Ukiah Traffic Analysis for Schools and Surrounding Areas

City of Ukiah

Final Report

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1. Introduction

The City of Ukiah Department of Public Works retained GHD to provide a comprehensive traffic analysis of schools in northwest Ukiah and their immediate surroundings to identify safety and congestion issues. This report presents existing conditions, needs, and recommended improvements for walking, bicycling, and driving in northwest Ukiah.

1.1 Planning and Policy Context

This report builds on previous planning efforts in the Ukiah community, helping the City fulfill its goal to improve the quality of life for residents by providing safer and better connected transportation networks (City of Ukiah Bicycle and Pedestrian Master Plan).

Two intersections in the project area have already been identified or programmed for improvements. New signal poles were recently installed at the intersection of North State Street and Low Gap Road that include left turn signal heads and allow for an eight-phase cycle. The intersection of North Bush Street and Low Gap Road has been identified as a potential roundabout location, with $115,000 funded through the City's Short-Range Improvement Program.

Recommended improvements draw from these and other existing plans, including the Ukiah Safe Routes to School Plan and the Ukiah Bicycle and Pedestrian Master Plan.

Improving multimodal connectivity, particularly near schools, is an explicit goal in several local and regional plans.

- The Mendocino County Safe Routes to School (SRTS) Program and City of Ukiah Safe Routes to School Plan both seek to improve the quality of life for students by promoting physical activity and improving air quality
- The 2017 Mendocino County Regional Transportation Plan notes a need for intersection improvements along North State Street in the study area, among other transportation improvements
- The 2017 Mendocino County Active Transportation Plan presents a regional framework for improving bicycling, walking, and transit throughout the county
- The City of Ukiah Bicycle and Pedestrian Master Plan includes policies and infrastructure recommendations to improve conditions for bicycling and walking in the City and create a better connected network for active transportation
- The City of Ukiah General Plan Circulation Element and the City of Ukiah Citywide Circulation Study provide objectives and policies related to level of service (LOS) and model existing and future circulation and operations

2. Existing Conditions

2.1 Activity Generators

Public schools located in the project area include Ukiah High School, Frank Zeek Elementary School, and Orr Creek School for Special Education. The Ukiah Adult School and Ukiah Independent Study Academy are also located in the project area, but may have atypical transportation patterns compared to other campuses.

The Ukiah Unified School District recently altered the schedule for many of the schools in their district in an attempt to alleviate congestion by staggering start times.

In addition, several Mendocino County administration facilities and offices are located in the study area. These include the Mendocino County Sheriff's Office, Juvenile Hall, and Probation Services; Mendocino County Planning and Building Services; County Administration offices; and General Services. These facilities are located primarily along the south side of Low Gap Road.

2.2 Existing Infrastructure

1. Street Network

The study area includes streets from local to arterial roadways. Regional access is provided primarily by US 101. Circulation within the study area is provided by the following streets.

North State Street is a four-lane, north-south, undivided arterial roadway that runs between Low Gap Road and Empire Drive within the study area. State Street is the primary connector between northern and southern Ukiah.

Low Gap Road is a two-lane, east-west, undivided major collector facility that runs between State Street and Despina Drive within the study area.

Despina Drive is a two-lane, north-south, undivided residential roadway that runs between Low Gap Road and Empire Drive within the study area. Despina Drive currently has a speed limit of 25 MPH.

North Bush Street is a two-lane, north-south, undivided residential roadway that runs between, Low Gap Road and Empire Drive within the study area. Frank Zeek Elementary School and the Ukiah Adult School are both present along North Bush Street.

Empire Drive is a two-lane, east-west, undivided residential roadway that runs between Despina Drive and North State Street. Empire Drive currently has a speed limit of 25 MPH.

2. Pedestrian Network

Sidewalks are present along all roadways in the study area, with no notable gaps in pedestrian facilities. In some areas, utility poles, sign posts, and other obstructions reduce the passable width of sidewalks below minimums required by the Americans with Disabilities Act (ADA). These

obstructions were primarily observed in the project area on Low Gap Road and on North State Street.

Marked crosswalks are provided along North State Street at the intersections of Empire Drive, Bricarelli Drive, and Low Gap Road. Yellow school crosswalks are marked at the following intersections:

- North State Street and Mazzoni Street
- North State Street and Magnolia Street
- North Bush Street and Low Gap Road
- North Bush Street and Arlington Drive
- Midblock on Low Gap Road near the Mendocino County Jail driveway
- Despina Drive and Low Gap Road
- Despina Drive and Capps Lane
- Despina Drive and Empire Drive

3. Bicycle Network

Class II bicycle lanes currently exist in the study area along Low Gap Road, Despina Drive, and North Bush Street. Except for a segment of Low Gap Road west of North Bush Street, all streets with bicycle lanes also have on-street parking.

At the intersection of North Bush Street and Low Gap Road, gaps are created in the bikeway network when bicycle lanes on all approaches end 100 to 250 feet before the intersection.

4. Transit Network

Mendocino Transit Authority provides transit service on two local routes within Ukiah and three regional routes that offer connections to nearby destinations. The Ukiah Unified School District also operates eleven school bus routes within the community.

Transit stops in the project area are located near each school and along North Bush Street and North State Street.

2.3 Existing Traffic Operations Analysis

1. Level of Service

Traffic operations are measured using “Level of Service” (LOS), a qualitative metric for traffic conditions. Letter grades A through F are assigned to intersections or roadway segments and represent progressively worsening traffic conditions. In general, LOS A represents free-flow conditions with very little delay, and LOS F represents over-capacity conditions with long delays and queues.

Mendocino County's *Ukiah Valley Area Plan* establishes standards for acceptable LOS that apply to multiple intersections in this project area:

- For State Routes and all Mendocino County arterials and collectors, LOS D is acceptable
- For local roads, LOS C is acceptable

The City of Ukiah General Plan includes interim standards for acceptable LOS that apply to this project:

- At signalized or all-way stop controlled intersections, LOS D is acceptable
- At intersections with stop controls only on side streets, LOS E is acceptable, except where side streets have very low traffic volumes and LOS F conditions may be acceptable

Six intersections in the study area were selected for analysis using existing traffic volumes, intersection controls, and lane geometries. Table 1 presents selected intersection operations for AM and PM peak hours under both school year and summer conditions.

Table 1: Existing Intersection Operations

#	Intersection	Control Type[1,2]	School Year				Summer			
			AM		PM		AM		PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	N State St & Empire Dr	Signal	44.4	D	35.7	D	17.6	B	22.0	C
2	N State St & Low Gap Rd	Signal	19.4	B	20.4	C	17.4	B	21.7	C
3	N Bush St & Low Gap Rd	AWSC	31.7	D	32.9	D	12.4	B	11.8	B
4	Despina Dr & Low Gap Rd	AWSC	16.9	C	15.4	C	8.1	A	7.3	A
5	Despina Dr & Capps Ln	TWSC	33.0	D	20.1	C	9.5	A	9.9	A
6	Despina Dr & Empire Dr	TWSC	22.3	C	13.3	B	9.5	A	9.0	A

As shown in Table 1, three intersections were found to operate at an unacceptable LOS during the school year:

- North State Street and Empire Drive operates at LOS D due to high eastbound left-turn volumes on Empire Drive
- North Bush Street and Low Gap Road operates at LOS D due to low peak hour factors on some movements
- Despina Drive and Capps Lane operates at LOS D due to heavy school traffic on Despina Drive making it difficult to turn off of Capps Lane

All study intersections currently operate at or above acceptable LOS during summer months, likely due to the absence of regular school-related traffic.

Additional detail on this traffic operations analysis is provided in Appendix A. Traffic counts and turning movements are documented in Appendix B, and model outputs are provided in Appendix C.

2. Queues

Due to the complex interaction between the pedestrians, vehicles, and school crossing guard at the intersections of N. Bush Street & Low Gap Road, a SimTraffic analysis was performed to determine the impact these various modes have on the circulation system. The SimTraffic model was modified to better align with what was observed in the field. Due to the limitations of the program, the AM peak hour queues reported in SimTraffic do not match the observed AM peak hour queues.

Table 2 presents the Existing School Year Queue Lengths in the AM and PM peak hours.

Table 2: Existing School Year Queue Lengths

#	Intersection/Approach	Control Type[1,2]	Existing School Year 95th Percentile Queue (ft)		Available Storage
			AM	PM	
3	N Bush St & Low Gap Rd	AWSC			
	Eastbound Left		94	145	115
	Eastbound Through/Right		227	371	
	Westbound Left		100	72	110
	Westbound Through/Right		143	119	
	Northbound Left		101	87	75
	Northbound Through		102	154	
	Northbound Right		5	88	75
	Southbound Left		59	56	105
	Southbound Through		103	110	
	Southbound Right		57	36	80
4	Despina Dr & Low Gap Rd	AWSC			
	Eastbound Left/Through		107	107	
	Westbound Through/Right		141	94	
	Southbound Left/Right		97	80	

Queues are mostly acceptable, with the exception of the eastbound through lane at the intersection of N Bush Street and Low Gap Road. The queues exceed the available storage of the turn pocket for the northbound left lane during both the AM and PM peak hour, and for the eastbound left and northbound right lanes during the PM peak hour.

Based on field observations, there are extensive queues at the above study intersections that were not reflected in the modeled queue lengths. At the intersection of N. Bush Street & Low Gap Road the eastbound, westbound, and southbound queues exceed capacity. This is largely due to the

number of pedestrians and the crossing guard. Despite the crossing guard only motioning to stop traffic in two directions, the entire intersection would stop instead, bring all traffic to a standstill while students crossed. This, coupled with slow decision-making at the intersection, greatly increased the queue length compared to what was simulated.

At the intersection of Despina Drive & Low Gap Road, there was a consistently long queue in the westbound direction. The queue in the eastbound direction did not appear until after the school had officially started and is due to the vehicles that dropped off students at the school. The long westbound queue is due to a combination of students crossing and slow decision-making at the intersection.

2.4 Collisions

Collisions at the intersections in the study area were reviewed for the period of 2011 to 2017 from both the Statewide Integrated Traffic Records System (SWITRS) and Transportation Injury Mapping System (TIMS). The collisions during this period can be summarized as follows:

1. North State Street and Empire Drive: four injury collisions, three of which involved pedestrians. One severe injury, two visible injury, one complaint of pain. There were also three property damage only collisions.
2. North State Street and Low Gap Road: four visible injury and five complain of pain collisions. In addition, nine property damage only collisions were reported.
3. North Bush Street and Low Gap Road: one property damage only collision.
4. Despina Drive and Low Gap Road: one severe injury just north of the intersection, and one property damage only collision.
5. Despina Drive and Capps Lane: one visible injury, and two complaint of pain injury collisions, both of which involved pedestrians.
6. Despina Drive and Empire Drive: one property damage only collision.

3. Needs & Recommendations

Recommended infrastructure improvements are described in the following chapter, along with a summary of the challenge or concern that each improvement is intended to address. Recommendations are organized by numbered locations that correspond to intersection numbers from Table 1 and add additional numbers for other spot or corridor locations.

Figure 1 on the following page presents a concept-level overview of recommended improvements. Where applicable, designs for individual recommendations are provided in additional detail. These detailed concepts are also presented in Appendix D.

Figure 1:
Ukiah School Improvement Map
DRAFT

1 North State Street at Empire Drive and at Brush Street

2
- Improvements are part of the North State Street Study Project

3 North Bush Street and Low Gap Road
- Consider installing a single-lane roundabout or traffic signal

4 Despina Drive and Low Gap Road
- Consider installing a single-lane roundabout or traffic signal

5 Despina Drive and Capps Lane
- Install curb extensions on all corners, including between the two crosswalks on the west side of the intersection
- Upgrade marked crosswalks to yellow high visibility crosswalks
- Improve pedestrian gate and path onto school campus to meet ADA accessibility standards

6 Despina Drive and Empire Drive
- Install curb extensions on both ends of east and south leg marked crosswalks
- Upgrade marked crosswalks to yellow high visibility crosswalks

7 Empire Drive
- Install Class III Bicycle Route signs every 300-500 feet

8 Low Gap Road
- Install Class II Buffered Bicycle Lanes

9 North Bush Street near Arlington Drive
- Install curb extension on the west side of the intersection
- Upgrade marked crosswalks at intersection to yellow high visibility crosswalks
- Mark yellow high visibility crosswalks across school driveways south of Arlington Drive

10 Ukiah High School Parking Lot
- Mark yellow high visibility crosswalk across all driveways
- Install green conflict markings for bicycle lanes at driveways
- Mark yellow high visibility crosswalk and install RRFB at pedestrian pathway

0 250 500 Feet

GHD

3.1 Recommended Improvements

1. North State Street at Empire Drive

Improvements are being developed at this location as part of the North State Street Study Project.

2. North State Street at Brush Street

Improvements are being developed at this location as part of the North State Street Study Project.

3. North Bush Street at Low Gap Road

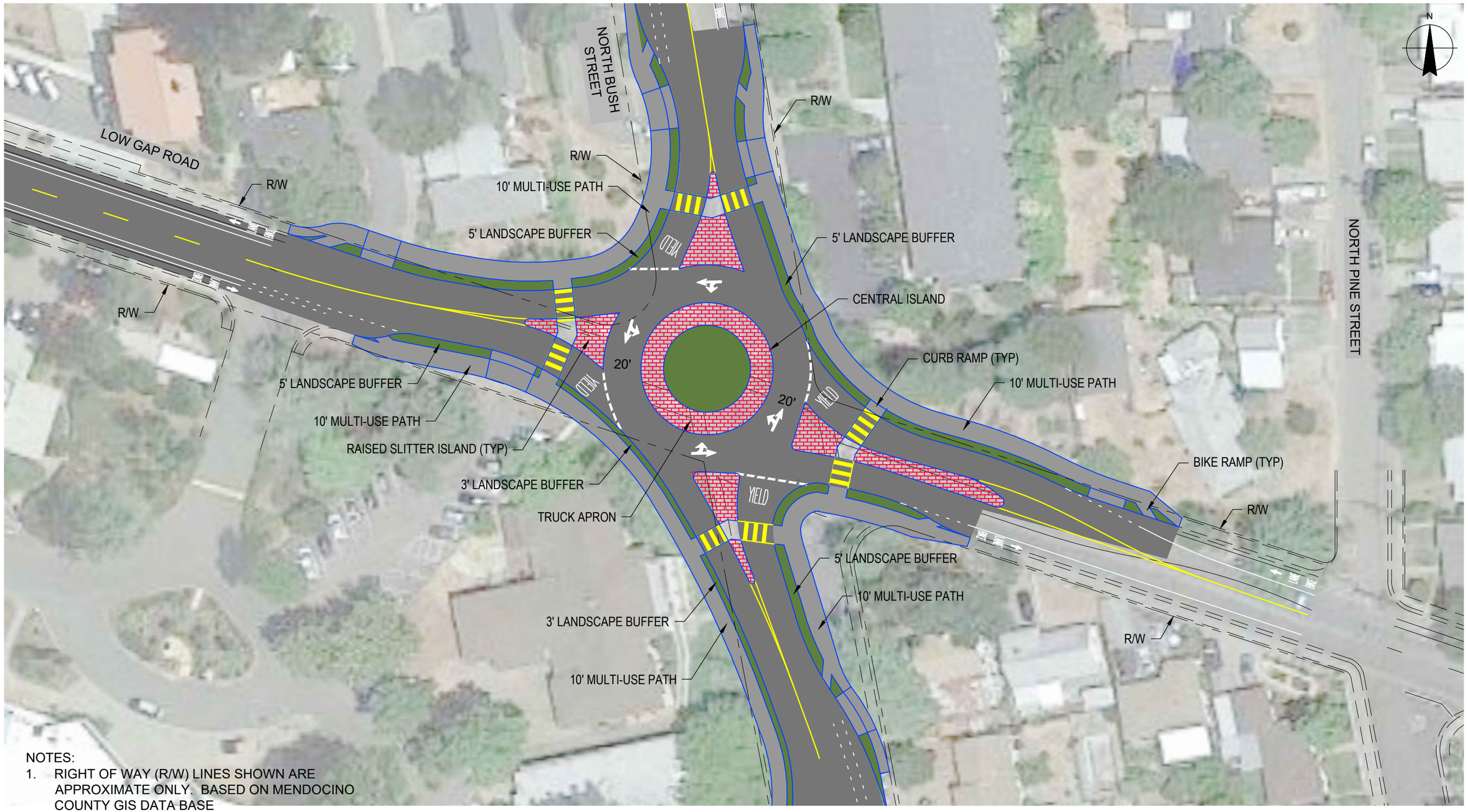
Challenges

Yellow transverse crosswalks are marked on all legs of the intersection, and all approaches are stop controlled. On the northwest side of the intersection, a pedestrian refuge “pork chop” exists between the southbound right turn and through lanes.

There is sufficient pedestrian traffic during morning and afternoon periods, and sufficient vehicular traffic, to have a crossing guard stationed at the northwest corner of the intersection. The current crossing guard typically crosses both the north east/west leg and the west north/south leg, waiting on the “pork chop.” Morning and afternoon queueing have been documented.

Recommendations

- A single lane roundabout is recommended to improve circulation and reduce queueing. This improvement will also reduce conflict points for pedestrians crossing the intersection, and reduce the crossing distance at any one time. See Figure 2.
- A traffic signal was considered at this location, but is not the preferred alternative at this time. Analysis of traffic operations with a signal at this location is included in Appendix C.



NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #3
IMPROVEMENTS CONCEPT
ROUNDABOUT

50' 0 50'
1 inch = 50 ft.

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City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.12.19**

FIGURE 2

Source:

Filename: K:\PRJ\2506\2506EX001.dwg Plot Date: 20 December 2019 - 11:13 AM

4. Despina Drive at Low Gap Road

Challenges

Yellow transverse crosswalks exist on the eastern and northern legs of this intersection; a yellow crosswalk with zebra markings is located on the western leg. All three approaches are stop controlled. A single diagonal curb ramp exists at each northern corner, and a single perpendicular curb ramp exists on both south corner.

The northwest corner, at the High School parking lot, allows for unconstrained turning movements and provides enough room for right turning vehicles to pull alongside left turning vehicles.

Recommendations

- A single lane roundabout is recommended to improve circulation and reduce queueing. This improvement will also reduce conflict points for pedestrians crossing the intersection, and reduce the crossing distance at any one time. See Figure 3.
- Alternately, curb extensions and/or a traffic signal could be installed at this intersection. See Figure 4 and Figure 5. Appendix C presents analysis of traffic operations at this intersection if a signal were installed. Average delay would be reduced from 31.7 seconds to 26 seconds in the AM peak hour and from 32.9 seconds to 22.7 seconds in the PM peak hour, coinciding with a change in LOS from D to C for both AM and PM. Appendix E presents the signal timing sheet for the signal alternative.

INTERSECTION #4
IMPROVEMENTS CONCEPT
ROUNDABOUT

50' 0 50'
1 inch = 50 ft.

City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.19.19**

FIGURE 3

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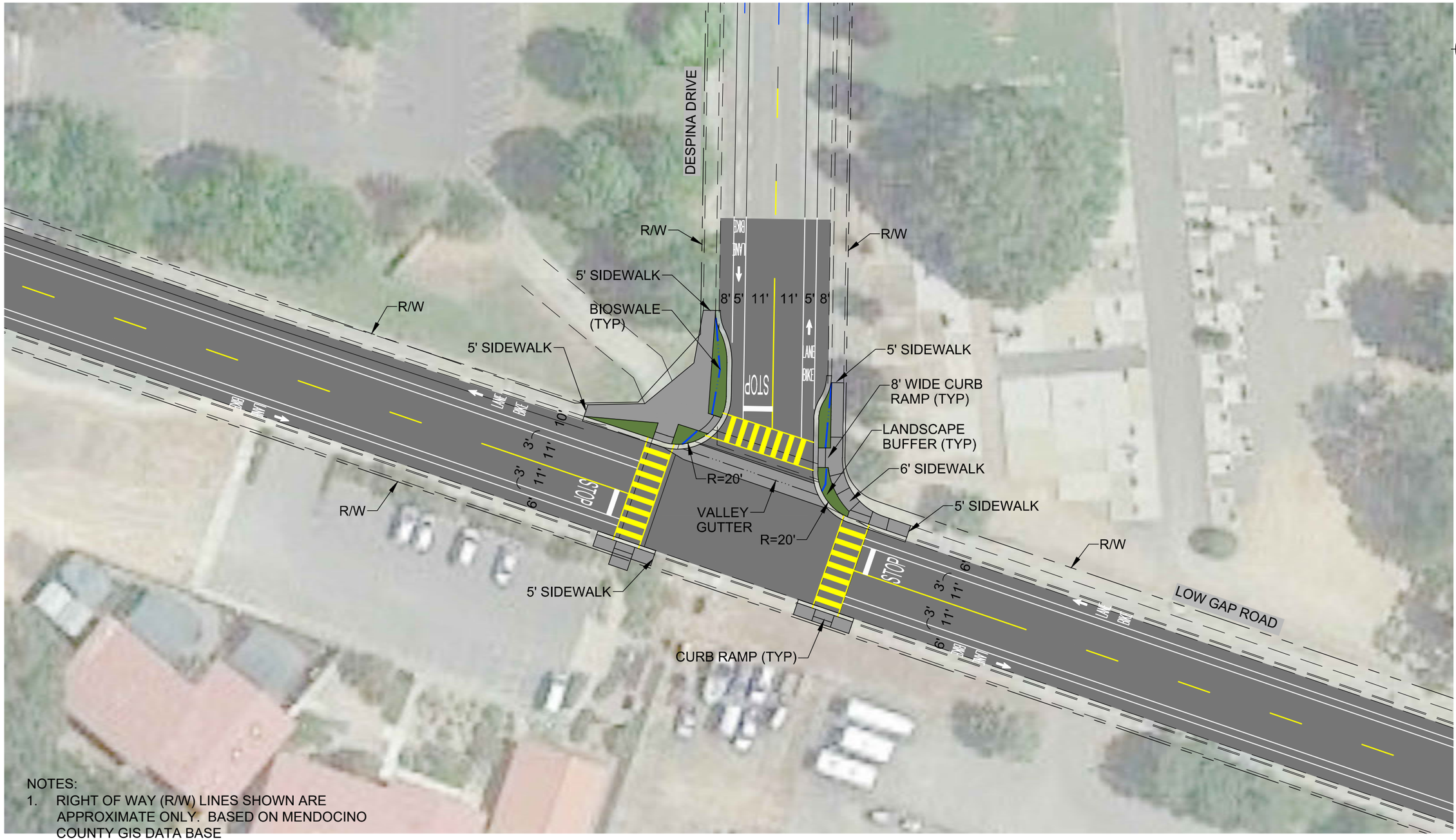

NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #4
IMPROVEMENTS CONCEPT
CURB EXTENSIONS

40' 0 40'
1 inch = 40 ft.

