turn signal phasing for Leg #3		--	
Type of left-turn signal phasing for Leg #4 (if applicable)		--	
Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3]		0	
Intersection red light cameras (present/not present)		Not Present	
Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only			
Maximum number of lanes crossed by a pedestrian (n_{lanesx})		--	
Number of bus stops within 300 m (1,000 ft) of the intersection		0	
Schools within 300 m (1,000 ft) of the intersection (present/not present)		Not Present	
Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection		0	

Worksheet 7B -- Crash Modification Factors for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CMF for Left-Turn Lanes	CMF for Left-Turn Signal Phasing	CMF for Right-Turn Lanes	CMF for Right Turn on Red	CMF for Lighting	CMF for Red Light Cameras	Combined CMF
CMF 1i	*CMF 2i*	*CMF 3i*	*CMF 4i*	*CMF 5i*	*CMF 6i*	*CMF $_{COMB}$*
from Table 12-24	from Table 12-25	from Table 12-26	from Equation 12-35	from Equation 12-36	from Equation 12-37	(1)*(2)*(3)*(4)*(5)*(6)
1.00	1.00	0.86	1.00	0.91	0.97	0.76

Worksheet 7C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bimv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bimv}**
	from Table 12-10			from Table 12-10	from Equation 12-21		$(4)_{TOTAL}$*(5)	(7) from Worksheet 7B		(6)*(7)*(8)
	a	b	c							
Total	-8.90	0.82	0.25	0.40	2.332	1.000	2.332	0.76	1.00	1.778
Fatal and Injury (FI)	-11.13	0.93	0.28	0.48	0.899	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.383	0.893	0.76	1.00	0.681
Property Damage Only (PDO)	-8.74	0.77	0.23	0.40	1.449	$(5)_{TOTAL}-(5)_{FI}$ = 0.617	1.439	0.76	1.00	1.097

Worksheet 7D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bimv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bimv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)**
	from Table 12-11	(9)FI from Worksheet 7C	from Table 12-11	(9)PDO from Worksheet 7C	(9)PDO from Worksheet 7C
Total	1.000	0.681	1.000	1.097	1.778
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.338	0.230	0.374	0.410	0.640
Head-on collision	0.041	0.028	0.030	0.033	0.061
Angle collision	0.440	0.299	0.335	0.368	0.667
Sideswipe	0.121	0.082	0.044	0.048	0.131
Other multiple-vehicle collision	0.060	0.041	0.217	0.238	0.279

Worksheet 7E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**			**Overdispersion Parameter, k**	**Initial N_{bisv}**	**Proportion of Total Crashes**	**Adjusted N_{bimv}**	**Combined CMFs**	**Calibration Factor, C_i**	**Predicted N_{bisv}**
	from Table 12-12			from Table 12-12	from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27		$(4)_{TOTAL}$*(5)	(7) from Worksheet 7B		(6)*(7)*(8)
	a	b	c							
Total	-5.33	0.33	0.12	0.65	0.290	1.000	0.290	0.76	1.00	0.221
Fatal and Injury (FI)	--	--	--	--	0.081	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.273	0.079	0.76	1.00	0.060
Property Damage Only (PDO)	-7.04	0.36	0.25	0.54	0.216	$(5)_{TOTAL}-(5)_{FI}$ = 0.727	0.211	0.76	1.00	0.161

Worksheet 7F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{bisv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{bisv\ (PDO)}$ (crashes/year)**	**Predicted N $_{bisv\ (TOTAL)}$ (crashes/year)**
	from Table 12-13	(9)FI from Worksheet 7E	from Table 12-13	(9)PDO from Worksheet 7E	(9)PDO from Worksheet 7E
Total	1.000	0.060	1.000	0.161	0.221
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with parked vehicle	0.001	0.000	0.001	0.000	0.000
Collision with animal	0.001	0.000	0.026	0.004	0.004
Collision with fixed object	0.679	0.041	0.847	0.136	0.177
Collision with other object	0.089	0.005	0.070	0.011	0.017
Other single-vehicle collision	0.051	0.003	0.007	0.001	0.004
Single-vehicle noncollision	0.179	0.011	0.049	0.008	0.019

Worksheet 7G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{pedi}**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	(9) from Worksheet 7C	(9) from Worksheet 7E	(2) + (3)	from Table 12-16		(4)*(5)*(6)
Total	1.778	0.221	1.999	0.022	1.00	0.044
Fatal and injury (FI)	--	--	--	--	1.00	0.044

