Community and Economic Development
Planning Division

Becky Beavers
Deputy Director BB

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PLANNING COMMISSION DATE: August 7, 2018

AGENDA ITEM: #3

PM	**#4230**	**Tentative Parcel Map and General Plan Amendment for**
GP	**#2017-001**	**50 Industrial Parcels**
APN	**029-280-029**	**Applicant/Owner: Madera Creek, LLC**
CEQA	**#2018-14**	**Mitigated Negative Declaration**

REQUEST:

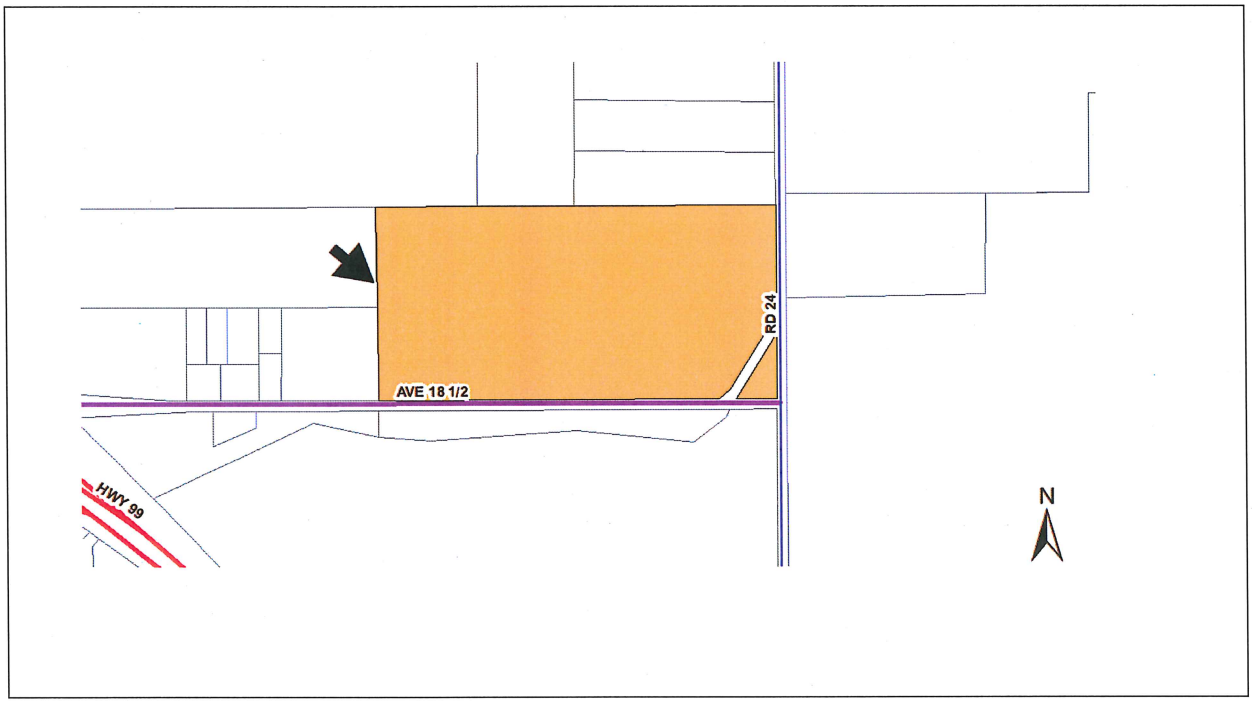
The applicant is requesting a Tentative Parcel Map and General Plan Amendment to allow for 50 industrial parcels.

LOCATION:

The project is located on the northwest corner of Road 24 and Ave 18 1/2 (18637 Road 24), Madera

ENVIRONMENTAL ASSESSMENT:

A Mitigated Negative Declaration (MND #2018-14) has been prepared and is subject to approval by the Planning Commission.



RECOMMENDATION: Staff recommends approval of PM #4230, GP #2017-001, and MND #2018-14 subject to conditions and the mitigation monitoring and reporting program.

STAFF REPORT August 7, 2018
PM #4230
GP #2017-001

GENERAL PLAN DESIGNATION (Exhibit A):

SITE:	AE (Agriculture Exclusive) Designation
SURROUNDING:	LI (Light Industrial) and AE (Agriculture Exclusive) Designations
PROPOSED:	LI (Light Industrial) Designation

ZONING (Exhibit B):

SITE:	IL (Industrial Light) District
SURROUNDING:	IL (Industrial Light) and ARE-40 (Agricultural Rural Exclusive-40 Acre) Districts

LAND USE:

SITE:	Pistachio Orchard
SURROUNDING:	Industrial uses and orchards

SIZE OF PROPERTY: 75.38 acres

ACCESS: The property is accessed via Avenue 18 1/2

PROJECT DESCRIPTION:

The applicant is requesting a tentative parcel map (PM #4230) for 49 industrial parcels and one (1) outlot pursuant to Section 66426(c) of the Subdivision Map Act which allows for a tentative parcel map to be processed instead of a tentative subdivision map for commercial and industrial uses. The application also includes a general plan amendment from AE (Agriculture Exclusive) with a 36 acre minimum parcel size to LI (Light Industrial) with a one acre minimum parcel size as per the current zone district.