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City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. 11176246
Report No.
Date 12.24.19

FIGURE 4

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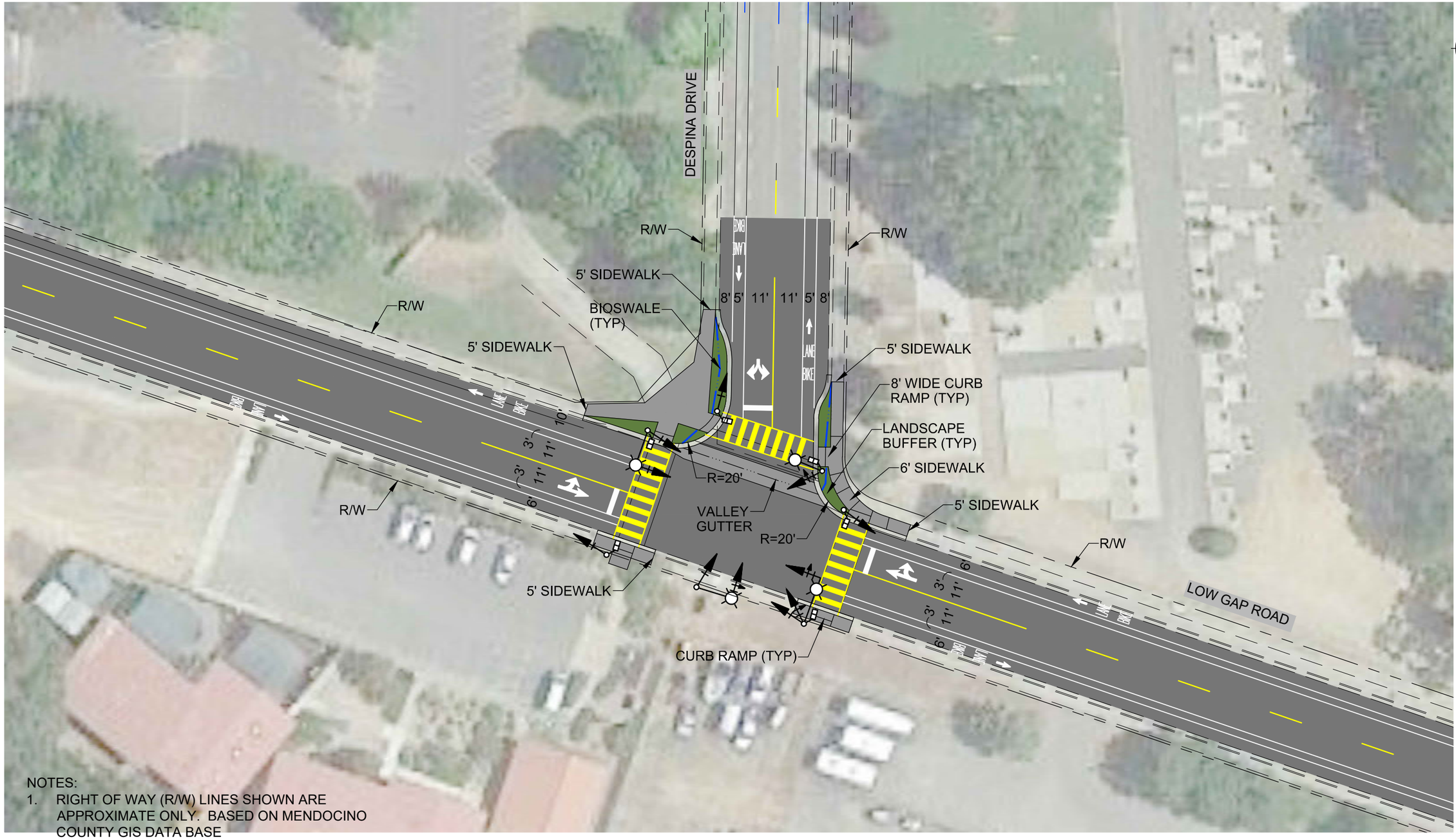

NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #4
IMPROVEMENTS CONCEPT
CURB EXTENSIONS / TRAFFIC SIGNAL

40' 0 40'
1 inch = 40 ft.

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City of Ukiah
Ukiah Traffic Analysis for Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.19.19**

FIGURE 5

Filename: K:\PRJ\2506\2506EX002.dwg Plot Date: 24 December 2019 - 11:01 AM

Source:

5. Despina Drive at Capps Lane

Challenges

Yellow transverse crosswalks are marked on all three legs of this intersection. Only the Capps Lane approach is controlled with a stop sign.

There is a narrow gap in the school fence on the west side of this intersection which is heavily used by students walking onto the campus. An unpaved path has been worn into the field.

Parents dropping off and picking up students also use this school access. Existing on-street parking on Despina Drive provides a place for drivers to pull over while students enter and exit vehicles, but can also create conflicts and visibility challenges for pedestrians crossing Despina Drive.

Recommendations

- Install curb extensions on all corners of the intersection, including a large curb extension spanning both crosswalks on the west side of the intersection. This will improve visibility between drivers and pedestrians, reduce pedestrian exposure by shortening crossing distances, and will discourage passenger loading and unloading in the intersection. See Figure 6.
- Upgrade the existing marked crosswalks to yellow high visibility crosswalks. This will enhance conspicuity of the intersection for oncoming drivers.
- Improve the pedestrian gate and unpaved path to meet standards for ADA accessibility and Class I shared use paths. Although bicycling is unlikely to be permitted on this path, these improvements will provide a safer and more accessible path onto campus for pedestrians. Paving the pathway will also support walking to school during winter months when rain may make an unpaved path impassable.

6. Despina Drive at Empire Drive

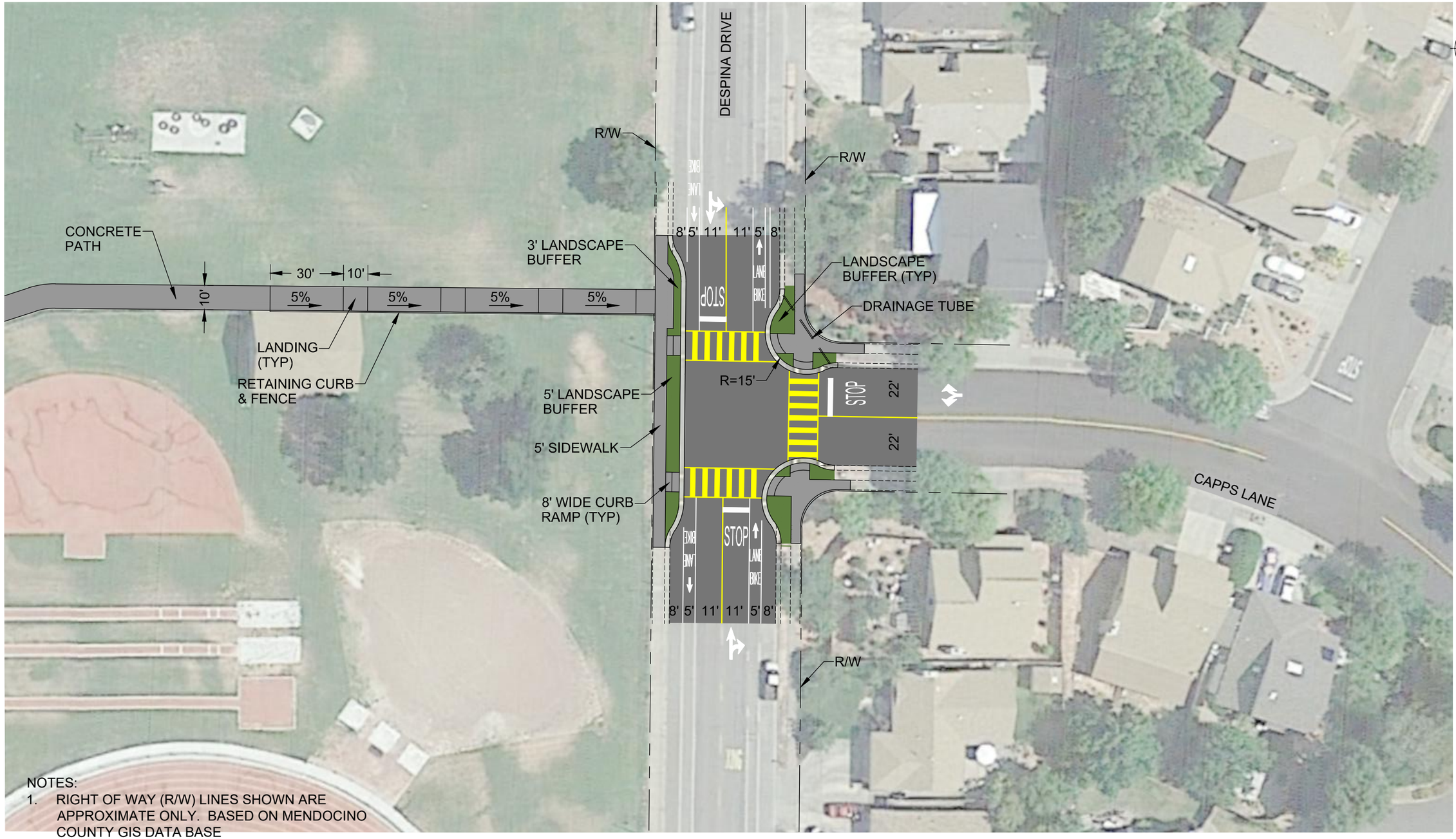
Challenges

Yellow transverse crosswalks are marked on the east and south legs of this T-intersection. Only the Empire Drive approach is controlled by a stop sign. A single diagonal curb ramp is provided on each of the northeast and southeast corners, but no curb ramp is provided to access the sidewalk on the west side of Despina Drive.

Existing on-street parking on Despina Drive provides a place for drivers to pull over while students enter and exit vehicles, but can also create conflicts and visibility challenges for pedestrians crossing Despina Drive at this location.

Recommendations

- Install curb extensions at each end of the crosswalks on the east and south legs of the intersection. This will improve visibility between drivers and pedestrians and reduce pedestrian exposure by shortening crossing distances.
- Upgrade the existing marked crosswalks to yellow high visibility crosswalks. This will enhance conspicuity of the intersection for oncoming drivers.



NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #5 IMPROVEMENTS CONCEPT CURB EXTENSIONS

40' 0 40'
1 inch = 40 ft.

City of Ukiah
Ukiah Traffic Analysis for Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.24.19**

FIGURE 6

Filename: K:\PRJ\2506\2506EX002.dwg Plot Date: 24 December 2019 - 11:01 AM

Source:

7. Empire Drive

Challenges

Ukiah has few designated bicycle facilities, but Class II bicycle lanes exist on both Despina Drive and Bush Street. The nearest east-west bicycle facility connecting these streets is Low Gap Road, which may be uncomfortable for some bicyclists due to its higher speeds and traffic volumes.

Recommendations

- Implement a Class III bicycle route on Empire Drive from Despina Drive to State Street. This will provide a bicycle connection on a quiet, low-stress street for students traveling to schools in the area.

8. Low Gap Road

Challenges

Class II bicycle lanes currently exist on Low Gap Road through the project area, which are relatively narrow and offer little separation between bicyclists and traffic. The posted speed limit on Low Gap Road is 30 mph, with the 85th percentile surveyed at 33 mph. Multiple schools, community buildings, and businesses have driveway access off of Low Gap Road, which creates potential conflicts between bicyclists and drivers turning in or out of driveways.

Recommendations

- Upgrade existing bicycle lanes to Class II buffered bicycle lanes. This will improve comfort for bicyclists by providing additional separation from moving traffic, and may have a traffic calming effect by narrowing the width of vehicle lanes.
- Highlight bicycle lanes with green markings where they cross driveways. This will increase visibility of the bicycle lane for drivers and reinforce that drivers turning across the bicycle lane must yield the right of way to bicyclists.

9. North Bush Street near Arlington Drive

Challenges

Yellow transverse crosswalks are marked on all three legs of this intersection. All three approaches are controlled with stop signs. The west side of this intersection is a driveway providing access for school buses to drop off and pick up students. The curb on the west side of Bush Street is marked red and parking is prohibited within the intersection and approximately 50 feet to the north and south.

In addition to the school bus driveway located at the Arlington Drive intersection, three other driveways south of Arlington Drive provide access to the school's parking lots. Each of these creates a potential conflict with pedestrians walking along the sidewalk.

Recommendations

- Install curb extensions on the west end of both crosswalks on the west side of the intersection. This will improve visibility between drivers and pedestrians, reduce pedestrian exposure by shortening crossing distances, and will discourage passenger loading and unloading in the intersection while preserving bus access to the bus loop driveway.
- Upgrade the existing marked crosswalks to yellow high visibility crosswalks. This will enhance conspicuity of the intersection for oncoming drivers.
- Mark yellow high visibility crosswalks across driveways. This will enhance visibility of pedestrians for drivers entering or exiting driveways.

10. Ukiah High School Parking Lots

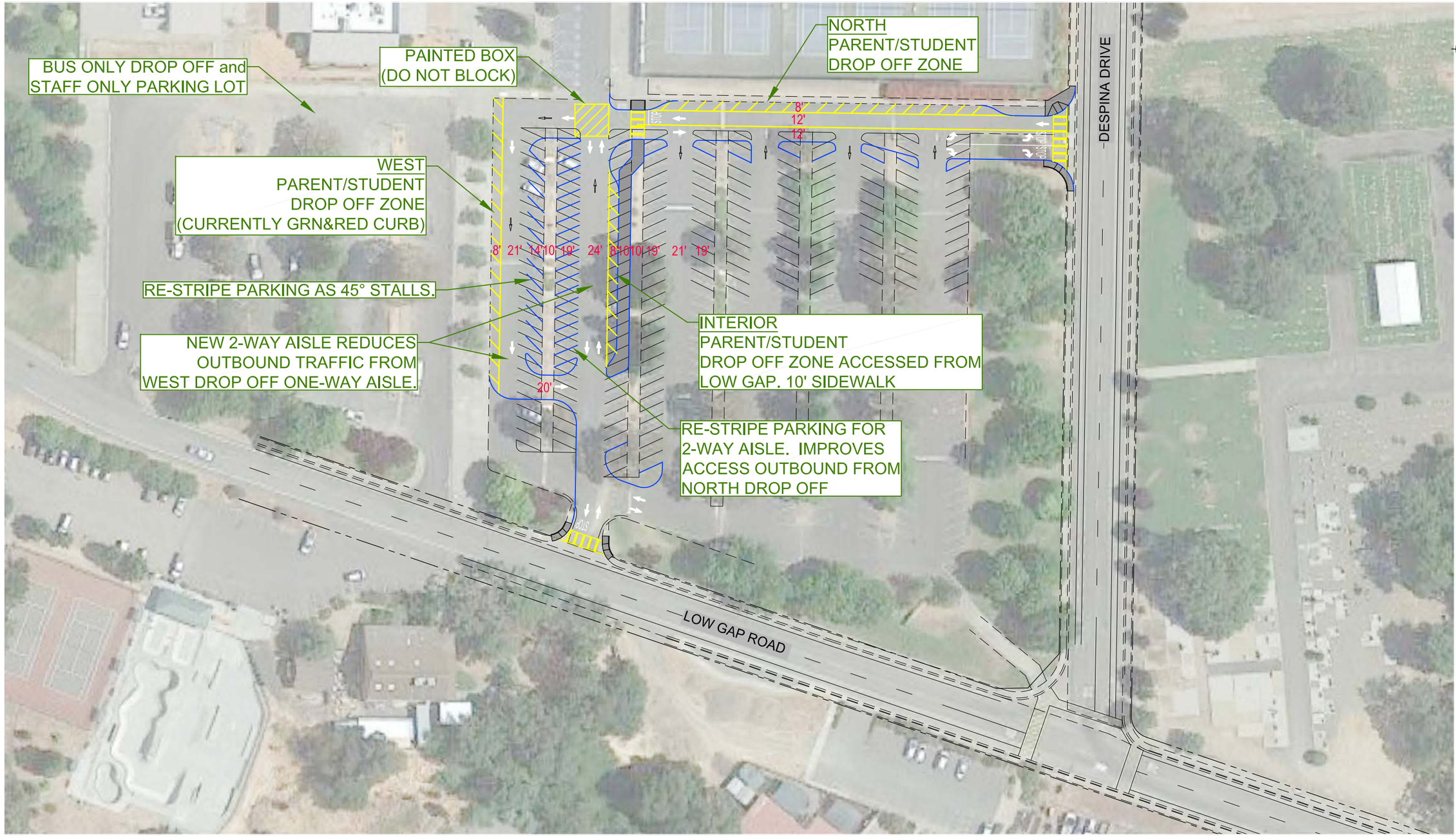
Challenges

Four driveways off Despina Drive and Low Gap Road provide access to staff and student parking lots at Ukiah High School. Each of these creates a potential conflict with pedestrians walking along the sidewalk and bicyclists traveling in bicycle lanes. A skate park located south of Low Gap Road has created demand for a crossing from the school, but no crosswalk exists. This contributes to students darting across the roadway.

In addition, vehicle circulation within the student and visitor parking lot at the corner of Low Gap Road and Despina Drive is currently challenging at congested school arrival and dismissal times. The high school has a mix of students who drive themselves to school and students who are dropped off by a parent or other adult. Long queues form at the exit driveways, exacerbated by queues on both Low Gap Road and Despina Drive that form at the stop-controlled intersection. Within the parking lot, exiting drivers are currently funneled to routes that conflict with drivers accessing drop-off areas. Large sections of curb are currently marked red and parking is prohibited, contributing to underutilized curb space for drop-off that could facilitate smoother operations.

Recommendations

- Reconfigure internal parking lot circulation and student drop-off as shown in Figure 7.
- Mark yellow high visibility crosswalks across driveways. This will enhance visibility of pedestrians for drivers entering or exiting driveways.
- Highlight bicycle lanes with green markings where they cross driveways. This will increase visibility of the bicycle lane for drivers and reinforce that drivers turning across the bicycle lane must yield the right of way to bicyclists.
- Mark a yellow high visibility crosswalk and install a rectangular rapid flashing beacon (RRFB) across Low Gap Road aligned with the pedestrian path on the high school campus and the skate park. This will increase visibility of pedestrians crossing the road and encourage crossings to occur at a single designated location.
- This configuration will result in a net loss of 53 parking spaces, which should be within the typical amount of unused spaces in the lot on a daily basis.



PARKING LOT
IMPROVEMENT CONCEPT
UKIAH HIGH SCHOOL

80' 0 80'
1 inch = 80 ft.

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Ukiah Traffic Analysis for
Schools and Surrounding Areas

PARKING LOT CONCEPT
UKIAH HIGH SCHOOL

Project No. 11176246
Report No.
Date 2.6.2020

FIGURE 7

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Source:

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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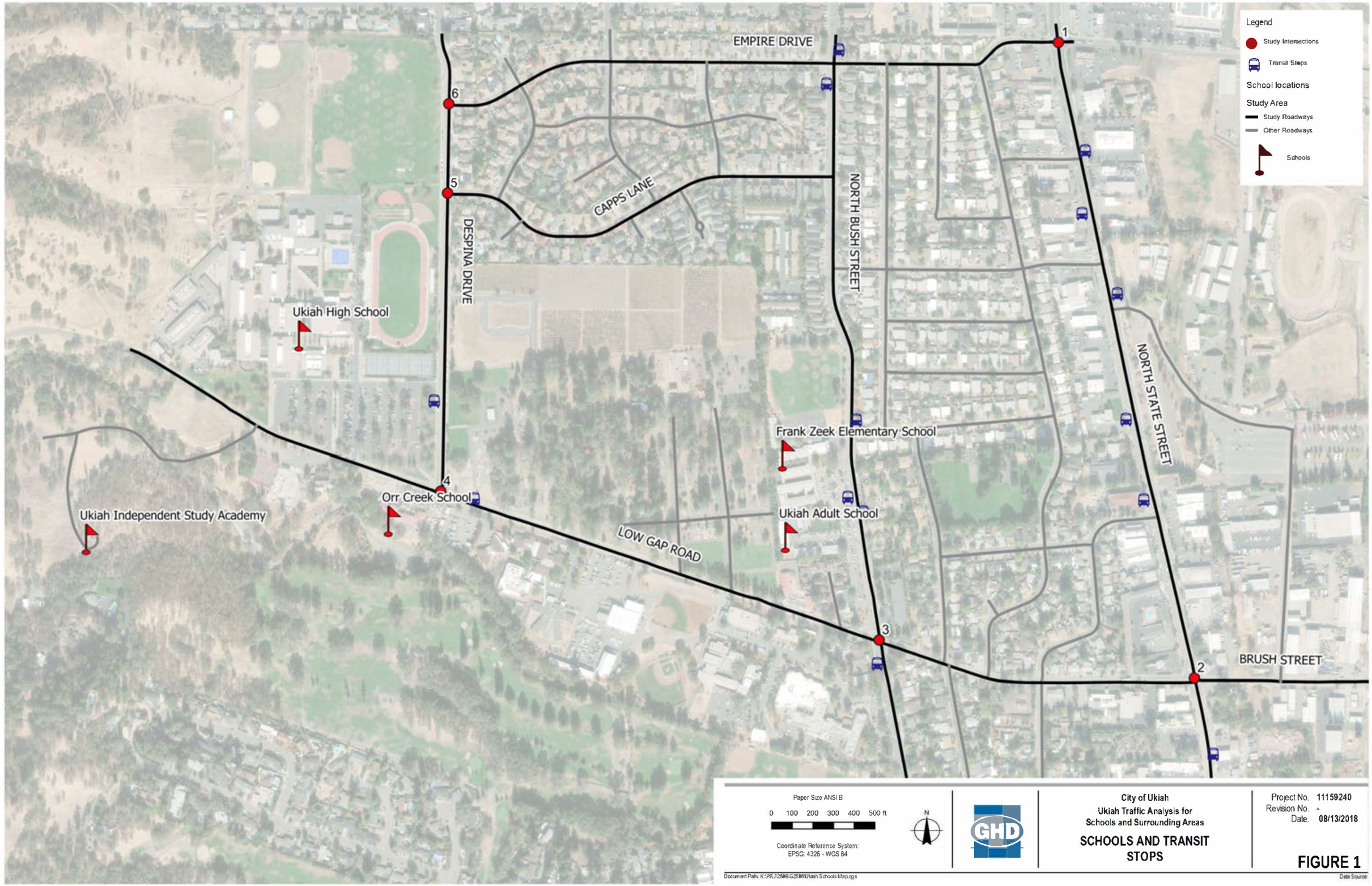
Appendix A: Traffic Operations Analysis Figures



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Ukiah Traffic Analysis for
Schools and Surrounding Areas