Worksheet 7H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)	(3)	(4)
CMF for Bus Stops	CMF for Schools	CMF for Alcohol Sales Establishments	Combined CMF
CMF_{1p}	CMF_{2p}	CMF_{3p}	
from Table 12-28	from Table 12-29	from Table 12-30	(1)*(2)*(3)
--	--	--	--

Worksheet 7I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

(1)	(2)					(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**SPF Coefficients**					**Overdispersion Parameter, k**	**$N_{pedbase}$**	**Combined CMF**	**Calibration factor, C_i**	**Predicted N_{pedi}**
	from Table 12-14						from Equation 12-29	(4) from Worksheet 7H		(4)*(5)*(6)
	a	b	c	d	e					
Total	--	--	--	--	--	--	--	--	1.00	--
Fatal and Injury (FI)	--	--	--	--	--	--	--	--	1.00	--

Worksheet 7J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Predicted N_{bimv}**	**Predicted N_{bisv}**	**Predicted N_{bi}**	**f_{bikei}**	**Calibration factor, C_i**	**Predicted N_{bikei}**
	(9) from Worksheet 7C	(9) from Worksheet 7E	(2) + (3)	from Table 12-17		(4)*(5)*(6)
Total	1.778	0.221	1.999	0.018	1.00	0.036
Fatal and injury (FI)	--	--	--	--	1.00	0.036

Worksheet 7K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections

(1)	(2)	(3)	(4)
	Fatal and injury (FI)	**Property damage only (PDO)**	**Total**
Collision type	(3) from Worksheet 7D and 2F; (7) from 2G or 2I and 2J	(5) from Worksheet 7D and 2F	(6) from Worksheet 7D and 2F; (7) from 2G or 2I and 2J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 7D)	0.230	0.410	0.640
Head-on collisions (from Worksheet 7D)	0.028	0.033	0.061
Angle collisions (from Worksheet 7D)	0.299	0.368	0.667
Sideswipe (from Worksheet 7D)	0.082	0.048	0.131
Other multiple-vehicle collision (from Worksheet 7D)	0.041	0.238	0.279
Subtotal	0.681	1.097	1.778
SINGLE-VEHICLE			
Collision with parked vehicle (from Worksheet 7F)	0.000	0.000	0.000
Collision with animal (from Worksheet 7F)	0.000	0.004	0.004
Collision with fixed object (from Worksheet 7F)	0.041	0.136	0.177
Collision with other object (from Worksheet 7F)	0.005	0.011	0.017
Other single-vehicle collision (from Worksheet 7F)	0.003	0.001	0.004
Single-vehicle noncollision (from Worksheet 7F)	0.011	0.008	0.019
Collision with pedestrian (from Worksheet 7G or 2I)	0.044	0.000	0.044
Collision with bicycle (from Worksheet 7J)	0.036	0.000	0.036
Subtotal	0.140	0.161	0.301
Total	0.821	1.258	2.079

Worksheet 7L -- Summary Results for Urban and Suburban Arterial Intersections

(1)	(2)
Crash severity level	**Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)**
	(Total) from Worksheet 7K
Total	2.1
Fatal and injury (FI)	0.8
Property damage only (PDO)	1.3

Worksheet 8A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	Lufeng Lin	Roadway	Lincoln Ave
Agency or Company	Fehr and Peers	Roadway Section	Lincoln Avenue along the current school frontage
Date Performed	05/20/20	Jurisdiction	Oakland, CA, USA
		Analysis Year	2020

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	2U
Length of segment, L (mi)		--	0.05
AADT (veh/day)	$AADT_{MAX}$ = 32,600 (veh/day)	--	8,360
Type of on-street parking (none/parallel/angle)		None	Parallel (Comm/Ind)
Proportion of curb length with on-street parking		--	1
Median width (ft) - for divided only		15	Not Present
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	0
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	2
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed 30 mph or Lower
Roadside fixed object density (fixed objects / mi)		0	284
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	8
Calibration Factor, Cr		1.00	1.00

Worksheet 8B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
2.07	2.61	1.00	0.93	1.00	5.04

Worksheet 8C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 8B		(6)*(7)*(8)
	a	b							
Total	-15.22	1.68	0.84	0.048	1.000	0.048	5.04	1.00	0.240
Fatal and Injury (FI)	-16.22	1.66	0.65	0.015	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.295	0.014	5.04	1.00	0.071
Property Damage Only (PDO)	-15.62	1.69	0.87	0.035	$(5)_{TOTAL}-(5)_{FI}$ = 0.705	0.034	5.04	1.00	0.169