SCHOOLS AND TRANSIT STOPS

Project No. 11159240
Revision No. -
Date. 08/13/2018

FIGURE 1

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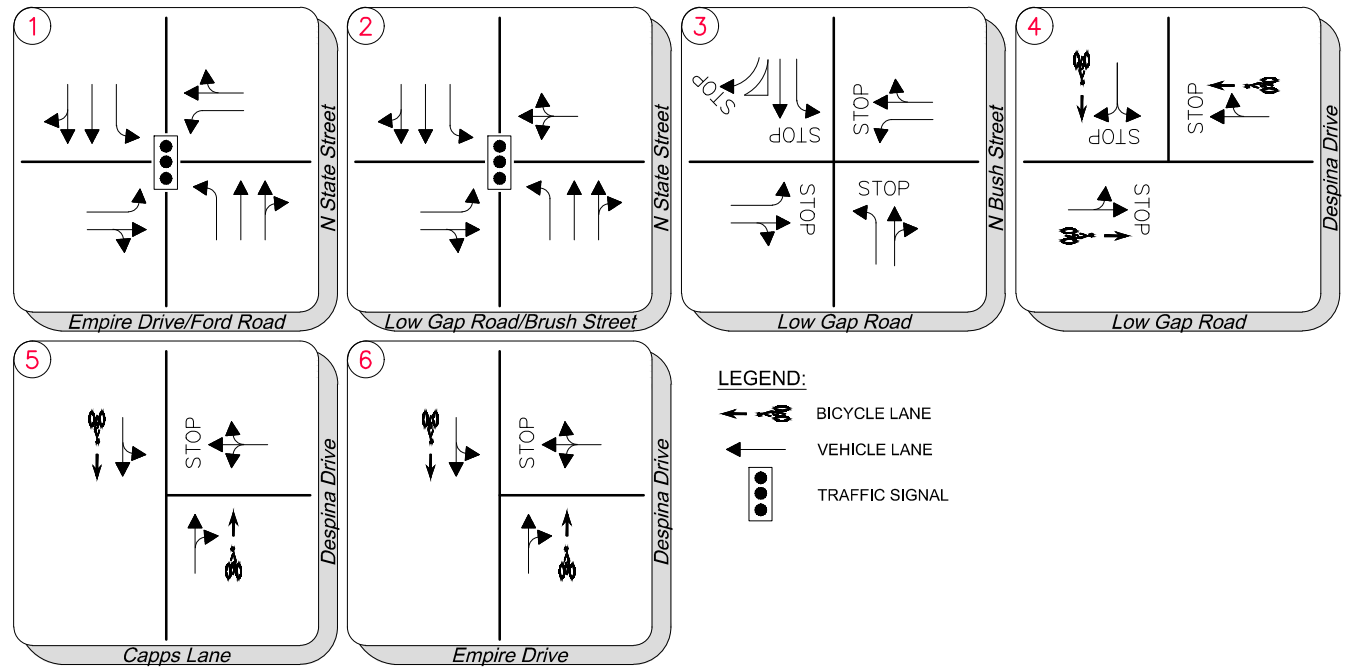

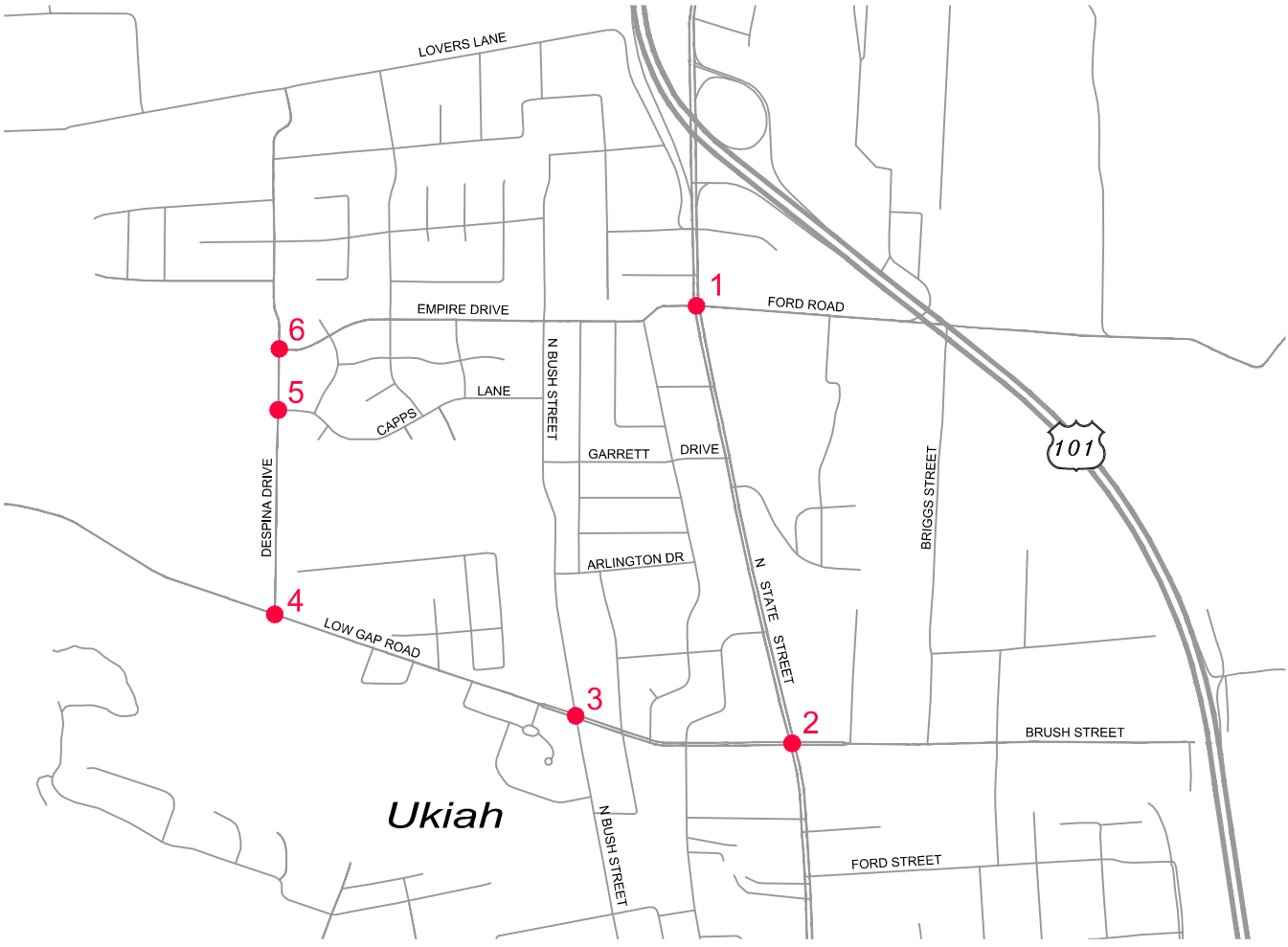

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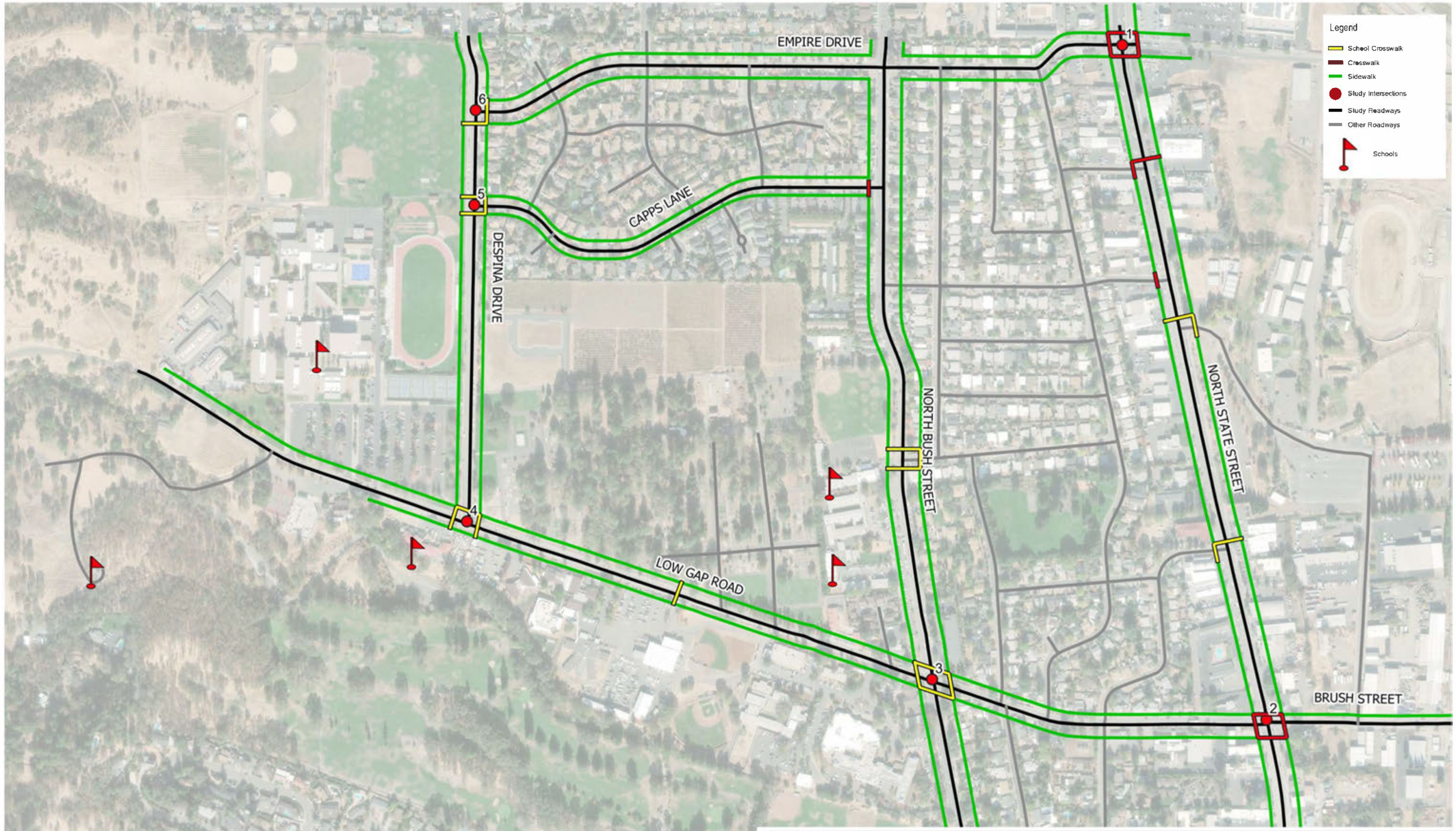
City of Ukiah
TRAFFIC ANALYSIS FOR SCHOOLS & SURROUNDING AREA

EXISTING LANE GEOMETRICS AND CONTROL

Project No. 11176246
Report No. 001
Date 07.12.2018

FIGURE 2



Data Disclaimer

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** Remove only if not required by data custodian **

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EPSG: 4326 - WGS 84

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Ukiah Traffic Analysis for
Schools and Surrounding Areas

EXISTING PEDESTRIAN FACILITIES

Project No. 11159240
Revision No. -
Date. 08/13/2018

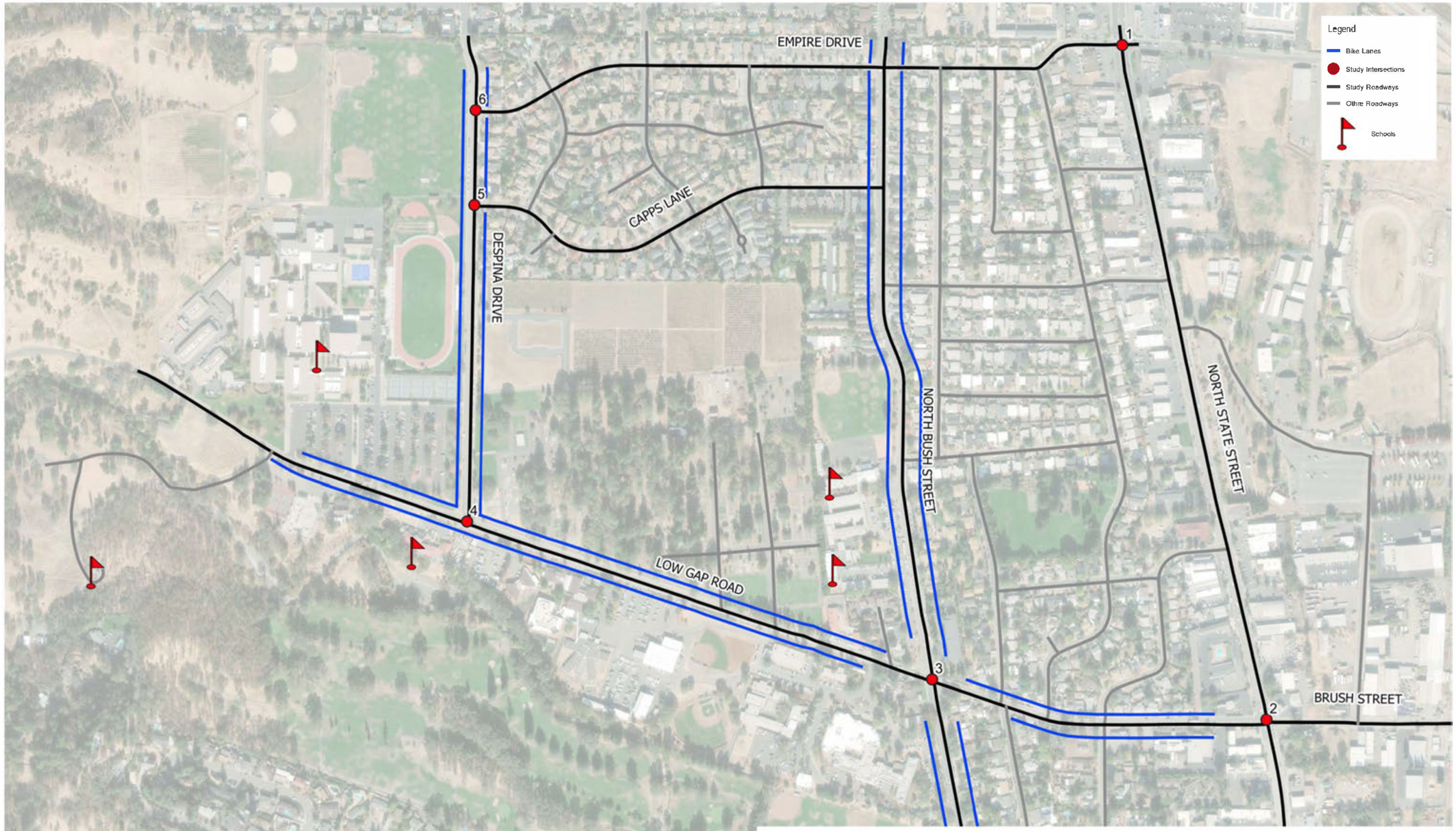
FIGURE 3

Document Path: K:\PRJ\2509\G2508\Ukiah Schools Map.qgs

Data Source:

Print Date: Aug-13-2018

Created By: Zach Stinger



Data Disclaimer

** Insert text as required by data custodian **
** Remove only if not required by data custodian **

Paper Size ANSI B

0 100 200 300 400 500 ft

Coordinate Reference System:
EPSG: 4326 - WGS 84

N

GHD

City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

EXISTING BICYCLE FACILITIES

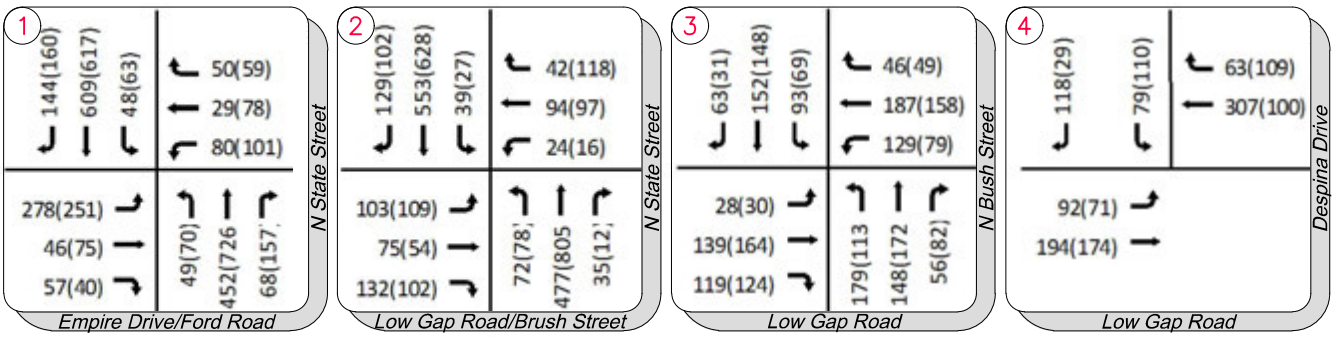
Project No. 11159240
Revision No. -
Date. 08-13-2018

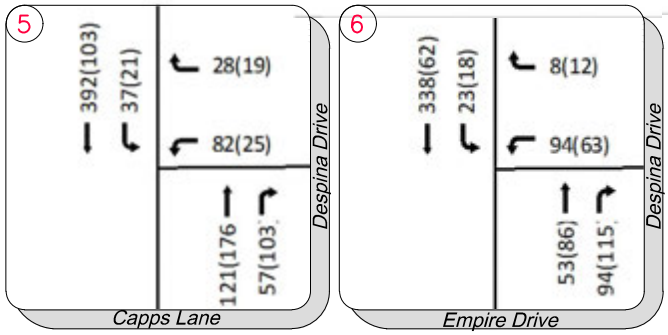
FIGURE 4

Document Path: K:\PRJ\2508\G2508\Ukiah Schools Map.qgs

Print Date: Aug-13-2018

Data Source:
Created By: Zach Stinger

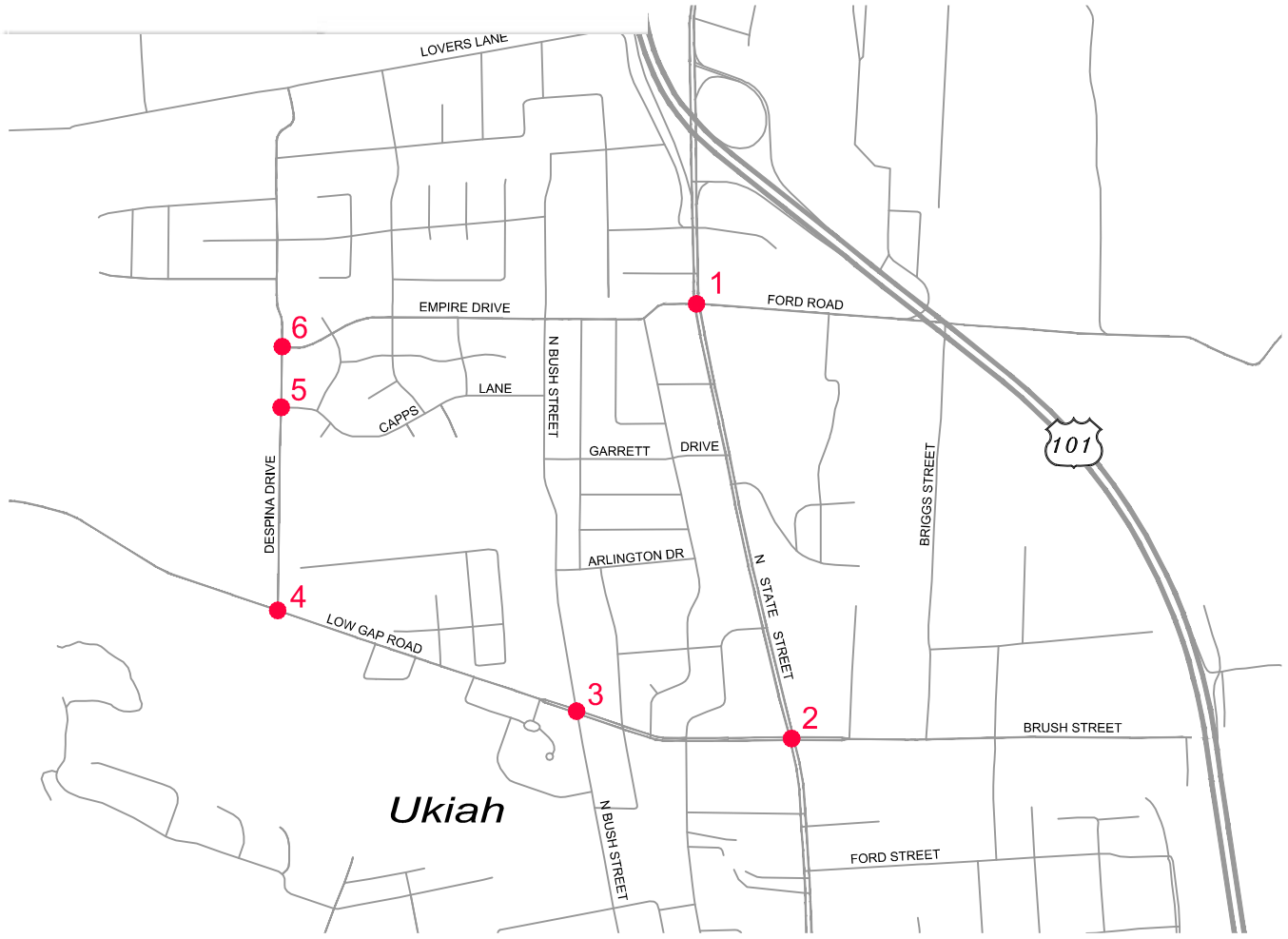




LEGEND:

XX - AM PEAK HOUR TRAFFIC VOLUMES

(XX) - PM PEAK HOUR TRAFFIC VOLUMES



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City of Ukiah
TRAFFIC ANALYSIS FOR SCHOOLS & SURROUNDING AREA

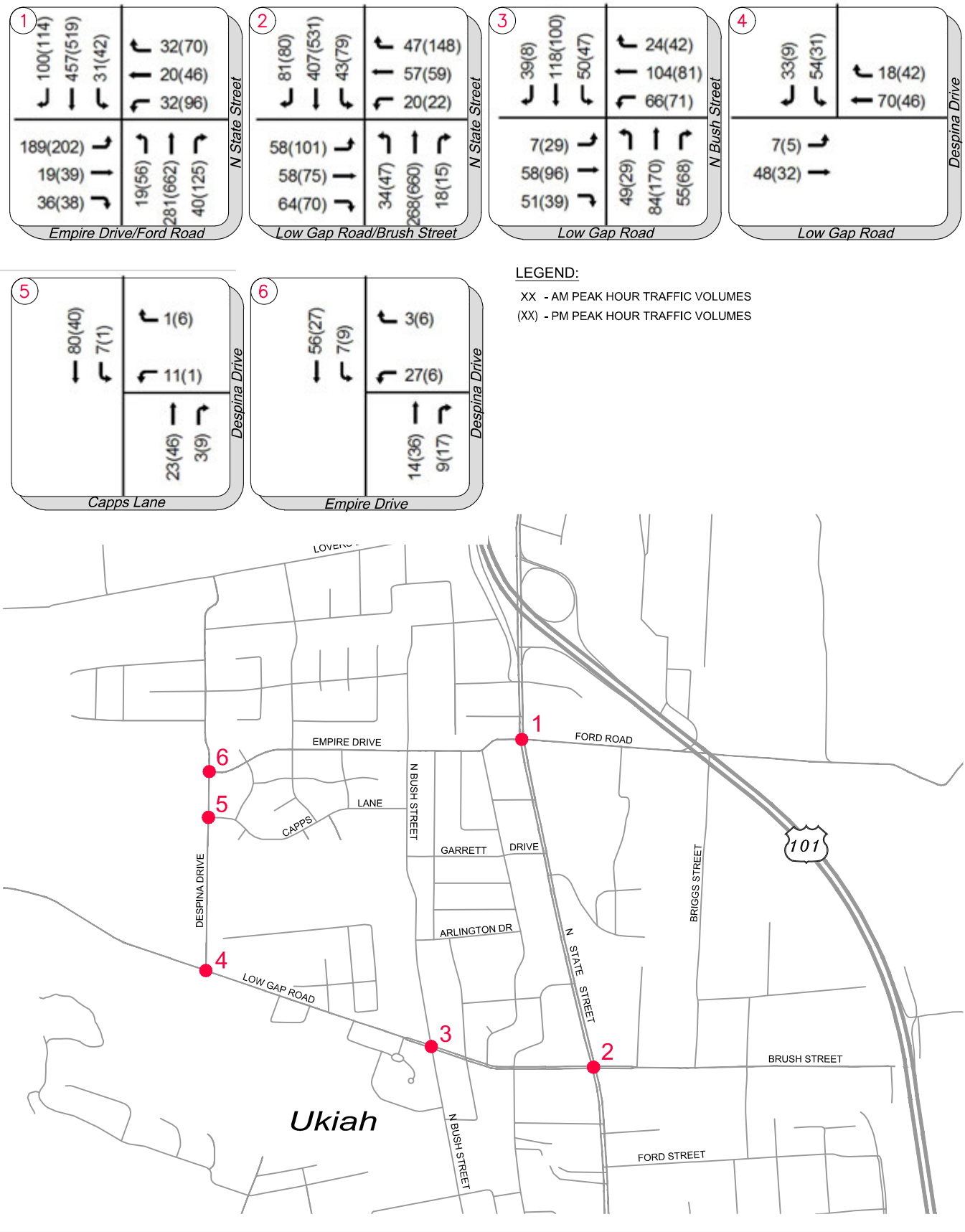
EXISTING SCHOOL YEAR PEAK HOUR TRAFFIC VOLUMES

Project No. 11176246
Report No. 001
Date 07.12.2018

FIGURE 5

Filename: K:\PRJ\2506\T2506\T2506TG001.dwg Plot Date: 31 August 2018 - 1:56 PM

Source:



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GHD

City of Ukiah
TRAFFIC ANALYSIS FOR SCHOOLS & SURROUNDING AREA

EXISTING SUMMER PEAK HOUR TRAFFIC VOLUMES

Project No. 11176246
Report No. 001
Date 07.12.2018

FIGURE 6

Filename: K:\PRJ\2506\T2506\T2506TG001.dwg Plot Date: 31 August 2018 - 2:08 PM

Source:

Appendix B: Intersection Turning Movement Counts

Prepared by National Data & Surveying Services

N State St & S Empire Dr

Peak Hour Turning Movement Count

ID: 18-08208-010
City: Ukiah

Day: Thursday
Date: 05/10/2018

	PEAK HOURS	COUNT PERIODS
AM	07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	02:00 PM - 06:00 PM

N State St – SOUTHBOUND

	Right	Through	Left	U-Turn	Exit
AM	144	609	48	0	780
NOON	0	0	0	0	0
PM	160	617	63	0	1036
	0	0	0	0	

S Empire Dr – EASTBOUND

	AM	NOON	PM	
Exit	222	0	308	
U-Turn	0	0	0	0
Left	278	0	251	0
Through	46	0	75	0
Right	57	0	40	0

S Empire Dr – WESTBOUND

		PM	NOON	AM
Right	0	59	0	50
Through	0	78	0	29
Left	0	101	0	80
U-Turn	0	0	0	0
Exit		295	0	162

N State St – NORTHBOUND

	Exit	U-Turn	Left	Through	Right
		0	0	0	0
PM	758	0	70	726	157
NOON	0	0	0	0	0
AM	746	0	49	452	68

CONTROL

0

	AM	NOON	PM
TEV	1910	0	2397
PHF	0.84		0.91

Total Vehicles (AM)

Approach	Movements
Southbound	144, 609, 48
Eastbound	278, 46, 57
Westbound	50, 29, 80
Northbound	49, 452, 68

HT (AM)

Approach	Movements
Southbound	1, 8, 1
Eastbound	5, 1, 0
Westbound	9, 0, 1
Northbound	1, 14, 2

Total Vehicles (Noon)

All movements: N/A

HT (NOON)

All movements: N/A

Total Vehicles (PM)

Approach	Movements
Southbound	160, 617, 63
Eastbound	251, 75, 40
Westbound	59, 78, 101
Northbound	70, 726, 157

HT (PM)

Approach	Movements
Southbound	1, 6, 1
Eastbound	1, 0, 0
Westbound	2, 0, 0
Northbound	0, 6, 0

Pedestrians (Crosswalks)

Crosswalk	PM	NOON	AM	AM	NOON	PM
North	6	0	1	0	0	8
South	8	0	0	0	0	7

Crosswalk		PM	NOON	AM
West	upper	6	0	1
West	lower	1	0	0
East	upper	0	0	0
East	lower	0	0	0

Diagonal crossings: AM 0, NOON 0, PM 0 (each corner)

Prepared by National Data & Surveying Services

N State St & Low Gap Rd/Brush St

Peak Hour Turning Movement Count

ID: 18-08208-012
City: Ukiah

Day: Thursday
Date: 05/10/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 06:00 PM

N State St — SOUTHBOUND

AM	129	553	39	0	622	AM
NOON	0	0	0	0	0	NOON
PM	102	628	27	0	1032	PM

Low Gap Rd/Brush St — EASTBOUND

AM	NOON	PM	
295	0	277	⇦
0	0	0	↶ 0
103	0	109	↱ 0
75	0	54	→ 0
132	0	102	↴ 0
AM	NOON	PM	

CONTROL

0

TEV	1775 AM	0 NOON	2148 PM
PHF	0.81		0.92

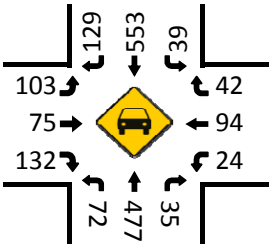
Low Gap Rd/Brush St — WESTBOUND

PM	NOON	AM	
118	0	42	0 ↰
97	0	94	0 ←
16	0	24	0 ↰
0	0	0	0 ↶
93	0	149	⇨
PM	NOON	AM	

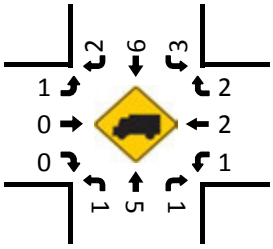
N State St — NORTHBOUND

PM	746	0	78	805	12	PM
NOON	0	0	0	0	0	NOON
AM	709	0	72	477	35	AM

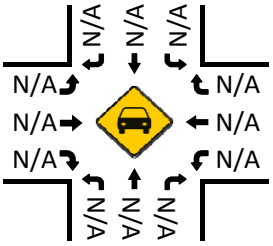
Total Vehicles (AM)



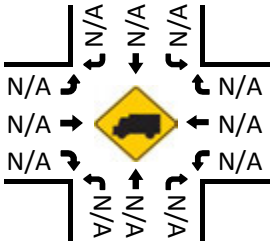
HT (AM)



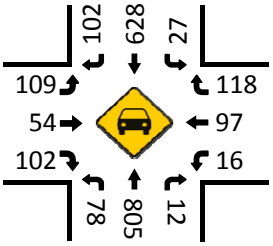
Total Vehicles (Noon)



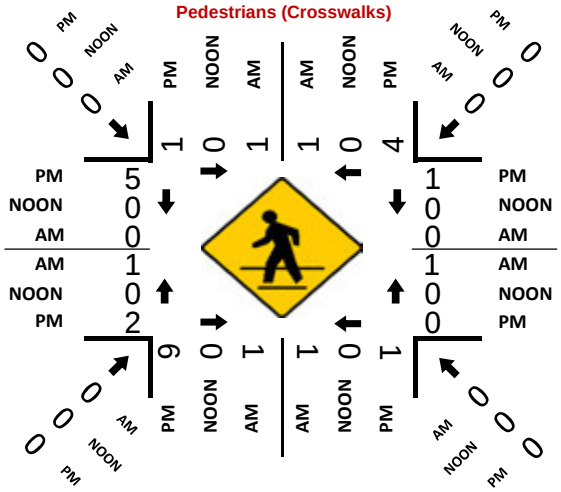
HT (NOON)



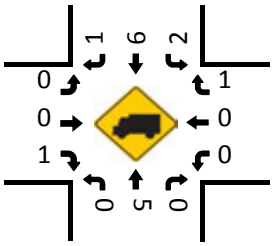
Total Vehicles (PM)



Pedestrians (Crosswalks)



HT (PM)



Prepared by National Data & Surveying Services

N. Bush St & Low Gap Rd

Peak Hour Turning Movement Count

ID: 18-08208-016
City: Ukiah

Day: Thursday
Date: 05/10/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
02:45 PM - 03:45 PM	02:00 PM - 06:00 PM

N. Bush St — SOUTHBOUND

AM	63	152	93	0	222	AM
NOON	0	0	0	0	0	NOON
PM	31	148	69	0	251	PM

Low Gap Rd — EASTBOUND

AM	NOON	PM	
429	0	302	
0	0	0	0
28	0	30	0
139	0	164	0
119	0	124	0
AM	NOON	PM	

CONTROL

0

TEV	1339	0	1219
	AM	NOON	PM
PHF	0.87		0.84

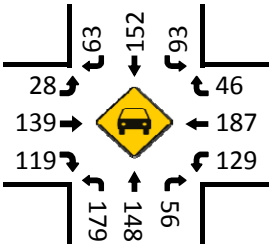
WESTBOUND — Low Gap Rd

PM	NOON	AM	
49	0	46	0
158	0	187	0
79	0	129	0
0	0	0	0
315	0	288	
PM	NOON	AM	

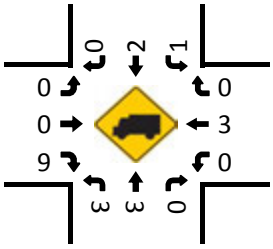
N. Bush St — NORTHBOUND

PM	351	0	113	172	82	PM
NOON	0	0	0	0	0	NOON
AM	400	0	179	148	56	AM

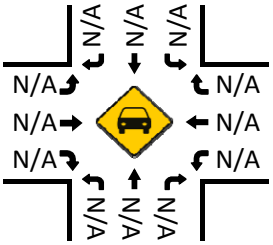
Total Vehicles (AM)



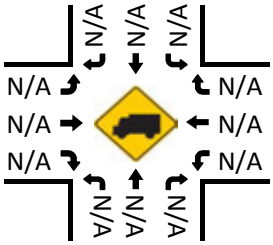
HT (AM)



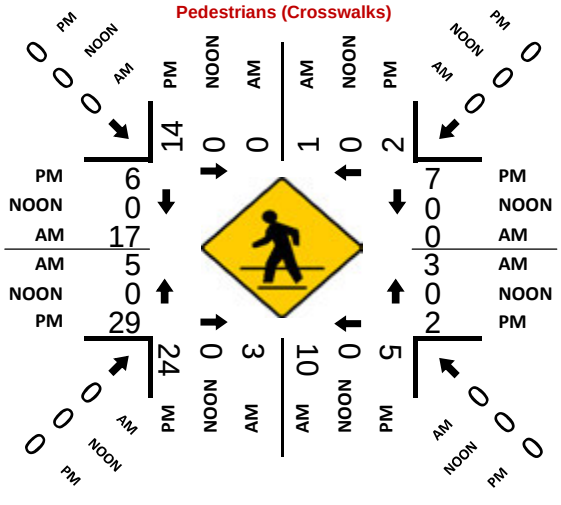
Total Vehicles (Noon)



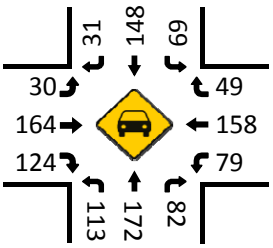
HT (NOON)



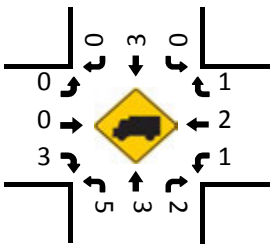
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

Despina Dr & Low Gap Rd

Peak Hour Turning Movement Count

ID: 18-08208-017
City: Ukiah

Day: Thursday
Date: 05/10/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	03:00 PM - 04:00 PM	02:00 PM - 06:00 PM

Despina Dr — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing (⇧)
AM	118	0	79	0	155
NOON	0	0	0	0	0
PM	29	0	110	0	180
(red)	0	0	0	0	

Low Gap Rd — EASTBOUND

	AM	NOON	PM	(red)
Departing (⇦)	425	0	129	
U-Turn	0	0	0	0
Left	92	0	71	0
Thru	194	0	174	0
Right	0	0	0	0

Low Gap Rd — WESTBOUND

	(red)	PM	NOON	AM
Right	0	109	0	63
Thru	0	100	0	307
Left	0	0	0	0
U-Turn	0	0	0	0
Departing (⇨)		284	0	273

Despina Dr — NORTHBOUND

	Departing (⇩)	U-Turn	Left	Thru	Right
(red)		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

0

	AM	NOON	PM
TEV	853	0	593
PHF	0.76		0.62

Total Vehicles (AM)

Approach	Left	Thru	Right
Southbound	79	0	118
Eastbound	92	194	0
Westbound	0	307	63
Northbound	0	0	0

HT (AM)

Approach	Left	Thru	Right
Southbound	0	0	4
Eastbound	1	10	0
Westbound	0	5	1
Northbound	0	0	0

Total Vehicles (Noon)

Approach	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

HT (NOON)

Approach	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (PM)

Approach	Left	Thru	Right
Southbound	110	0	29
Eastbound	71	174	0
Westbound	0	100	109
Northbound	0	0	0

HT (PM)

Approach	Left	Thru	Right
Southbound	1	0	2
Eastbound	5	4	0
Westbound	0	6	0
Northbound	0	0	0

Pedestrians (Crosswalks)

North crosswalk:

	PM	NOON	AM	AM	NOON	PM
North	24	0	0	9	0	3

South crosswalk:

	PM	NOON	AM	AM	NOON	PM
South	0	0	0	0	0	0

West crosswalk:

	West
PM	37
NOON	0
AM	5
AM	11
NOON	0
PM	4

East crosswalk:

	East
PM	0
NOON	0
AM	0
AM	0
NOON	0
PM	3

Diagonal crossings:

	PM	NOON	AM
Northwest	0	0	0
Northeast	0	0	0
Southwest	0	0	0
Southeast	0	0	0

Prepared by National Data & Surveying Services

Despina Dr & Empire Dr

Peak Hour Turning Movement Count

ID: 18-08208-018
City: Ukiah

Day: Thursday
Date: 05/10/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
03:00 PM - 04:00 PM	02:00 PM - 06:00 PM

SOUTHBOUND (Despina Dr)

	L	T	R	U	Total	
AM	0	338	22	1	62	AM
NOON	0	0	0	0	0	NOON
PM	0	62	18	0	98	PM

EASTBOUND (Empire Dr)

	L	T	R	
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	0	0

WESTBOUND (Empire Dr)

	L	T	R	
PM	12	0	8	0
NOON	0	0	0	0
AM	63	0	94	0

NORTHBOUND (Despina Dr)

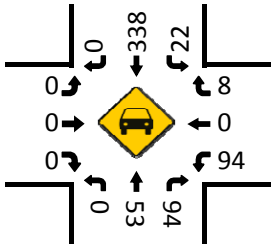
	L	T	R	U	Total	
PM	126	1	0	86	115	PM
NOON	0	0	0	0	0	NOON
AM	432	0	0	53	94	AM

CONTROL

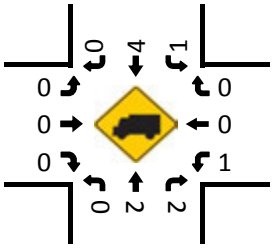
0

TEV	610	0	357
	AM	NOON	PM
PHF	0.65		0.59

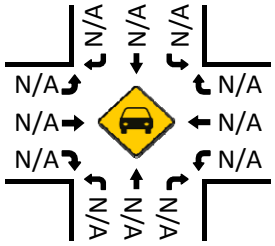
Total Vehicles (AM)



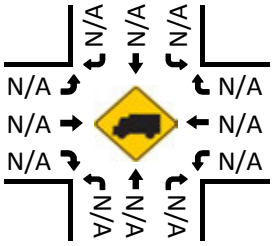
HT (AM)



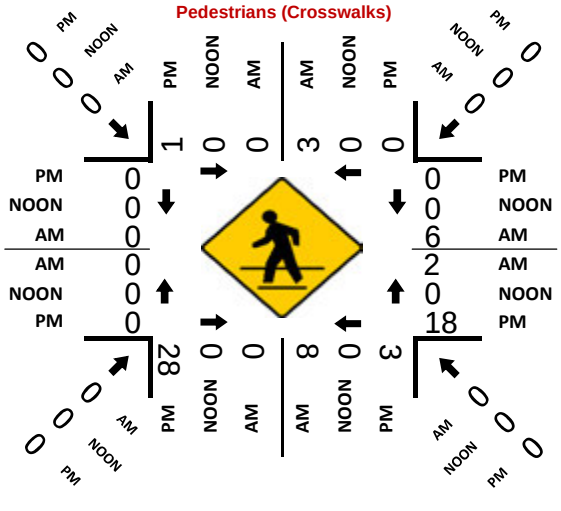
Total Vehicles (Noon)



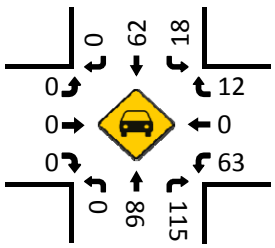
HT (NOON)



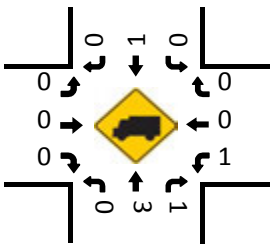
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

Despina Dr & Capps Ln

Peak Hour Turning Movement Count

ID: 18-08208-019
City: Ukiah

Day: Thursday
Date: 05/10/2018

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 06:00 PM

Despina Dr — SOUTHBOUND

AM	0	392	37	0	149	AM
NOON	0	0	0	0	0	NOON
PM	0	103	21	0	195	PM

Capps Ln — EASTBOUND

AM	NOON	PM	
0	0	0	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	0	→ 0
0	0	0	↷ 0
AM	NOON	PM	

CONTROL

0

TEV	719 AM	0 NOON	447 PM
PHF	0.63		0.50

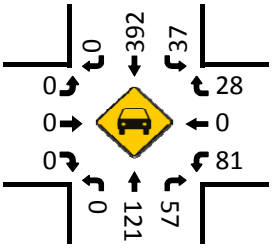
Capps Ln — WESTBOUND

PM	NOON	AM	
19	0	28	↶ 0
0	0	0	← 0
25	0	81	↱ 0
0	0	1	↷ 0
124	0	95	⇨
PM	NOON	AM	

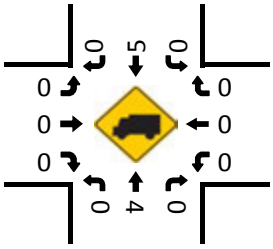
Despina Dr — NORTHBOUND

PM	128	0	0	176	103	PM
NOON	0	0	0	0	0	NOON
AM	475	2	0	121	57	AM

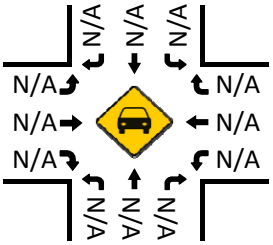
Total Vehicles (AM)



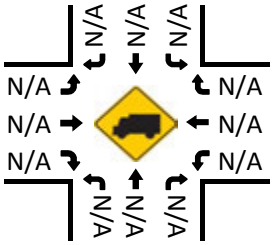
HT (AM)



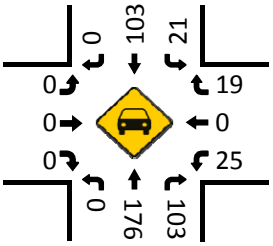
Total Vehicles (Noon)



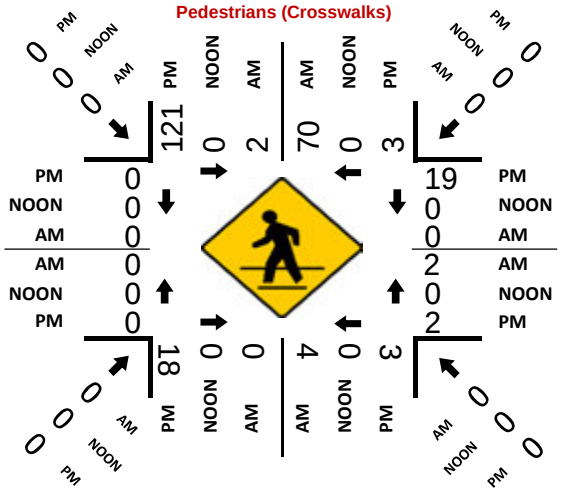
HT (NOON)



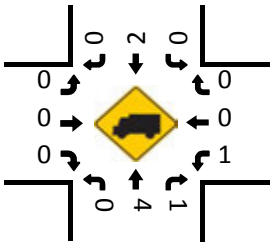
Total Vehicles (PM)



Pedestrians (Crosswalks)



HT (PM)



Prepared by National Data & Surveying Services

N State St & Empire Dr/Ford Rd

Peak Hour Turning Movement Count

ID: 18-08350-001
City: Ukiah

Day: Wednesday
Date: 07/11/2018

PEAK HOURS	
AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 06:00 PM

SOUTHBOUND — N State St

AM	100	457	31	0	502	AM
NOON	0	0	0	0	0	NOON
PM	114	519	42	0	934	PM

EASTBOUND — Empire Dr/Ford Rd

AM	NOON	PM	
139	0	216	⇦
0	0	0	↶ 0
189	0	202	↱ 0
19	0	39	→ 0
36	0	38	↳ 0
AM	NOON	PM	

WESTBOUND — Empire Dr/Ford Rd

PM	NOON	AM	
70	0	32	0 ↰
46	0	20	0 ←
96	0	32	0 ↰
0	0	0	0 ↶
206	0	90	⇨
PM	NOON	AM	

CONTROL

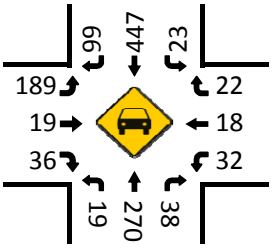
0

TEV	1256 AM	0 NOON	2009 PM
PHF	0.85		0.92

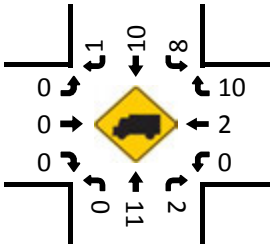
NORTHBOUND — N State St

PM	653	0	56	662	125	PM
NOON	0	0	0	0	0	NOON
AM	525	0	19	281	40	AM

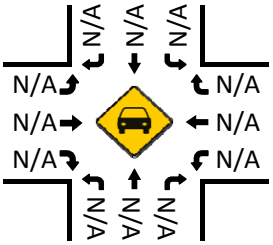
Cars (AM)