Worksheet 8D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	(9)FI from Worksheet 8C	from Table 12-4	(9)PDO from Worksheet 8C	(9)TOTAL from Worksheet 8C
Total	1.000	0.071	1.000	0.169	0.240
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.730	0.052	0.778	0.132	0.183
Head-on collision	0.068	0.005	0.004	0.001	0.005
Angle collision	0.085	0.006	0.079	0.013	0.019
Sideswipe, same direction	0.015	0.001	0.031	0.005	0.006
Sideswipe, opposite direction	0.073	0.005	0.055	0.009	0.014
Other multiple-vehicle collision	0.029	0.002	0.053	0.009	0.011

Worksheet 8E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 8B		(6)*(7)*(8)
	a	b							
Total	-5.47	0.56	0.81	0.033	1.000	0.033	5.04	1.00	0.167
Fatal and Injury (FI)	-3.96	0.23	0.50	0.008	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.240	0.008	5.04	1.00	0.040
Property Damage Only (PDO)	-6.51	0.64	0.87	0.024	$(5)_{TOTAL}-(5)_{FI}$ = 0.760	0.025	5.04	1.00	0.127

Worksheet 8F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	(9)FI from Worksheet 8E	from Table 12-6	(9)PDO from Worksheet 8E	(9)TOTAL from Worksheet 8E
Total	1.000	0.040	1.000	0.127	0.167
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.026	0.001	0.066	0.008	0.009
Collision with fixed object	0.723	0.029	0.759	0.096	0.125
Collision with other object	0.010	0.000	0.013	0.002	0.002
Other single-vehicle collision	0.241	0.010	0.162	0.021	0.030

Worksheet 8G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	0	0.158	1.000	0.000	
Minor commercial	0	0.050	1.000	0.000	
Major industrial/institutional	0	0.172	1.000	0.000	
Minor industrial/institutional	2	0.023	1.000	0.026	--
Major residential	0	0.083	1.000	0.000	
Minor residential	0	0.016	1.000	0.000	
Other	0	0.025	1.000	0.000	
Total	--	--	--	0.026	0.81

Worksheet 8H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	(5)TOTAL from Worksheet 8G	from Table 12-7	$(2)_{TOTAL}$ * (3)	(6) from Worksheet 8B		(4)*(5)*(6)
Total	0.026	1.000	0.026	5.04	1.00	0.129
Fatal and injury (FI)	--	0.323	0.008	5.04	1.00	0.042
Property damage only (PDO)	--	0.677	0.017	5.04	1.00	0.087

Worksheet 8I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 8C	(9) from Worksheet 8E	(7) from Worksheet 8H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	0.240	0.167	0.129	0.536	0.036	1.00	0.019
Fatal and injury (FI)	--	--	--	--	--	1.00	0.019

Worksheet 8J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 8C	(9) from Worksheet 8E	(7) from Worksheet 8H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	0.240	0.167	0.129	0.536	0.018	1.00	0.010
Fatal and injury (FI)	--	--	--	--	--	1.00	0.010

Worksheet 8K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 8D and 1F; (7) from Worksheet 8H; and (8) from Worksheet 8I and 1J	(5) from Worksheet 8D and 1F; and (7) from Worksheet 8H	(6) from Worksheet 8D and 1F; (7) from Worksheet 8H; and (8) from Worksheet 8I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 8D)	0.052	0.132	0.183
Head-on collisions (from Worksheet 8D)	0.005	0.001	0.005
Angle collisions (from Worksheet 8D)	0.006	0.013	0.019
Sideswipe, same direction (from Worksheet 8D)	0.001	0.005	0.006
Sideswipe, opposite direction (from Worksheet 8D)	0.005	0.009	0.014
Driveway-related collisions (from Worksheet 8H)	0.042	0.087	0.129
Other multiple-vehicle collision (from Worksheet 8D)	0.002	0.009	0.011
Subtotal	0.113	0.257	0.369
SINGLE-VEHICLE			
Collision with animal (from Worksheet 8F)	0.001	0.008	0.009
Collision with fixed object (from Worksheet 8F)	0.029	0.096	0.125
Collision with other object (from Worksheet 8F)	0.000	0.002	0.002
Other single-vehicle collision (from Worksheet 8F)	0.010	0.021	0.030
Collision with pedestrian (from Worksheet 8I)	0.019	0.000	0.019
Collision with bicycle (from Worksheet 8J)	0.010	0.000	0.010
Subtotal	0.069	0.127	0.196
Total	0.182	0.384	0.565

Worksheet 8L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 8K		(2) / (3)
Total	0.6	0.05	11.3
Fatal and injury (FI)	0.2	0.05	3.6
Property damage only (PDO)	0.4	0.05	7.7