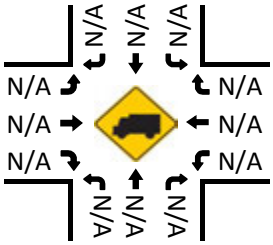
HT (AM)



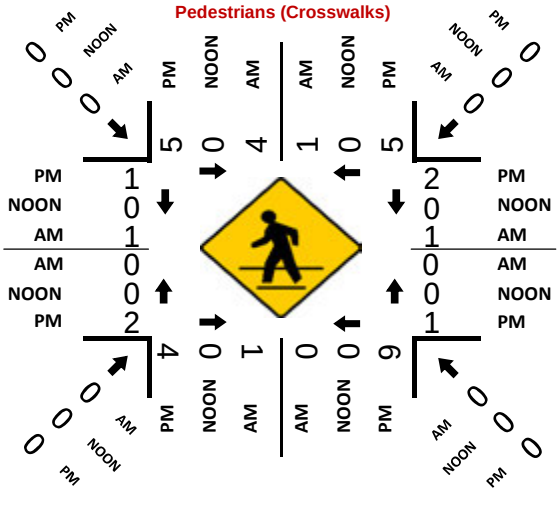
Cars (NOON)



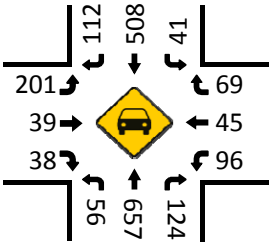
HT (NOON)



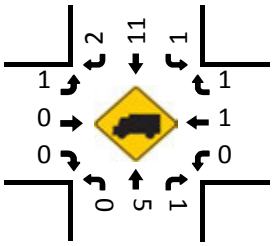
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

N State St & Low Gap Rd/ Brush St

Peak Hour Turning Movement Count

ID: 18-08350-002
City: Ukiah

Day: Wednesday
Date: 07/11/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	02:00 PM - 06:00 PM

N State St — SOUTHBOUND

AM	81	407	43	0	373	AM
NOON	0	0	0	0	0	NOON
PM	80	531	79	0	909	PM

Low Gap Rd/ Brush St — EASTBOUND

AM	NOON	PM		
172	0	186	⇦	
0	0	0	↶	0
58	0	101	↱	0
58	0	75	→	0
64	0	70	↴	0
AM	NOON	PM		

CONTROL

0

TEV	1155 AM	0 NOON	1887 PM
PHF	0.79		0.85

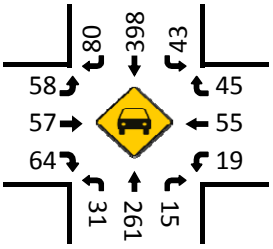
Low Gap Rd/ Brush St — WESTBOUND

PM	NOON	AM		
148	0	47	↷	0
59	0	57	←	0
22	0	20	↰	0
0	0	0	↶	0
169	0	119	⇨	
PM	NOON	AM		

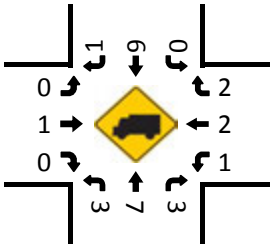
N State St — NORTHBOUND

PM	623	0	47	660	15	PM
NOON	0	0	0	0	0	NOON
AM	491	0	34	268	18	AM

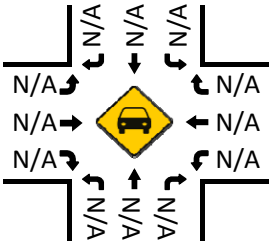
Cars (AM)



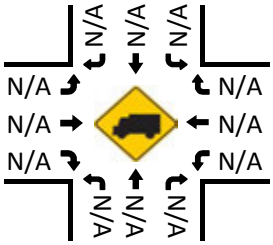
HT (AM)



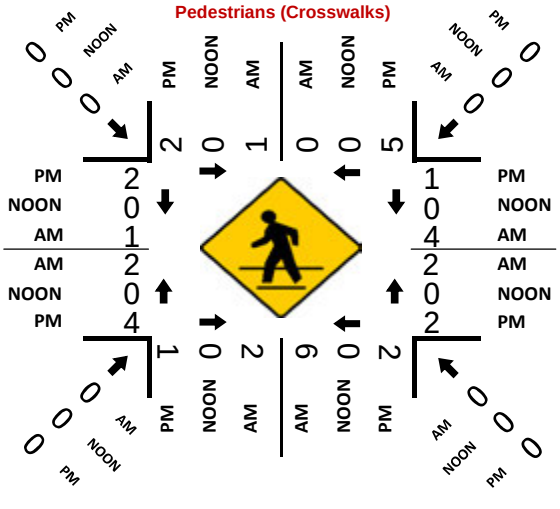
Cars (NOON)



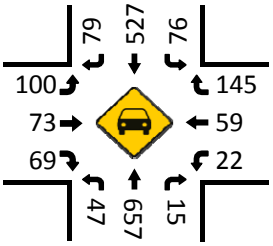
HT (NOON)



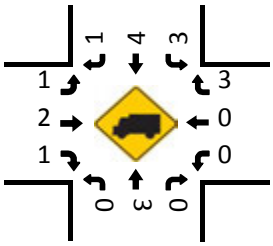
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

N Bush St & Low Gap Rd

Peak Hour Turning Movement Count

ID: 18-08350-003
City: Ukiah

Day: Wednesday
Date: 07/11/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	02:00 PM - 06:00 PM

SOUTHBOUND — N Bush St

AM	39	118	50	0	115	AM
NOON	0	0	0	0	0	NOON
PM	8	100	47	0	241	PM

EASTBOUND — Low Gap Rd

AM	NOON	PM	
192	0	118	⇦
0	0	0	0 ↶
7	0	29	0 ↱
58	0	96	0 →
51	0	39	0 ↴
AM	NOON	PM	

WESTBOUND — Low Gap Rd

PM	NOON	AM	
42	0	24	0 ↰
81	0	104	0 ←
71	0	66	0 ↰
0	0	0	0 ↶
211	0	163	⇨
PM	NOON	AM	

CONTROL

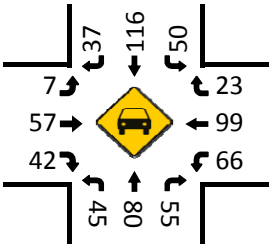
0

TEV	705 AM	0 NOON	780 PM
PHF	0.68		0.82

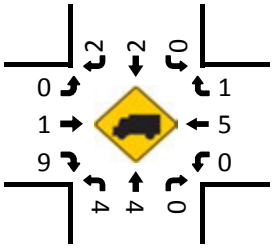
NORTHBOUND — N Bush St

PM	210	0	29	170	68	PM
NOON	0	0	0	0	0	NOON
AM	235	0	49	84	55	AM

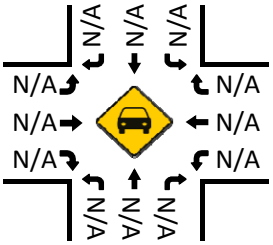
Cars (AM)



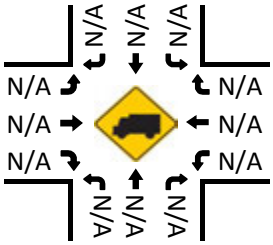
HT (AM)



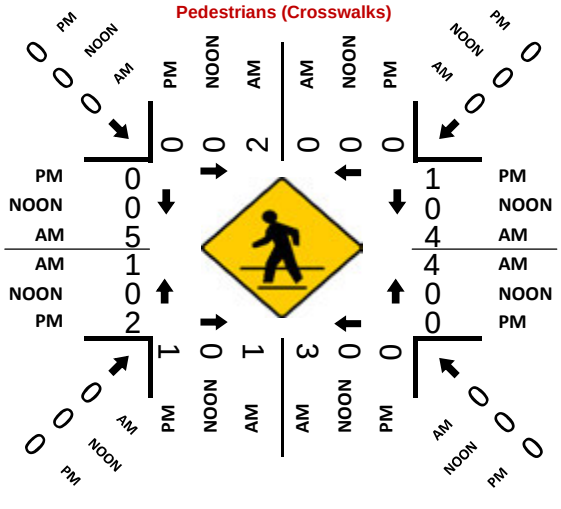
Cars (NOON)



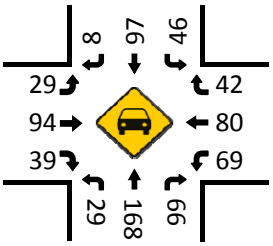
HT (NOON)



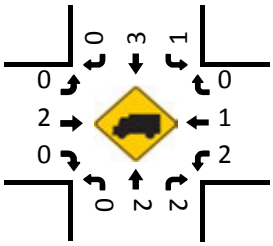
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Despina Dr & Low Gap Rd

Peak Hour Turning Movement Count

ID: 18-08350-004
City: Ukiah

Day: Wednesday
Date: 07/11/2018

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	02:00 PM - 06:00 PM

Despina Dr — SOUTHBOUND

AM	33	0	54	0	25
NOON	0	0	0	0	0
PM	9	0	31	0	47
	0	0	0	0	

Low Gap Rd — EASTBOUND

	AM	NOON	PM	
	103	0	55	
	0	0	0	0
	7	0	5	0
	48	0	32	0
	0	0	0	0

Low Gap Rd — WESTBOUND

	PM	NOON	AM
0	42	0	18
0	46	0	70
0	0	0	0
0	0	0	0
	63	0	102

Despina Dr — NORTHBOUND

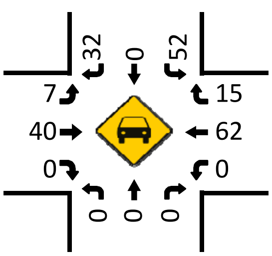
		0	0	0	0	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL

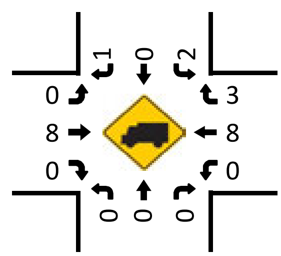
0

	AM	NOON	PM
TEV	230	0	165
PHF	0.70		0.94

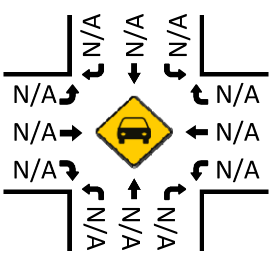
Cars (AM)



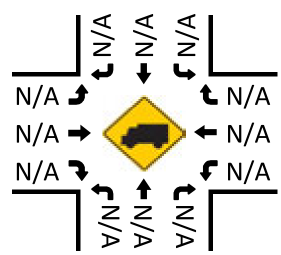
HT (AM)



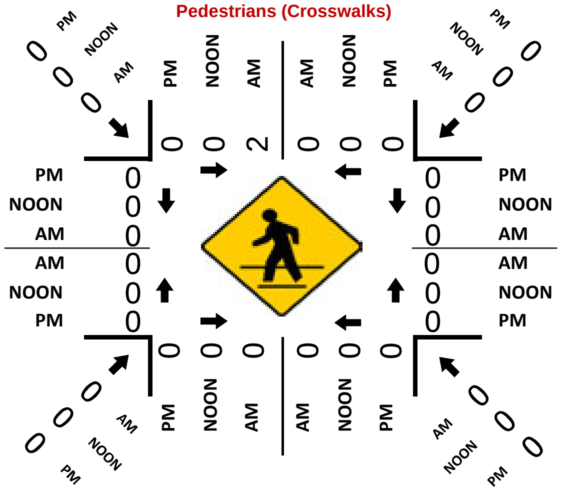
Cars (NOON)



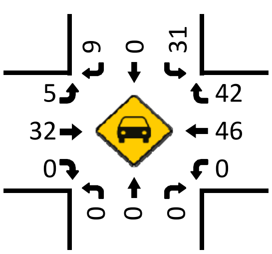
HT (NOON)



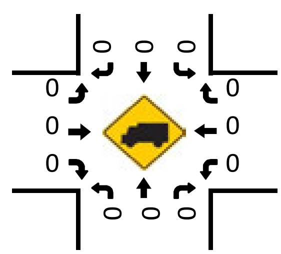
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Despina Dr & Empire Dr

Peak Hour Turning Movement Count

ID: 18-08350-005
City: Ukiah

Day: Wednesday
Date: 07/11/2018

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	03:45 PM - 04:45 PM	02:00 PM - 06:00 PM

Despina Dr — SOUTHBOUND

	U-Turn	Left	Thru	Right	Exit
AM	0	56	7	0	17
NOON	0	0	0	0	0
PM	0	27	9	0	42
Other	0	0	0	0	

Empire Dr — WESTBOUND

	Other	PM	NOON	AM
Left	0	6	0	3
Thru	0	0	0	0
Right	0	6	0	27
U-Turn	0	0	0	0
Exit		26	0	16

Empire Dr — EASTBOUND

	AM	NOON	PM	Other
Exit	0	0	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	0	0	0
Right	0	0	0	0

Despina Dr — NORTHBOUND

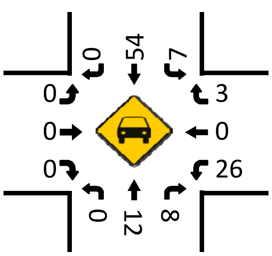
	Exit	U-Turn	Left	Thru	Right
Other		0	0	0	0
PM	33	0	0	36	17
NOON	0	0	0	0	0
AM	83	0	0	14	9

CONTROL

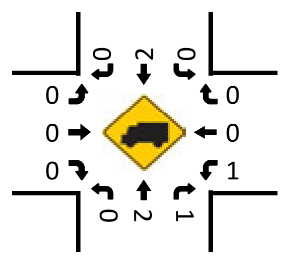
0

	AM	NOON	PM
TEV	116	0	101
PHF	0.74		0.97

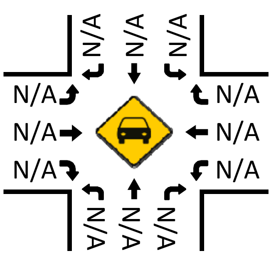
Cars (AM)



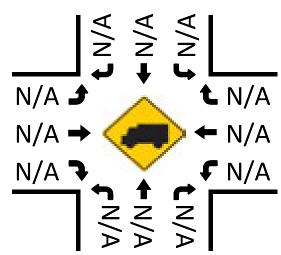
HT (AM)



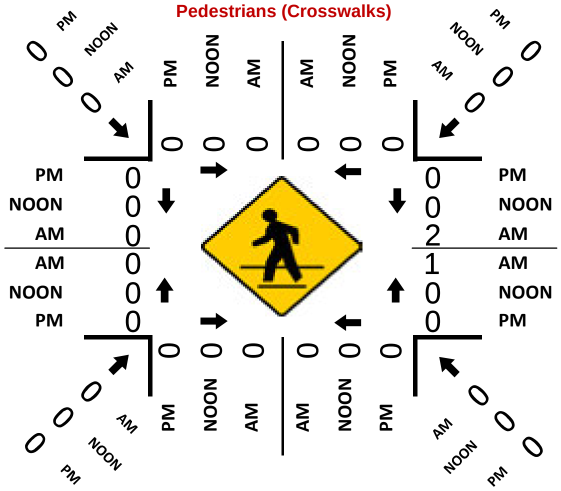
Cars (NOON)



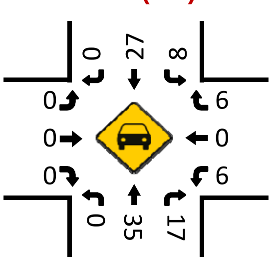
HT (NOON)



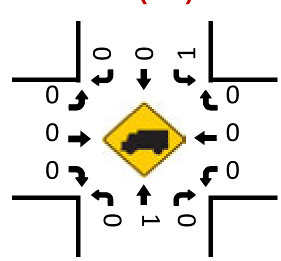
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Despina Dr & Capps Ln

Peak Hour Turning Movement Count

ID: 18-08350-006
City: Ukiah

Day: Wednesday
Date: 07/11/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	02:00 PM - 06:00 PM

SOUTHBOUND — Despina Dr

AM	0	80	6	1	25	AM
NOON	0	0	0	0	0	NOON
PM	0	40	1	0	52	PM

EASTBOUND — Capps Ln

AM	NOON	PM	
0	0	0	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	0	→ 0
0	0	0	↷ 0
AM	NOON	PM	

WESTBOUND — Capps Ln

PM	NOON	AM	
6	0	1	↰ 0
0	0	0	← 0
1	0	11	↶ 0
0	0	0	↷ 0
10	0	9	⇨
PM	NOON	AM	

NORTHBOUND — Despina Dr

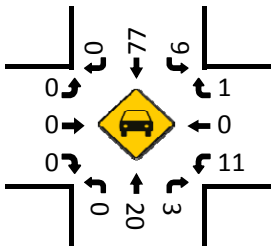
PM	41	0	0	46	9	PM
NOON	0	0	0	0	0	NOON
AM	91	0	0	23	3	AM

CONTROL

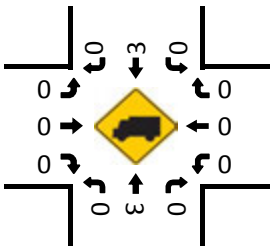
0

TEV	125 AM	0 NOON	103 PM
PHF	0.74		0.89

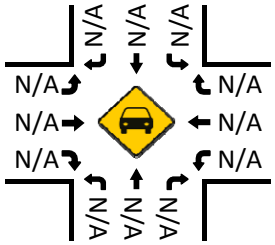
Cars (AM)



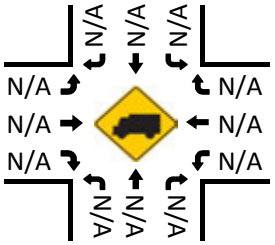
HT (AM)



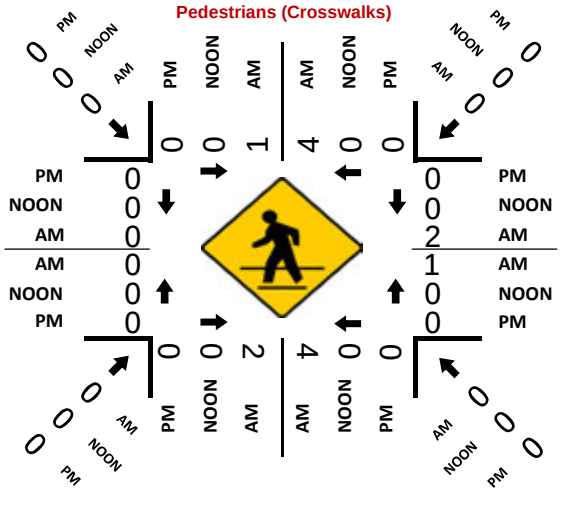
Cars (NOON)



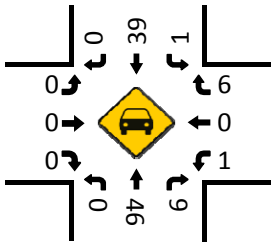
HT (NOON)



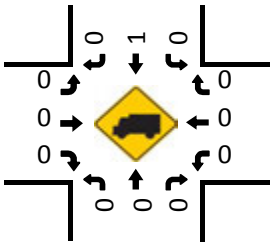
Pedestrians (Crosswalks)



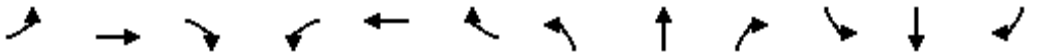
Cars (PM)



HT (PM)



Appendix C: Synchro and SimTraffic Outputs



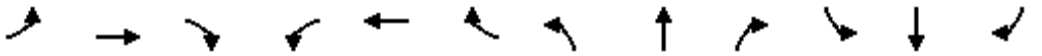
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	278	46	57	80	29	50	49	452	68	48	609	144
Future Volume (veh/h)	278	46	57	80	29	50	49	452	68	48	609	144
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	55	68	95	35	60	58	538	81	57	725	171
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	124	154	122	58	99	78	1026	154	78	943	222
Arrive On Green	0.14	0.16	0.16	0.07	0.09	0.09	0.04	0.33	0.33	0.04	0.33	0.33
Sat Flow, veh/h	1781	761	940	1781	617	1058	1781	3099	465	1781	2852	673
Grp Volume(v), veh/h	331	0	123	95	0	95	58	308	311	57	452	444
Grp Sat Flow(s),veh/h/ln	1781	0	1701	1781	0	1676	1781	1777	1787	1781	1777	1748
Q Serve(g_s), s	7.0	0.0	3.3	2.7	0.0	2.8	1.6	7.1	7.2	1.6	11.6	11.6
Cycle Q Clear(g_c), s	7.0	0.0	3.3	2.7	0.0	2.8	1.6	7.1	7.2	1.6	11.6	11.6
Prop In Lane	1.00		0.55	1.00		0.63	1.00		0.26	1.00		0.38
Lane Grp Cap(c), veh/h	245	0	278	122	0	158	78	588	592	78	588	578
V/C Ratio(X)	1.35	0.00	0.44	0.78	0.00	0.60	0.74	0.52	0.53	0.74	0.77	0.77
Avail Cap(c_a), veh/h	245	0	335	631	0	264	666	1119	1125	701	944	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	19.2	23.3	0.0	22.1	24.0	13.7	13.8	24.0	15.3	15.3
Incr Delay (d2), s/veh	181.5	0.0	0.4	4.1	0.0	1.4	5.0	0.3	0.3	5.0	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.1	0.0	1.2	1.2	0.0	1.1	0.7	2.5	2.5	0.7	4.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	203.4	0.0	19.6	27.4	0.0	23.5	29.0	14.0	14.0	29.0	16.1	16.1
LnGrp LOS	F	A	B	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		454			190			677			953	
Approach Delay, s/veh		153.6			25.4			15.3			16.9	
Approach LOS		F			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	21.8	8.5	13.3	7.2	21.8	12.0	9.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	32.0	18.0	10.0	19.0	27.0	7.0	8.0
Max Q Clear Time (g_c+I1), s	3.6	9.2	4.7	5.3	3.6	13.6	9.0	4.8
Green Ext Time (p_c), s	0.0	2.5	0.0	0.1	0.0	3.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	75	132	24	94	42	72	477	35	39	553	129
Future Volume (veh/h)	103	75	132	24	94	42	72	477	35	39	553	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	93	163	30	116	52	89	589	43	48	683	159
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	145	253	59	215	97	116	1223	89	82	987	230
Arrive On Green	0.09	0.24	0.24	0.03	0.18	0.18	0.07	0.36	0.36	0.05	0.35	0.35
Sat Flow, veh/h	1781	609	1067	1781	1222	548	1781	3358	245	1781	2861	665
Grp Volume(v), veh/h	127	0	256	30	0	168	89	311	321	48	424	418
Grp Sat Flow(s),veh/h/ln	1781	0	1675	1781	0	1770	1781	1777	1826	1781	1777	1749
Q Serve(g_s), s	4.1	0.0	8.2	1.0	0.0	5.1	2.9	8.0	8.1	1.6	12.2	12.2
Cycle Q Clear(g_c), s	4.1	0.0	8.2	1.0	0.0	5.1	2.9	8.0	8.1	1.6	12.2	12.2
Prop In Lane	1.00		0.64	1.00		0.31	1.00		0.13	1.00		0.38
Lane Grp Cap(c), veh/h	168	0	398	59	0	312	116	647	665	82	613	604
V/C Ratio(X)	0.76	0.00	0.64	0.51	0.00	0.54	0.76	0.48	0.48	0.59	0.69	0.69
Avail Cap(c_a), veh/h	599	0	844	449	0	743	449	1343	1380	449	1343	1323
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	0.0	20.4	28.3	0.0	22.3	27.4	14.6	14.6	27.8	16.8	16.8
Incr Delay (d2), s/veh	6.8	0.0	1.7	6.8	0.0	1.4	9.9	0.6	0.5	6.5	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	3.1	0.5	0.0	2.1	1.5	3.0	3.1	0.8	4.7	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	22.2	35.1	0.0	23.8	37.3	15.1	15.1	34.3	18.2	18.2
LnGrp LOS	C	A	C	D	A	C	D	B	B	C	B	B
Approach Vol, veh/h		383			198			721			890	
Approach Delay, s/veh		25.8			25.5			17.9			19.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	26.7	6.5	19.1	8.4	25.5	10.1	15.5
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	30.0	15.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	3.6	10.1	3.0	10.2	4.9	14.2	6.1	7.1
Green Ext Time (p_c), s	0.1	4.3	0.0	1.5	0.1	6.2	0.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	31.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	139	119	129	187	46	179	148	56	93	152	63
Future Vol, veh/h	28	139	119	129	187	46	179	148	56	93	152	63
Peak Hour Factor	0.70	0.89	0.89	0.70	0.81	0.72	0.80	0.86	0.78	0.66	0.71	0.51
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	156	134	184	231	64	224	172	72	141	214	124
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	42.4	37	26.9	23.6
HCM LOS	E	E	D	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	54%	0%	80%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	46%	0%	20%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	179	148	56	28	258	129	233	93	152	63
LT Vol	179	0	0	28	0	129	0	93	0	0
Through Vol	0	148	0	0	139	0	187	0	152	0
RT Vol	0	0	56	0	119	0	46	0	0	63
Lane Flow Rate	224	172	72	40	290	184	295	141	214	124
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.677	0.495	0.192	0.123	0.82	0.542	0.813	0.426	0.617	0.33
Departure Headway (Hd)	10.888	10.362	9.626	11.025	10.18	10.584	9.93	10.893	10.367	9.631
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	331	348	373	325	357	341	365	331	349	373
Service Time	8.655	8.129	7.392	8.79	7.944	8.348	7.693	8.66	8.134	7.397
HCM Lane V/C Ratio	0.677	0.494	0.193	0.123	0.812	0.54	0.808	0.426	0.613	0.332
HCM Control Delay	33.8	22.9	14.7	15.3	46.1	25.3	44.3	21.6	28.6	17.1
HCM Lane LOS	D	C	B	C	E	D	E	C	D	C
HCM 95th-tile Q	4.7	2.6	0.7	0.4	7.2	3.1	7.1	2	3.9	1.4

Intersection	
Intersection Delay, s/veh	16.9
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	92	194	307	63	79	118
Future Vol, veh/h	92	194	307	63	79	118
Peak Hour Factor	0.63	0.82	0.81	0.70	0.86	0.62
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	237	379	90	92	190
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	16.3	19.2	13.7
HCM LOS	C	C	B

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	0%	40%
Vol Thru, %	68%	83%	0%
Vol Right, %	0%	17%	60%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	286	370	197
LT Vol	92	0	79
Through Vol	194	307	0
RT Vol	0	63	118
Lane Flow Rate	383	469	282
Geometry Grp	1	1	1
Degree of Util (X)	0.59	0.688	0.455
Departure Headway (Hd)	5.551	5.284	5.811
Convergence, Y/N	Yes	Yes	Yes
Cap	647	680	618
Service Time	3.604	3.334	3.868
HCM Lane V/C Ratio	0.592	0.69	0.456
HCM Control Delay	16.3	19.2	13.7
HCM Lane LOS	C	C	B
HCM 95th-tile Q	3.9	5.5	2.4

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	82	28	121	57	37	392
Future Vol, veh/h	82	28	121	57	37	392
Conflicting Peds, #/hr	4	72	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	44	192	90	59	622

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	983	311	0	0	284	0
Stage 1	239	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	276	729	-	-	1278	-
Stage 1	801	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	253	610	-	-	1272	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33	0	0.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	297	1272	-
HCM Lane V/C Ratio	-	-	0.588	0.046	-
HCM Control Delay (s)	-	-	33	8	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	3.5	0.1	-

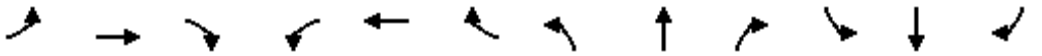
Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	94	8	53	94	23	338
Future Vol, veh/h	94	8	53	94	23	338
Conflicting Peds, #/hr	8	3	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	145	12	82	145	35	520

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	761	166	0	0	235	0
Stage 1	163	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	373	878	-	-	1332	-
Stage 1	866	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	346	857	-	-	1308	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	363	1308	-
HCM Lane V/C Ratio	-	-	0.432	0.027	-
HCM Control Delay (s)	-	-	22.3	7.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.1	0.1	-



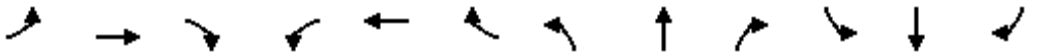
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	75	40	101	78	59	70	726	157	63	617	160
Future Volume (veh/h)	251	75	40	101	78	59	70	726	157	63	617	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	276	82	44	111	86	65	77	798	173	69	678	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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	190	102	143	121	92	98	1020	221	87	961	249
Arrive On Green	0.12	0.17	0.17	0.08	0.12	0.12	0.06	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	1133	608	1781	973	735	1781	2904	630	1781	2786	723
Grp Volume(v), veh/h	276	0	126	111	0	151	77	488	483	69	432	422
Grp Sat Flow(s),veh/h/ln	1781	0	1741	1781	0	1708	1781	1777	1757	1781	1777	1732
Q Serve(g_s), s	7.0	0.0	3.7	3.5	0.0	4.8	2.4	14.0	14.0	2.2	12.0	12.0
Cycle Q Clear(g_c), s	7.0	0.0	3.7	3.5	0.0	4.8	2.4	14.0	14.0	2.2	12.0	12.0
Prop In Lane	1.00		0.35	1.00		0.43	1.00		0.36	1.00		0.42
Lane Grp Cap(c), veh/h	219	0	292	143	0	213	98	624	617	87	613	597
V/C Ratio(X)	1.26	0.00	0.43	0.78	0.00	0.71	0.79	0.78	0.78	0.79	0.71	0.71
Avail Cap(c_a), veh/h	219	0	306	564	0	240	596	1001	990	627	844	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	21.2	25.6	0.0	23.9	26.5	16.5	16.5	26.7	16.1	16.1
Incr Delay (d2), s/veh	147.4	0.0	0.4	3.4	0.0	6.2	5.1	0.8	0.8	5.9	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	0.0	1.5	1.5	0.0	2.2	1.1	5.1	5.0	1.0	4.3	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	172.4	0.0	21.6	29.1	0.0	30.1	31.6	17.3	17.3	32.6	16.8	16.9
LnGrp LOS	F	A	C	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		402			262			1048			923	
Approach Delay, s/veh		125.1			29.6			18.4			18.0	
Approach LOS		F			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	25.0	9.6	14.5	8.1	24.6	12.0	12.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	32.0	18.0	10.0	19.0	27.0	7.0	8.0
Max Q Clear Time (g_c+I1), s	4.2	16.0	5.5	5.7	4.4	14.0	9.0	6.8
Green Ext Time (p_c), s	0.0	4.0	0.0	0.1	0.0	3.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	54	102	16	97	118	78	805	12	27	628	102
Future Volume (veh/h)	109	54	102	16	97	118	78	805	12	27	628	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	59	111	17	105	128	85	875	13	29	683	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	158	296	37	157	191	112	1297	19	57	1011	164
Arrive On Green	0.09	0.27	0.27	0.02	0.21	0.21	0.06	0.36	0.36	0.03	0.33	0.33
Sat Flow, veh/h	1781	578	1087	1781	762	929	1781	3584	53	1781	3056	496
Grp Volume(v), veh/h	118	0	170	17	0	233	85	434	454	29	397	397
Grp Sat Flow(s),veh/h/ln	1781	0	1665	1781	0	1692	1781	1777	1860	1781	1777	1775
Q Serve(g_s), s	3.9	0.0	5.0	0.6	0.0	7.7	2.8	12.5	12.5	1.0	11.7	11.7
Cycle Q Clear(g_c), s	3.9	0.0	5.0	0.6	0.0	7.7	2.8	12.5	12.5	1.0	11.7	11.7
Prop In Lane	1.00		0.65	1.00		0.55	1.00		0.03	1.00		0.28
Lane Grp Cap(c), veh/h	156	0	454	37	0	348	112	643	673	57	588	587
V/C Ratio(X)	0.76	0.00	0.37	0.46	0.00	0.67	0.76	0.67	0.67	0.51	0.67	0.68
Avail Cap(c_a), veh/h	587	0	823	440	0	697	440	1318	1380	440	1318	1316
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	17.9	29.4	0.0	22.2	28.0	16.3	16.3	28.9	17.5	17.5
Incr Delay (d2), s/veh	7.3	0.0	0.5	8.9	0.0	2.2	10.1	1.2	1.2	6.9	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.8	0.3	0.0	3.1	1.5	4.7	5.0	0.5	4.5	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.3	0.0	18.4	38.3	0.0	24.4	38.1	17.6	17.5	35.8	18.8	18.9
LnGrp LOS	C	A	B	D	A	C	D	B	B	D	B	B
Approach Vol, veh/h		288			250			973			823	
Approach Delay, s/veh		24.9			25.4			19.4			19.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	27.0	5.7	21.5	8.3	25.1	9.8	17.5
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	30.0	15.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	3.0	14.5	2.6	7.0	4.8	13.7	5.9	9.7
Green Ext Time (p_c), s	0.0	6.5	0.0	1.0	0.1	5.7	0.2	1.2

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	32.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	164	124	79	158	49	113	172	82	69	148	31
Future Vol, veh/h	30	164	124	79	158	49	113	172	82	69	148	31
Peak Hour Factor	0.54	0.79	0.76	0.85	0.70	0.86	0.82	0.72	0.83	0.62	0.84	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	208	163	93	226	57	138	239	99	111	176	36
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	56.2	30.4	22.6	20
HCM LOS	F	D	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	57%	0%	76%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	43%	0%	24%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	113	172	82	30	288	79	207	69	148	31
LT Vol	113	0	0	30	0	79	0	69	0	0
Through Vol	0	172	0	0	164	0	158	0	148	0
RT Vol	0	0	82	0	124	0	49	0	0	31
Lane Flow Rate	138	239	99	56	371	93	283	111	176	36
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.388	0.639	0.244	0.154	0.942	0.261	0.742	0.328	0.494	0.094
Departure Headway (Hd)	10.149	9.626	8.892	9.962	9.143	10.124	9.443	10.615	10.09	9.354
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	354	375	403	362	400	355	384	338	358	383
Service Time	7.912	7.388	6.655	7.662	6.843	7.884	7.202	8.382	7.856	7.12
HCM Lane V/C Ratio	0.39	0.637	0.246	0.155	0.927	0.262	0.737	0.328	0.492	0.094
HCM Control Delay	19.2	28	14.5	14.5	62.4	16.4	35	18.5	22.4	13.1
HCM Lane LOS	C	D	B	B	F	C	D	C	C	B
HCM 95th-tile Q	1.8	4.2	0.9	0.5	10.5	1	5.8	1.4	2.6	0.3

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	71	174	100	109	110	29
Future Vol, veh/h	71	174	100	109	110	29
Peak Hour Factor	0.61	0.64	0.57	0.57	0.40	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	116	272	175	191	275	43
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	16.6	14.2	15.3
HCM LOS	C	B	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	79%
Vol Thru, %	71%	48%	0%
Vol Right, %	0%	52%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	245	209	139
LT Vol	71	0	110
Through Vol	174	100	0
RT Vol	0	109	29
Lane Flow Rate	388	367	318
Geometry Grp	1	1	1
Degree of Util (X)	0.599	0.534	0.523
Departure Headway (Hd)	5.554	5.243	5.926
Convergence, Y/N	Yes	Yes	Yes
Cap	648	686	607
Service Time	3.606	3.298	3.98
HCM Lane V/C Ratio	0.599	0.535	0.524
HCM Control Delay	16.6	14.2	15.3
HCM Lane LOS	C	B	C
HCM 95th-tile Q	4	3.2	3

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	19	176	103	21	103
Future Vol, veh/h	25	19	176	103	21	103
Conflicting Peds, #/hr	21	124	0	21	21	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	38	352	206	42	206

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	787	600	0	0	579	0
Stage 1	476	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	360	501	-	-	995	-
Stage 1	625	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	311	346	-	-	949	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.1	0	1.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	325	949	-
HCM Lane V/C Ratio	-	-	0.271	0.044	-
HCM Control Delay (s)	-	-	20.1	9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	12	86	115	18	62
Future Vol, veh/h	63	12	86	115	18	62
Conflicting Peds, #/hr	5	1	0	18	18	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	59	59	59	59	59	59
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	20	146	195	31	105

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	434	263	0	0	359	0
Stage 1	262	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	579	776	-	-	1200	-
Stage 1	782	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	534	743	-	-	1152	-
Mov Cap-2 Maneuver	534	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	559	1152	-
HCM Lane V/C Ratio	-	-	0.227	0.026	-
HCM Control Delay (s)	-	-	13.3	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection: 3: Bush St & Low Gap Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	145	421	176	310	124	246	108	142	285	151
Average Queue (ft)	37	138	54	75	56	61	29	40	75	28
95th Queue (ft)	123	342	139	217	115	176	69	112	218	105
Link Distance (ft)		875		631		614			793	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	115		110		75		75	105		80
Storage Blk Time (%)		25	4	8	15	2	0	0	10	1
Queuing Penalty (veh)		8	12	13	33	5	0	1	25	5

Intersection: 4: Low Gap Rd & Despina Dr

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	176	290	131
Average Queue (ft)	71	95	56
95th Queue (ft)	132	227	98
Link Distance (ft)	931	982	1378
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Despina Dr & Capps Ln

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	160	79	256
Average Queue (ft)	53	15	66
95th Queue (ft)	119	53	182
Link Distance (ft)	211	1378	384
Upstream Blk Time (%)	1		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 102

Intersection: 3: Bush St & Low Gap Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	175	761	153	300	113	176	110	92	182	98
Average Queue (ft)	55	361	40	94	37	62	41	28	68	6
95th Queue (ft)	173	947	120	270	90	137	89	68	135	44
Link Distance (ft)		1087		608		572			852	
Upstream Blk Time (%)		11		0						
Queuing Penalty (veh)		0		0						
Storage Bay Dist (ft)	115		110		75		75	105		80
Storage Blk Time (%)	0	52	0	14	3	8	1	1	10	0
Queuing Penalty (veh)	0	18	0	12	7	17	2	1	11	0

Intersection: 4: Low Gap Rd & Despina Dr

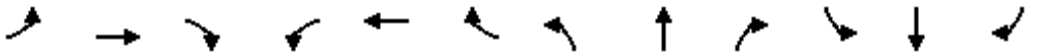
Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	316	333	270
Average Queue (ft)	97	89	71
95th Queue (ft)	243	238	208
Link Distance (ft)	731	906	1378
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Despina Dr & Capps Ln

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	118	204	155
Average Queue (ft)	33	52	35
95th Queue (ft)	86	139	109
Link Distance (ft)	211	1378	384
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 67



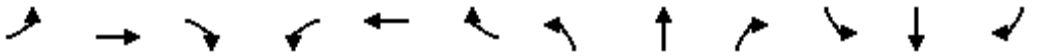
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	19	36	32	20	32	19	281	40	31	457	100
Future Volume (veh/h)	189	19	36	32	20	32	19	281	40	31	457	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	222	22	42	38	24	38	22	331	47	36	538	118
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	275	115	220	60	52	82	38	809	114	57	781	171
Arrive On Green	0.16	0.20	0.20	0.03	0.08	0.08	0.02	0.26	0.26	0.03	0.27	0.27
Sat Flow, veh/h	1753	566	1080	1753	640	1014	1753	3078	433	1753	2853	623
Grp Volume(v), veh/h	222	0	64	38	0	62	22	187	191	36	329	327
Grp Sat Flow(s),veh/h/ln	1753	0	1646	1753	0	1654	1753	1749	1763	1753	1749	1727
Q Serve(g_s), s	5.2	0.0	1.4	0.9	0.0	1.5	0.5	3.8	3.8	0.9	7.2	7.3
Cycle Q Clear(g_c), s	5.2	0.0	1.4	0.9	0.0	1.5	0.5	3.8	3.8	0.9	7.2	7.3
Prop In Lane	1.00		0.66	1.00		0.61	1.00		0.25	1.00		0.36
Lane Grp Cap(c), veh/h	275	0	335	60	0	134	38	459	463	57	479	473
V/C Ratio(X)	0.81	0.00	0.19	0.64	0.00	0.46	0.58	0.41	0.41	0.63	0.69	0.69
Avail Cap(c_a), veh/h	287	0	384	737	0	309	778	1307	1317	819	1103	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	14.1	20.4	0.0	18.8	20.8	13.0	13.1	20.5	13.9	13.9
Incr Delay (d2), s/veh	13.8	0.0	0.1	4.2	0.0	0.9	5.2	0.2	0.2	4.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.5	0.4	0.0	0.6	0.2	1.3	1.3	0.4	2.3	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.2	0.0	14.2	24.6	0.0	19.7	26.0	13.2	13.3	24.7	14.6	14.6
LnGrp LOS	C	A	B	C	A	B	C	B	B	C	B	B
Approach Vol, veh/h		286			100			400			692	
Approach Delay, s/veh		27.4			21.6			14.0			15.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	16.2	6.5	13.7	5.9	16.7	11.7	8.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	32.0	18.0	10.0	19.0	27.0	7.0	8.0
Max Q Clear Time (g_c+I1), s	2.9	5.8	2.9	3.4	2.5	9.3	7.2	3.5
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	2.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	58	64	20	57	47	34	268	18	43	407	81
Future Volume (veh/h)	58	58	64	20	57	47	34	268	18	43	407	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	73	73	81	25	72	59	43	339	23	54	515	103
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	114	198	220	52	199	163	80	933	63	94	839	167
Arrive On Green	0.06	0.25	0.25	0.03	0.21	0.21	0.05	0.28	0.28	0.05	0.29	0.29
Sat Flow, veh/h	1767	802	890	1767	942	772	1767	3351	226	1767	2929	583
Grp Volume(v), veh/h	73	0	154	25	0	131	43	178	184	54	309	309
Grp Sat Flow(s),veh/h/ln	1767	0	1693	1767	0	1714	1767	1763	1814	1767	1763	1749
Q Serve(g_s), s	2.0	0.0	3.7	0.7	0.0	3.2	1.2	3.9	4.0	1.4	7.4	7.4
Cycle Q Clear(g_c), s	2.0	0.0	3.7	0.7	0.0	3.2	1.2	3.9	4.0	1.4	7.4	7.4
Prop In Lane	1.00		0.53	1.00		0.45	1.00		0.12	1.00		0.33
Lane Grp Cap(c), veh/h	114	0	418	52	0	363	80	491	505	94	505	501
V/C Ratio(X)	0.64	0.00	0.37	0.48	0.00	0.36	0.54	0.36	0.37	0.57	0.61	0.62
Avail Cap(c_a), veh/h	729	0	1048	547	0	884	547	1637	1685	547	1637	1625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	15.1	23.1	0.0	16.3	22.6	14.0	14.0	22.4	15.0	15.0
Incr Delay (d2), s/veh	5.8	0.0	0.5	6.7	0.0	0.6	5.5	0.4	0.4	5.4	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.3	0.4	0.0	1.2	0.6	1.4	1.5	0.7	2.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	15.7	29.8	0.0	16.9	28.1	14.5	14.5	27.8	16.2	16.2
LnGrp LOS	C	A	B	C	A	B	C	B	B	C	B	B
Approach Vol, veh/h		227			156			405			672	
Approach Delay, s/veh		19.6			19.0			15.9			17.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	18.5	5.9	17.0	6.7	18.9	7.6	15.3
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	30.0	15.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	3.4	6.0	2.7	5.7	3.2	9.4	4.0	5.2
Green Ext Time (p_c), s	0.1	2.3	0.0	0.9	0.0	4.3	0.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	58	51	66	104	24	49	84	55	50	118	39
Future Vol, veh/h	7	58	51	66	104	24	49	84	55	50	118	39
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	10	85	75	97	153	35	72	124	81	74	174	57
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	12.8	13	11.5	12.3
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	53%	0%	81%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	47%	0%	19%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	84	55	7	109	66	128	50	118	39
LT Vol	49	0	0	7	0	66	0	50	0	0
Through Vol	0	84	0	0	58	0	104	0	118	0
RT Vol	0	0	55	0	51	0	24	0	0	39
Lane Flow Rate	72	124	81	10	160	97	188	74	174	57
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.153	0.245	0.144	0.022	0.311	0.203	0.361	0.154	0.34	0.101
Departure Headway (Hd)	7.637	7.127	6.413	7.81	6.976	7.53	6.896	7.559	7.05	6.336
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	470	504	559	459	516	479	525	475	510	565
Service Time	5.378	4.868	4.154	5.551	4.718	5.23	4.596	5.299	4.789	4.075
HCM Lane V/C Ratio	0.153	0.246	0.145	0.022	0.31	0.203	0.358	0.156	0.341	0.101
HCM Control Delay	11.8	12.2	10.2	10.7	12.9	12.1	13.4	11.7	13.4	9.8
HCM Lane LOS	B	B	B	B	B	B	B	B	B	A
HCM 95th-tile Q	0.5	1	0.5	0.1	1.3	0.8	1.6	0.5	1.5	0.3

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	48	70	18	54	33
Future Vol, veh/h	7	48	70	18	54	33
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	10	69	100	26	77	47
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	8.1	8.2
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	0%	62%
Vol Thru, %	87%	80%	0%
Vol Right, %	0%	20%	38%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	55	88	87
LT Vol	7	0	54
Through Vol	48	70	0
RT Vol	0	18	33
Lane Flow Rate	79	126	124
Geometry Grp	1	1	1
Degree of Util (X)	0.099	0.151	0.153
Departure Headway (Hd)	4.523	4.327	4.434
Convergence, Y/N	Yes	Yes	Yes
Cap	795	832	812
Service Time	2.534	2.338	2.445
HCM Lane V/C Ratio	0.099	0.151	0.153
HCM Control Delay	8	8.1	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.5	0.5

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	1	23	3	7	80
Future Vol, veh/h	11	1	23	3	7	80
Conflicting Peds, #/hr	4	72	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	15	1	31	4	9	108

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	165	107	0	0	37	0
Stage 1	35	-	-	-	-	-
Stage 2	130	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.245	-
Pot Cap-1 Maneuver	819	939	-	-	1554	-
Stage 1	980	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	809	873	-	-	1551	-
Mov Cap-2 Maneuver	809	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	885	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	814	1551	-
HCM Lane V/C Ratio	-	-	0.02	0.006	-
HCM Control Delay (s)	-	-	9.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

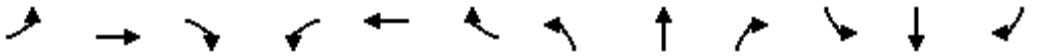
Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	3	14	9	7	56
Future Vol, veh/h	27	3	14	9	7	56
Conflicting Peds, #/hr	8	3	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	36	4	19	12	9	76

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	135	36	0	0	39	0
Stage 1	33	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.245	-
Pot Cap-1 Maneuver	852	1028	-	-	1552	-
Stage 1	982	-	-	-	-	-
Stage 2	915	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	833	1017	-	-	1540	-
Mov Cap-2 Maneuver	833	-	-	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	908	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	848	1540	-
HCM Lane V/C Ratio	-	-	0.048	0.006	-
HCM Control Delay (s)	-	-	9.5	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



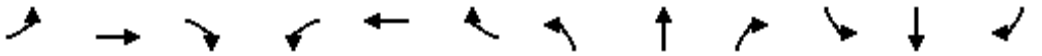
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	39	38	96	46	70	56	662	125	42	519	114
Future Volume (veh/h)	202	39	38	96	46	70	56	662	125	42	519	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	220	42	41	104	50	76	61	720	136	46	564	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	239	153	150	134	78	119	80	969	183	66	917	201
Arrive On Green	0.13	0.18	0.18	0.07	0.12	0.12	0.05	0.32	0.32	0.04	0.32	0.32
Sat Flow, veh/h	1781	857	837	1781	654	994	1781	2983	563	1781	2891	633
Grp Volume(v), veh/h	220	0	83	104	0	126	61	429	427	46	346	342
Grp Sat Flow(s),veh/h/ln	1781	0	1694	1781	0	1649	1781	1777	1769	1781	1777	1748
Q Serve(g_s), s	6.4	0.0	2.2	3.0	0.0	3.8	1.8	11.2	11.2	1.3	8.6	8.7
Cycle Q Clear(g_c), s	6.4	0.0	2.2	3.0	0.0	3.8	1.8	11.2	11.2	1.3	8.6	8.7
Prop In Lane	1.00		0.49	1.00		0.60	1.00		0.32	1.00		0.36
Lane Grp Cap(c), veh/h	239	0	303	134	0	197	80	577	575	66	564	555
V/C Ratio(X)	0.92	0.00	0.27	0.78	0.00	0.64	0.76	0.74	0.74	0.69	0.61	0.62
Avail Cap(c_a), veh/h	239	0	325	616	0	253	650	1092	1087	684	921	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	18.5	23.7	0.0	21.9	24.6	15.6	15.6	24.8	15.1	15.1
Incr Delay (d2), s/veh	36.3	0.0	0.2	3.7	0.0	1.3	5.4	0.7	0.7	4.7	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	0.8	1.3	0.0	1.4	0.8	4.0	4.0	0.6	3.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	0.0	18.6	27.3	0.0	23.2	30.0	16.4	16.4	29.5	15.5	15.5
LnGrp LOS	E	A	B	C	A	C	C	B	B	C	B	B
Approach Vol, veh/h		303			230			917			734	
Approach Delay, s/veh		47.6			25.0			17.3			16.4	
Approach LOS		D			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	21.9	8.9	14.3	7.3	21.5	12.0	11.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	32.0	18.0	10.0	19.0	27.0	7.0	8.0
Max Q Clear Time (g_c+I1), s	3.3	13.2	5.0	4.2	3.8	10.7	8.4	5.8
Green Ext Time (p_c), s	0.0	3.6	0.0	0.1	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	75	70	22	59	148	47	660	15	79	531	80
Future Volume (veh/h)	101	75	70	22	59	148	47	660	15	79	531	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	88	82	26	69	174	55	776	18	93	625	94
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	242	225	52	100	251	88	1147	27	122	1059	159
Arrive On Green	0.09	0.27	0.27	0.03	0.21	0.21	0.05	0.32	0.32	0.07	0.34	0.34
Sat Flow, veh/h	1781	887	827	1781	467	1178	1781	3549	82	1781	3094	464
Grp Volume(v), veh/h	119	0	170	26	0	243	55	388	406	93	358	361
Grp Sat Flow(s),veh/h/ln	1781	0	1714	1781	0	1645	1781	1777	1854	1781	1777	1781
Q Serve(g_s), s	4.0	0.0	5.0	0.9	0.0	8.4	1.9	11.7	11.7	3.2	10.3	10.3
Cycle Q Clear(g_c), s	4.0	0.0	5.0	0.9	0.0	8.4	1.9	11.7	11.7	3.2	10.3	10.3
Prop In Lane	1.00		0.48	1.00		0.72	1.00		0.04	1.00		0.26
Lane Grp Cap(c), veh/h	157	0	467	52	0	351	88	574	600	122	608	610
V/C Ratio(X)	0.76	0.00	0.36	0.50	0.00	0.69	0.63	0.68	0.68	0.76	0.59	0.59
Avail Cap(c_a), veh/h	575	0	830	431	0	664	431	1291	1347	431	1291	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	18.2	29.6	0.0	22.5	28.9	18.2	18.2	28.4	16.8	16.8
Incr Delay (d2), s/veh	7.3	0.0	0.5	7.3	0.0	2.4	7.1	1.4	1.3	9.5	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.9	0.5	0.0	3.3	0.9	4.6	4.8	1.6	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	0.0	18.7	36.9	0.0	24.9	36.0	19.6	19.5	37.8	17.7	17.7
LnGrp LOS	C	A	B	D	A	C	D	B	B	D	B	B
Approach Vol, veh/h		289			269			849			812	
Approach Delay, s/veh		25.3			26.1			20.6			20.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	25.0	6.3	21.9	7.6	26.2	10.0	18.2
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	30.0	15.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	5.2	13.7	2.9	7.0	3.9	12.3	6.0	10.4
Green Ext Time (p_c), s	0.1	5.6	0.0	0.9	0.1	5.1	0.2	1.2

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	96	39	71	81	42	29	170	68	47	100	8
Future Vol, veh/h	29	96	39	71	81	42	29	170	68	47	100	8
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	117	48	87	99	51	35	207	83	57	122	10
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	11.9	11.6	12.1	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	71%	0%	66%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	29%	0%	34%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	170	68	29	135	71	123	47	100	8
LT Vol	29	0	0	29	0	71	0	47	0	0
Through Vol	0	170	0	0	96	0	81	0	100	0
RT Vol	0	0	68	0	39	0	42	0	0	8
Lane Flow Rate	35	207	83	35	165	87	150	57	122	10
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.07	0.38	0.135	0.072	0.301	0.173	0.269	0.118	0.233	0.017
Departure Headway (Hd)	7.102	6.594	5.882	7.294	6.589	7.205	6.463	7.396	6.887	6.175
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	502	543	605	489	542	495	552	482	518	575
Service Time	4.88	4.371	3.66	5.076	4.371	4.987	4.245	5.184	4.674	3.961
HCM Lane V/C Ratio	0.07	0.381	0.137	0.072	0.304	0.176	0.272	0.118	0.236	0.017
HCM Control Delay	10.4	13.4	9.6	10.6	12.2	11.5	11.6	11.2	11.8	9.1
HCM Lane LOS	B	B	A	B	B	B	B	B	B	A
HCM 95th-tile Q	0.2	1.8	0.5	0.2	1.3	0.6	1.1	0.4	0.9	0.1

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	32	46	42	31	9
Future Vol, veh/h	5	32	46	42	31	9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	34	49	45	33	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.3	7.2	7.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	0%	78%
Vol Thru, %	86%	52%	0%
Vol Right, %	0%	48%	23%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	37	88	40
LT Vol	5	0	31
Through Vol	32	46	0
RT Vol	0	42	9
Lane Flow Rate	39	94	43
Geometry Grp	1	1	1
Degree of Util (X)	0.045	0.098	0.049
Departure Headway (Hd)	4.106	3.752	4.183
Convergence, Y/N	Yes	Yes	Yes
Cap	870	953	851
Service Time	2.141	1.782	2.23
HCM Lane V/C Ratio	0.045	0.099	0.051
HCM Control Delay	7.3	7.2	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	6	46	9	1	40
Future Vol, veh/h	1	6	46	9	1	40
Conflicting Peds, #/hr	21	124	0	21	21	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	7	52	10	1	45

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	146	202	0	0	83	0
Stage 1	78	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	846	839	-	-	1514	-
Stage 1	945	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	811	725	-	-	1484	-
Mov Cap-2 Maneuver	811	-	-	-	-	-
Stage 1	925	-	-	-	-	-
Stage 2	936	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	736	1484	-
HCM Lane V/C Ratio	-	-	0.011	0.001	-
HCM Control Delay (s)	-	-	9.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	6	36	17	9	27
Future Vol, veh/h	6	6	36	17	9	27
Conflicting Peds, #/hr	5	1	0	18	18	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	6	37	18	9	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	115	65	0	0	73	0
Stage 1	64	-	-	-	-	-
Stage 2	51	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	881	999	-	-	1527	-
Stage 1	959	-	-	-	-	-
Stage 2	971	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	856	981	-	-	1501	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	1.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	914	1501	-
HCM Lane V/C Ratio	-	-	0.014	0.006	-
HCM Control Delay (s)	-	-	9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Proposed Improvements

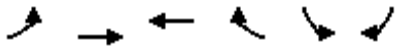
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	139	119	129	187	46	179	148	56	93	152	63
Future Volume (veh/h)	28	139	119	129	187	46	179	148	56	93	152	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.93	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	156	134	184	231	64	224	172	72	141	214	0
Peak Hour Factor	0.70	0.89	0.89	0.70	0.81	0.72	0.80	0.86	0.78	0.66	0.71	0.51
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	205	177	231	440	122	276	464	366	182	366	
Arrive On Green	0.04	0.22	0.22	0.13	0.31	0.31	0.15	0.25	0.25	0.10	0.20	0.00
Sat Flow, veh/h	1781	915	786	1781	1402	388	1781	1870	1473	1781	1870	1585
Grp Volume(v), veh/h	40	0	290	184	0	295	224	172	72	141	214	0
Grp Sat Flow(s),veh/h/ln	1781	0	1701	1781	0	1791	1781	1870	1473	1781	1870	1585
Q Serve(g_s), s	1.3	0.0	9.7	6.1	0.0	8.2	7.4	4.6	2.4	4.7	6.3	0.0
Cycle Q Clear(g_c), s	1.3	0.0	9.7	6.1	0.0	8.2	7.4	4.6	2.4	4.7	6.3	0.0
Prop In Lane	1.00		0.46	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	72	0	382	231	0	562	276	464	366	182	366	
V/C Ratio(X)	0.56	0.00	0.76	0.80	0.00	0.52	0.81	0.37	0.20	0.77	0.59	
Avail Cap(c_a), veh/h	178	0	502	345	0	696	403	592	466	377	564	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.7	0.0	22.1	25.7	0.0	17.2	24.9	19.0	18.1	26.7	22.3	0.0
Incr Delay (d2), s/veh	6.6	0.0	4.8	7.6	0.0	0.8	7.8	0.5	0.3	6.8	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	4.1	2.9	0.0	3.2	3.5	1.9	0.8	2.2	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	26.9	33.3	0.0	17.9	32.7	19.5	18.4	33.5	23.8	0.0
LnGrp LOS	D	A	C	C	A	B	C	B	B	C	C	
Approach Vol, veh/h		330			479			468			355	A
Approach Delay, s/veh		27.9			23.8			25.6			27.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	19.6	12.4	18.2	13.9	16.4	7.0	23.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.3	19.3	11.8	18.0	13.8	18.4	6.1	23.7
Max Q Clear Time (g_c+I1), s	10.7	6.6	8.1	11.7	9.4	8.3	3.3	10.2
Green Ext Time (p_c), s	0.2	0.9	0.2	0.9	0.3	0.8	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	92	194	307	63	79	118
Future Volume (veh/h)	92	194	307	63	79	118
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	146	237	379	90	92	190
Peak Hour Factor	0.63	0.82	0.81	0.70	0.86	0.62
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	226	1057	494	117	125	258
Arrive On Green	0.13	0.57	0.34	0.34	0.24	0.24
Sat Flow, veh/h	1781	1870	1449	344	522	1078
Grp Volume(v), veh/h	146	237	0	469	283	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1793	1606	0
Q Serve(g_s), s	3.6	2.9	0.0	10.7	7.5	0.0
Cycle Q Clear(g_c), s	3.6	2.9	0.0	10.7	7.5	0.0
Prop In Lane	1.00			0.19	0.33	0.67
Lane Grp Cap(c), veh/h	226	1057	0	611	384	0
V/C Ratio(X)	0.65	0.22	0.00	0.77	0.74	0.00
Avail Cap(c_a), veh/h	701	2037	0	1072	730	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.1	5.0	0.0	13.5	16.2	0.0
Incr Delay (d2), s/veh	3.1	0.1	0.0	2.1	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.7	0.0	3.9	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.2	5.1	0.0	15.6	18.9	0.0
LnGrp LOS	C	A	A	B	B	A
Approach Vol, veh/h		383	469		283	
Approach Delay, s/veh		11.6	15.6		18.9	
Approach LOS		B	B		B	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		30.5		15.5	10.3	20.2
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		50.1		20.9	18.1	27.5
Max Q Clear Time (g_c+I1), s		4.9		9.5	5.6	12.7
Green Ext Time (p_c), s		1.5		0.7	0.3	2.7

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

LANE SUMMARY

Site: 101 [Intersection 3 AM Ex School]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N Bush Street													
Lane 1[d]	468	2.0	948	0.493	100	9.9	LOS A	3.4	86.5	Full	235	0.0	0.0
Approach	468	2.0		0.493		9.9	LOS A	3.4	86.5				
East: Low Gap Road													
Lane 1[d]	479	2.0	859	0.558	100	12.1	LOS B	4.8	120.9	Full	260	0.0	0.0
Approach	479	2.0		0.558		12.1	LOS B	4.8	120.9				
North: N Bush Street													
Lane 1[d]	355	2.0	768	0.462	100	11.0	LOS B	2.7	69.4	Full	125	0.0	0.0
Lane 2	124	2.0	768	0.161	100	6.4	LOS A	0.6	15.7	Full	125	0.0	0.0
Approach	479	2.0		0.462		9.8	LOS A	2.7	69.4				
West: Low Gap Road													
Lane 1[d]	330	2.0	768	0.430	100	10.3	LOS B	2.5	63.3	Full	170	0.0	0.0
Approach	330	2.0		0.430		10.3	LOS B	2.5	63.3				
Intersection	1755	2.0		0.558		10.6	LOS B	4.8	120.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [Intersection 4 AM Ex School]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Low Gap Road													
Lane 1[d]	469	2.0	1161	0.404	100	7.2	LOS A	2.5	62.5	Full	1600	0.0	0.0
Approach	469	2.0		0.404		7.2	LOS A	2.5	62.5				
North: Despina Drive													
Lane 1[d]	282	2.0	910	0.310	100	7.3	LOS A	1.5	38.3	Full	1600	0.0	0.0
Approach	282	2.0		0.310		7.3	LOS A	1.5	38.3				
West: Low Gap Road													
Lane 1[d]	383	2.0	1227	0.312	100	5.8	LOS A	1.7	44.4	Full	1600	0.0	0.0
Approach	383	2.0		0.312		5.8	LOS A	1.7	44.4				
Intersection	1134	2.0		0.404		6.8	LOS A	2.5	62.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

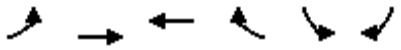
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	164	124	79	158	49	113	172	82	69	148	31
Future Volume (veh/h)	30	164	124	79	158	49	113	172	82	69	148	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	208	163	93	226	57	138	239	99	111	176	0
Peak Hour Factor	0.54	0.79	0.76	0.85	0.70	0.86	0.82	0.72	0.83	0.62	0.84	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	271	212	122	435	110	179	445	342	144	408	
Arrive On Green	0.05	0.29	0.29	0.07	0.31	0.31	0.10	0.24	0.24	0.08	0.22	0.00
Sat Flow, veh/h	1781	938	735	1781	1425	359	1781	1870	1437	1781	1870	1585
Grp Volume(v), veh/h	56	0	371	93	0	283	138	239	99	111	176	0
Grp Sat Flow(s),veh/h/ln	1781	0	1672	1781	0	1784	1781	1870	1437	1781	1870	1585
Q Serve(g_s), s	1.7	0.0	11.3	2.8	0.0	7.3	4.2	6.2	3.1	3.4	4.5	0.0
Cycle Q Clear(g_c), s	1.7	0.0	11.3	2.8	0.0	7.3	4.2	6.2	3.1	3.4	4.5	0.0
Prop In Lane	1.00		0.44	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	0	483	122	0	544	179	445	342	144	408	
V/C Ratio(X)	0.60	0.00	0.77	0.76	0.00	0.52	0.77	0.54	0.29	0.77	0.43	
Avail Cap(c_a), veh/h	218	0	678	241	0	746	337	758	582	305	725	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.7	0.0	18.1	25.4	0.0	15.9	24.4	18.5	17.3	25.0	18.7	0.0
Incr Delay (d2), s/veh	6.2	0.0	3.5	9.3	0.0	0.8	6.9	1.0	0.5	8.4	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	4.3	1.4	0.0	2.8	2.0	2.6	1.0	1.7	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	0.0	21.5	34.7	0.0	16.7	31.3	19.5	17.8	33.4	19.4	0.0
LnGrp LOS	C	A	C	C	A	B	C	B	B	C	B	
Approach Vol, veh/h		427			376			476			287	A
Approach Delay, s/veh		22.9			21.2			22.6			24.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	17.7	8.3	20.5	10.1	16.6	7.4	21.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	22.5	7.5	22.5	10.5	21.5	6.8	23.2
Max Q Clear Time (g_c+I1), s	5.4	8.2	4.8	13.3	6.2	6.5	3.7	9.3
Green Ext Time (p_c), s	0.1	1.5	0.0	1.6	0.1	0.8	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	71	174	100	109	110	29
Future Volume (veh/h)	71	174	100	109	110	29
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.94	1.00	0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1900	1900
Adj Flow Rate, veh/h	116	272	175	191	275	43
Peak Hour Factor	0.61	0.64	0.57	0.57	0.40	0.68
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	196	982	249	271	400	63
Arrive On Green	0.11	0.53	0.32	0.32	0.27	0.27
Sat Flow, veh/h	1767	1856	782	853	1481	232
Grp Volume(v), veh/h	116	272	0	366	319	0
Grp Sat Flow(s),veh/h/ln	1767	1856	0	1635	1717	0
Q Serve(g_s), s	2.8	3.6	0.0	8.8	7.5	0.0
Cycle Q Clear(g_c), s	2.8	3.6	0.0	8.8	7.5	0.0
Prop In Lane	1.00			0.52	0.86	0.13
Lane Grp Cap(c), veh/h	196	982	0	520	464	0
V/C Ratio(X)	0.59	0.28	0.00	0.70	0.69	0.00
Avail Cap(c_a), veh/h	713	1906	0	856	953	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.0	5.8	0.0	13.4	14.7	0.0
Incr Delay (d2), s/veh	2.8	0.2	0.0	1.8	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.0	0.0	2.9	2.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.8	6.0	0.0	15.2	16.5	0.0
LnGrp LOS	C	A	A	B	B	A
Approach Vol, veh/h		388	366		319	
Approach Delay, s/veh		10.7	15.2		16.5	
Approach LOS		B	B		B	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			28.3		16.6	9.5	18.8
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			46.1		24.9	18.1	23.5
Max Q Clear Time (g_c+I1), s			5.6		9.5	4.8	10.8
Green Ext Time (p_c), s			1.7		0.9	0.2	1.9

Intersection Summary		
HCM 6th Ctrl Delay		14.0
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

LANE SUMMARY

Site: 101 [Intersection 3 PM Ex School]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance													
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N Bush Street													
Lane 1[d]	475	2.0	911	0.522	100	10.8	LOS B	4.1	103.2	Full	235	0.0	0.0
Approach	475	2.0		0.522		10.8	LOS B	4.1	103.2				
East: Low Gap Road													
Lane 1[d]	376	2.0	861	0.436	100	9.6	LOS A	2.6	65.9	Full	260	0.0	0.0
Approach	376	2.0		0.436		9.6	LOS A	2.6	65.9				
North: N Bush Street													
Lane 1[d]	287	2.0	889	0.323	100	7.6	LOS A	1.4	36.0	Full	125	0.0	0.0
Lane 2	36	2.0	889	0.041	100	4.4	LOS A	0.1	3.7	Full	125	0.0	0.0
Approach	324	2.0		0.323		7.2	LOS A	1.4	36.0				
West: Low Gap Road													
Lane 1[d]	426	2.0	900	0.474	100	9.9	LOS A	3.1	78.7	Full	170	0.0	0.0
Approach	426	2.0		0.474		9.9	LOS A	3.1	78.7				
Intersection	1601	2.0		0.522		9.6	LOS A	4.1	103.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [Intersection 4 PM Ex School]

New Site
Site Category: (None)
Roundabout

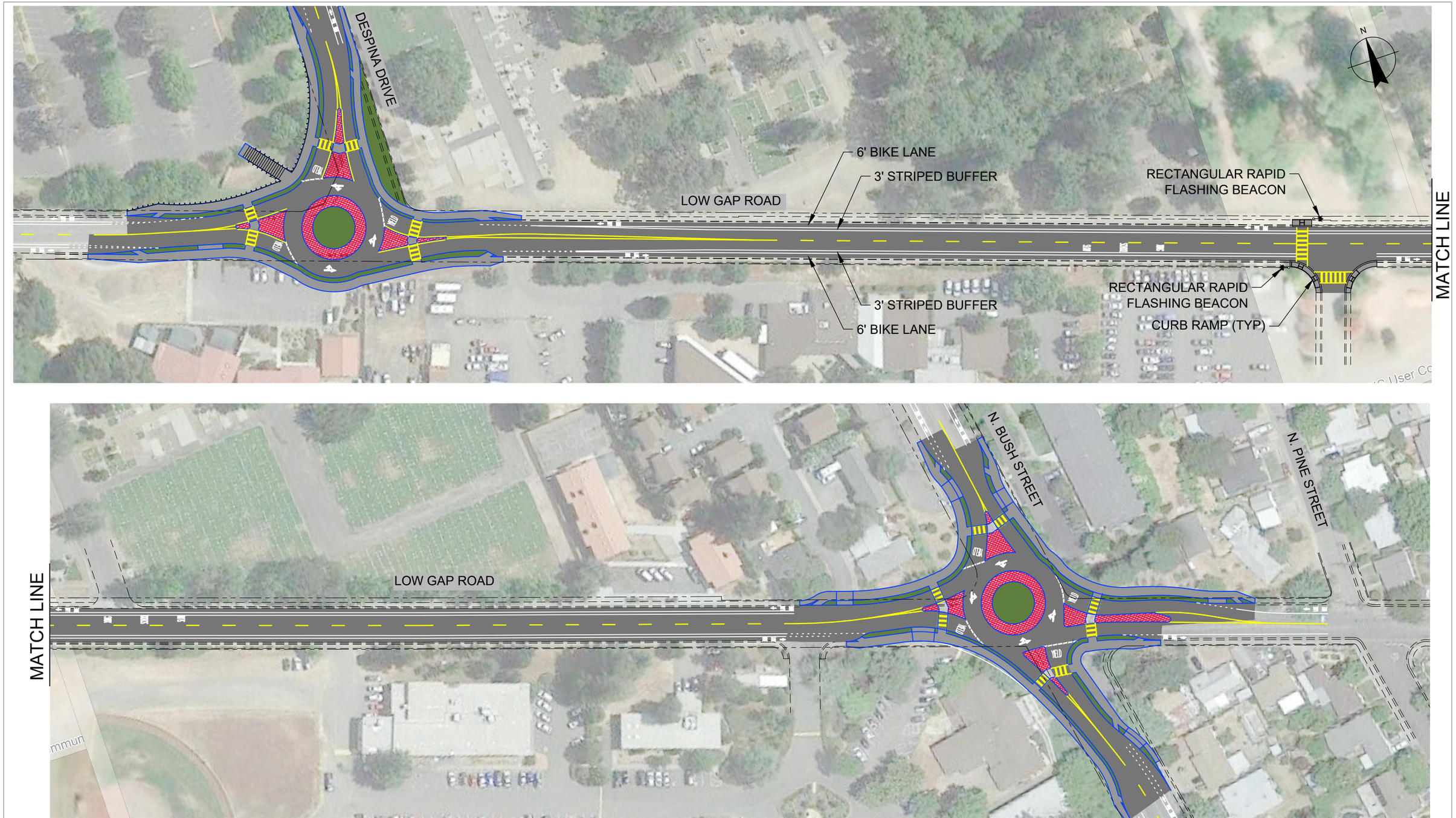
Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Low Gap Road													
Lane 1[d]	367	3.0	1184	0.310	100	5.9	LOS A	1.7	43.2	Full	1600	0.0	0.0
Approach	367	3.0		0.310		5.9	LOS A	1.7	43.2				
North: Despina Drive													
Lane 1[d]	318	3.0	1108	0.287	100	6.0	LOS A	1.5	37.6	Full	1600	0.0	0.0
Approach	318	3.0		0.287		6.0	LOS A	1.5	37.6				
West: Low Gap Road													
Lane 1[d]	388	3.0	997	0.389	100	7.8	LOS A	2.1	53.8	Full	1600	0.0	0.0
Approach	388	3.0		0.389		7.8	LOS A	2.1	53.8				
Intersection	1073	3.0		0.389		6.6	LOS A	2.1	53.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Appendix D: Design Recommendations



LOW GAP ROAD IMPROVEMENTS CONCEPT ROUNDABOUTS

100' 0 100'

1 inch = 100 ft.

GHD

City of Ukiah
Ukiah Traffic Analysis for Schools and Surrounding Areas

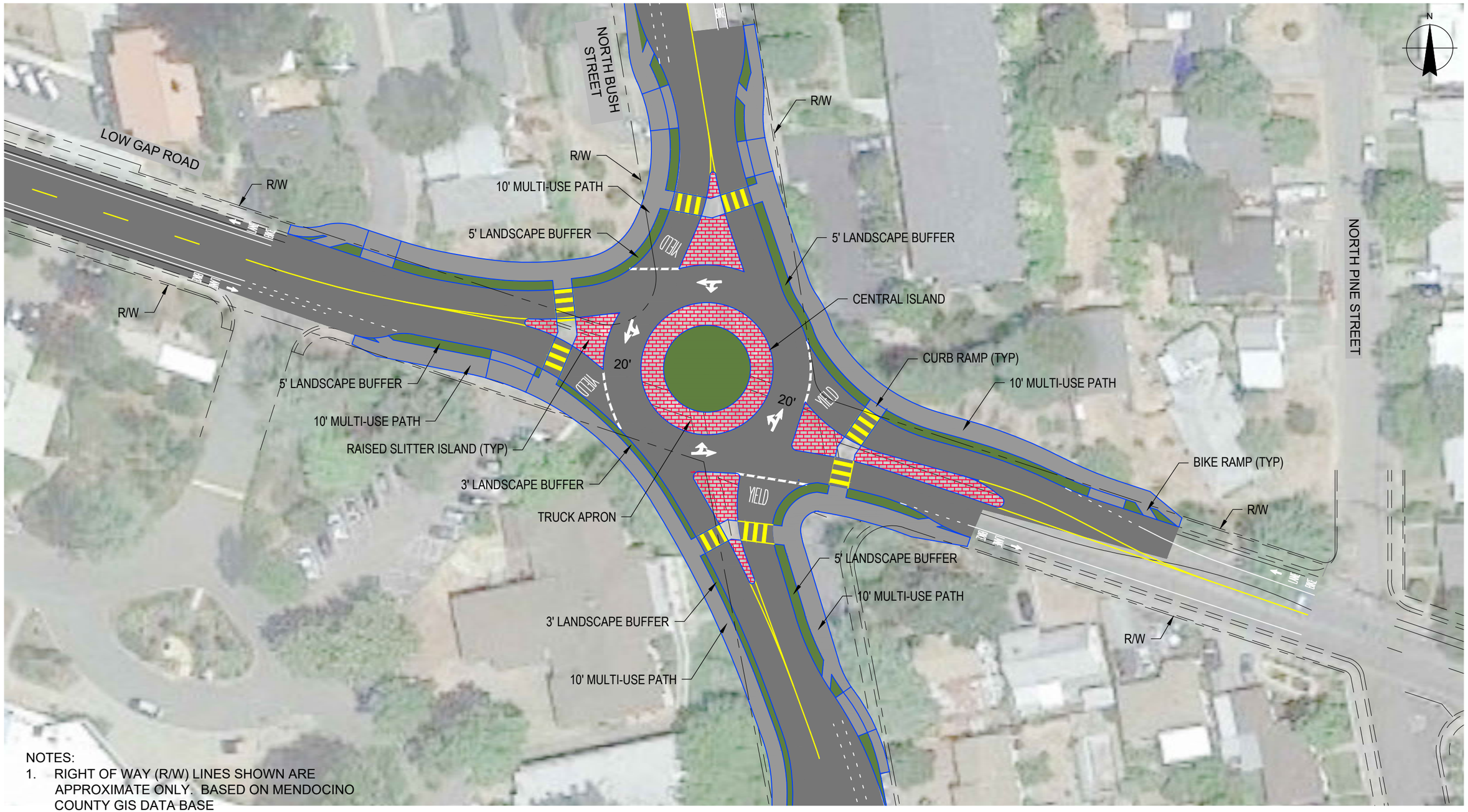
INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.19.19**

FIGURE D1

Filename: K:\PRJ\2506\2506EX001.dwg Plot Date: 20 December 2019 - 3:01 PM

Source:



NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #3
IMPROVEMENTS CONCEPT
ROUNDABOUT

50' 0 50'
1 inch = 50 ft.

GHD

City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.12.19**

FIGURE D2

Source:

Filename: K:\PRJ\2506\2506EX001.dwg Plot Date: 20 December 2019 - 11:13 AM

NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #4
IMPROVEMENTS CONCEPT
ROUNDABOUT

50' 0 50'
1 inch = 50 ft.

City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

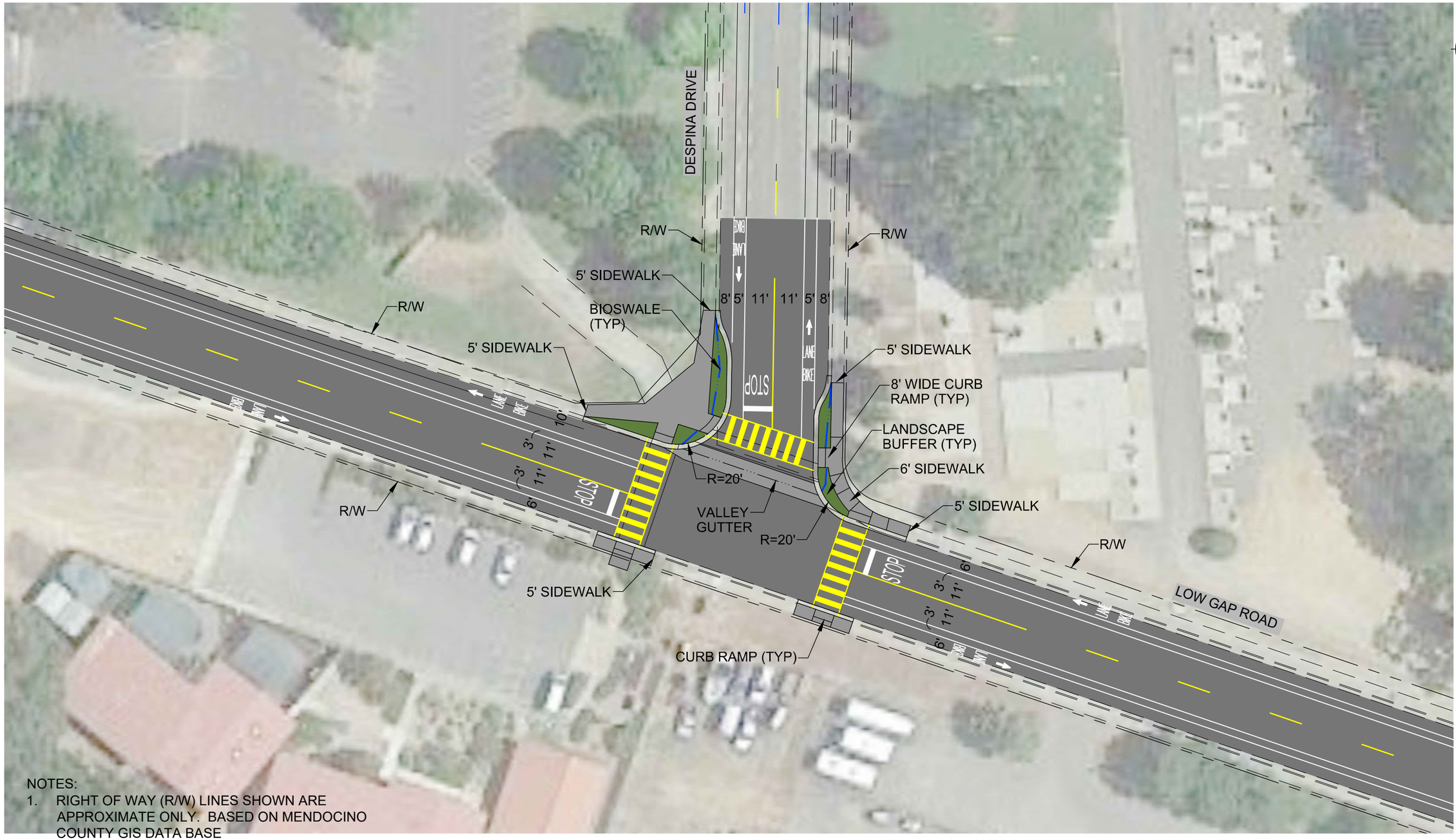
INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.19.19**

FIGURE D3

Filename: K:\PRJ\2506\2506EX001.dwg Plot Date: 20 December 2019 - 2:39 PM

Source:



NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #4
IMPROVEMENTS CONCEPT
CURB EXTENSIONS

40' 0 40'
1 inch = 40 ft.

GHD

City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

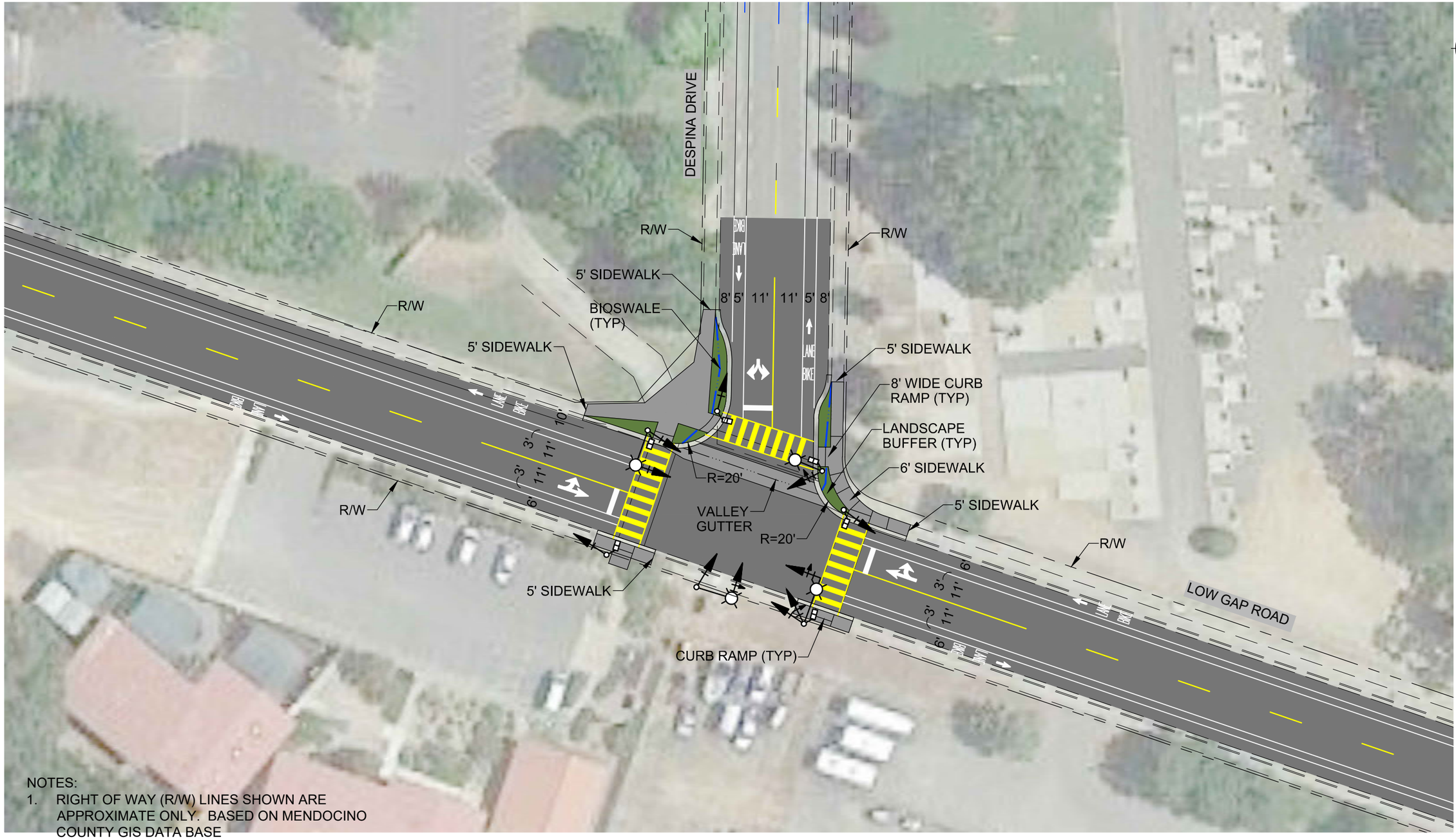
INTERSECTION IMPROVEMENT CONCEPTS

Project No. 11176246
Report No.
Date 12.24.19

FIGURE D4

Filename: K:\PRJ\2506\2506EX002.dwg Plot Date: 24 December 2019 - 11:01 AM

Source:



NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #4
IMPROVEMENTS CONCEPT
CURB EXTENSIONS / TRAFFIC SIGNAL

40' 0 40'
1 inch = 40 ft.

GHD

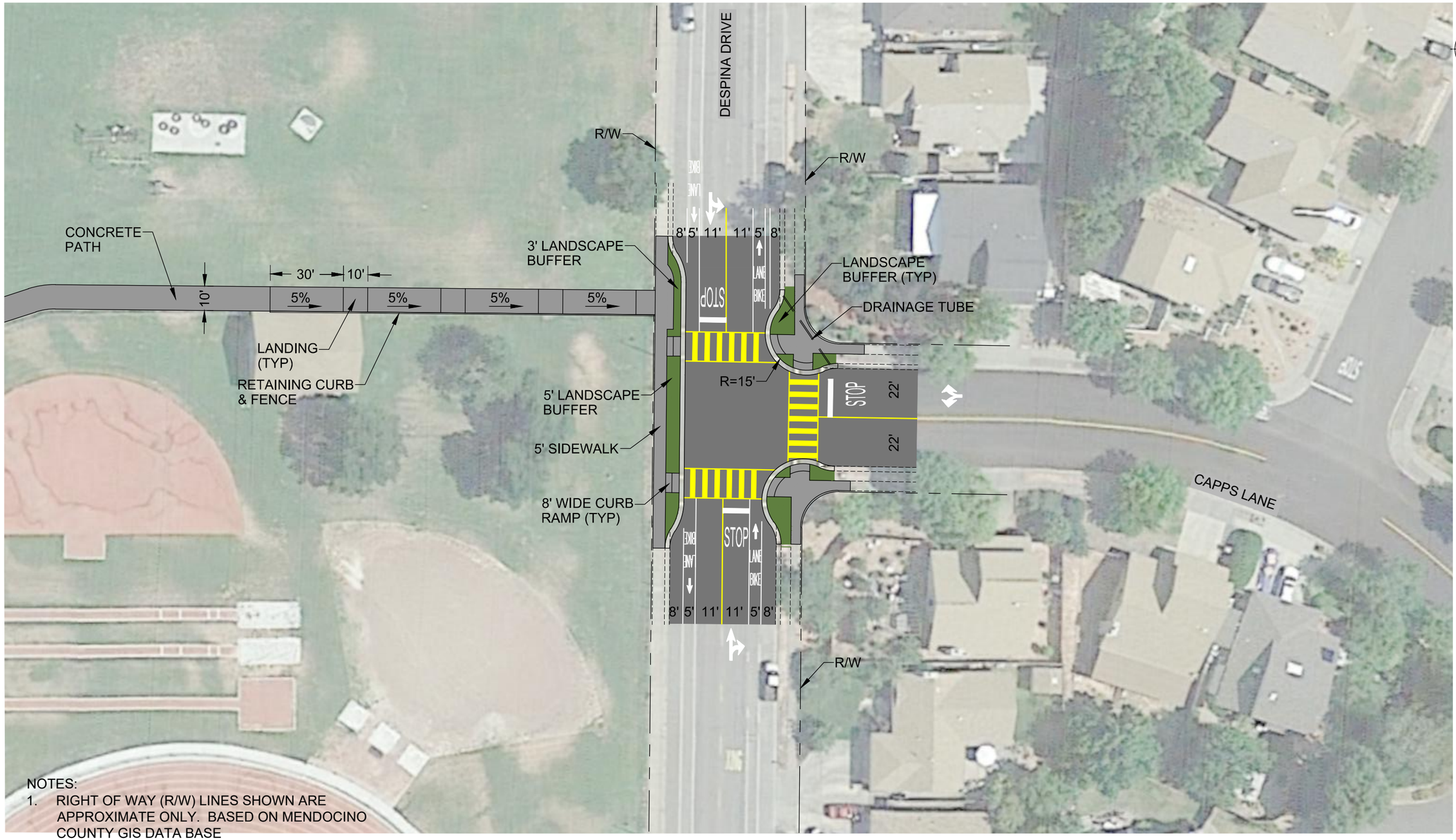
City of Ukiah
Ukiah Traffic Analysis for Schools and Surrounding Areas
INTERSECTION IMPROVEMENT CONCEPTS

Project No. 11176246
Report No.
Date 12.19.19

FIGURE D5

Source:

Filename: K:\PRJ\2506\2506EX002.dwg Plot Date: 24 December 2019 - 11:01 AM



NOTES:
1. RIGHT OF WAY (R/W) LINES SHOWN ARE APPROXIMATE ONLY. BASED ON MENDOCINO COUNTY GIS DATA BASE

INTERSECTION #5
IMPROVEMENTS CONCEPT
CURB EXTENSIONS

40' 0 40'
1 inch = 40 ft.

GHD

City of Ukiah
Ukiah Traffic Analysis for
Schools and Surrounding Areas

INTERSECTION IMPROVEMENT CONCEPTS

Project No. **11176246**
Report No.
Date **12.24.19**

FIGURE D6

Filename: K:\PRJ\2506\2506EX002.dwg Plot Date: 24 December 2019 - 11:01 AM

Source:

Appendix E: Signal Timing

INTERSECTION:

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street Name: **State Street**
E/W Street Name: **Despina Drive/Low Gap Road**

Last Database Change:

Change Record					
Change	By	Date	Change	By	Date

Notes: Phase 7 is a ped only phase for the N-S Peds

Drop Number		<C+0+0>
Zone Number		<C+0+1>
Area Number		<C+0+2>
Area Address		<C+0+3>
QuicNet Channel		(QuicNet)

Communication Addresses

Manual Plan		<C+A+1>
Manual Offset		<C+B+1>

Manual Selection

Max Initial		<F+0+E>
Red Revert		<F+0+F>
All Red Start		<F+C+0>

Start / Revert Times

	Phase							
Column Numbers ---->	1	2	3	4	5	6	7	8
Row *Phase Names ---->*				EB		SB	Ped	WB
0 Ped Walk							7	7
1 Ped FDW							17	21
2 Min Green				8		6		8
3 Type 3 Limit								
4 Added Initial								
5 Veh Extension				2.5		2.0		2.5
6 Max Gap				3.0		2.5		3.0
7 Min Gap				2.5		2.0		2.5
8 Max Limit				30.0		30.0		35.0
9 Max Limit 2								
A								
B Call To Phase								
C Reduce By				0.0		0.0		0.0
D Reduce Every				0.0		0.0		0.0
E Yellow Change				3.6		3.6		3.6
F Red Clear				1.0		1.0		1.0

Phase Timing - Bank 1 <F Page>

E	
RR-1 Delay	
RR-1 Clear	
EV-A Delay	
EV-A Clear	
EV-B Delay	
EV-B Clear	
EV-C Delay	
EV-C Clear	
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

F		Row
Permit		0
Red Lock		1
Yellow Lock		2
Min Recall		3
Ped Recall		4
View Set Peds	- - - - -	5
Rest In Walk		6
Red Rest		7
Dual Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond. Service		C
Man Cntrl Calls		D
Yellow Start		E
First Phases	6	F

Phase Functions <F Page>

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C