ORDINANCES/POLICIES:

Madera County General Plan (Part I Land Use Standards)

Madera County Code (Chapter 17.72 regulates Parcel Maps).

Madera County Code (Chapter 18.42 I-L Zone District)

California Government Code Title 7 (Subdivision Map Act).

ANALYSIS:

Madera Creek, LLC submitted a tentative parcel map and general plan amendment application in May 2017. After review of the application Staff determined a Traffic Impact Study (TIS) and Groundwater Report would be required. The application was then put on hold until the completion of the studies.

The proposed tentative parcel map consists of 49 light industrial lots on approximately 80 acres located on the north side of Avenue 18½ between the Road 23½ alignment and Road 24. The lots range in size from 1.0 acre to 1.6 acres. The map also indicates a 6.1-acre outlot for storm drain purposes and 1.3 acres that will be a remainder parcel. The project will construct a portion of Road 23½ along the western edge of the site. Site access will be provided via new local roads, with one connection to Road 23½, one connection to Road 24, and two connections to Avenue 18½.

Data provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*, are typically used to estimate the number of trips anticipated to be generated by proposed projects. The table below presents the trip generation estimates for the Project.

Project Trip Generation

ITE Land Use	Units	Daily		A.M. Peak Hour (Occurs Between 7:00 and 9:00 a.m.)					P.M. Peak Hour (Occurs Between 4:00 and 6:00 p.m.)				
		Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
General Light Industrial (110)	80 acres	51.80	4,144	7.51	83:17	499	102	601	7.26	22:78	128	453	581

Reference: *Trip Generation Manual, 9th Edition*, Institute of Transportation Engineers 2012
Rates are reported in trips per acre. In:Out are percentages of the total.

The TIS indicates that the Project is expected to cause the LOS at the intersection of the SR 99 southbound ramps, Road 23, and Avenue 18½ to drop from B to E during the a.m. peak hour. Also, the Project is expected to cause the LOS at the intersection of the SR 99 northbound ramps and Avenue 18½ to drop from D to F during the a.m. peak hour and from C to F during the p.m. peak hour. Mitigation measures including the signalization or roundabouts at the intersections are included as part of the Mitigation Monitoring and Reporting Program, in addition to future assumptions for growth in the area causing impacts to roadways.

A Report of Groundwater Conditions was also prepared for the project. This project is currently zoned for industrial use; therefore the impacts to groundwater for industrial use would remain the same if the parcel were built out on a single legal parcel or over the proposed 49 parcels. The parcel has historically been zoned for industrial use and would allow for the construction of industrial buildings as a by-right use. The property is currently planted in pistachios. The report includes results of well production and water quality testing as recently as January 2018. The report indicates that the existing irrigation well currently used for the pistachios could likely be modified to produce water with acceptable contaminant levels. In addition the well would need to be modified to meet the requirements of the Environmental Health Division and Department of Water Resources for public water systems.

The consumptive use of the pistachios is indicated to be about two and a half (2.5) acre-feet per acre per year. The pumpage for the property is currently approximately 235 acre-feet per year. Storm runoff will be discharged onsite to a six acre pond and inside water use will be discharged via on-site community sewage system. The consumptive use of water for the project is estimated to be about two (2) percent of the existing consumptive use of the pistachio orchard.

Dry Creek runs along the southeastern portion of the property. Mitigation measures include a setback buffer from high water mark for biological resources. The portion on the southeast side of Dry Creek will remain as a remainder parcel.

As this project is a parcel map, improvements will be constructed as development of the parcels proceeds; however, in cases where public safety may be impacted, those improvements must be completed prior to final parcel map recordation. The Fire and Building Division has requirements for either constructing improvements or entering into an improvement agreement for the water system for fire suppression and access roads.

This project includes a General Plan Amendment from AE (Agriculture Exclusive) to LI (Light Industrial). The surrounding parcels to the west, north, and south are all planned for Light Industrial uses, in addition to the most southeastern corner of the subject property. This proposal will be an expansion of the existing uses, including the current zone district for the property. The applicant has no prospective tenants at this time. The amendment will allow for the maximum use potential in the IL zone district.

The project was circulated to internal departments and external agencies for review. Comments were received from Caltrans requesting a Traffic Impact Study, the Environmental Health Division, Fire and Building Division, and Public Works Department.

If this project is approved, the applicant will need to submit a check, made out to the County of Madera, in the amount of $2,330.75 to cover the Notice of Determination (CEQA) filing at the Madera County Clerks' office. In lieu of the Fish and Wildlife fee, the applicant may choose to contact the Fresno office of the Department of Fish and Wildlife to apply for a fee waiver. The County Clerk Fee, Department of Fish and Wildlife Fee (or waiver if approved) is due within five days of approval of this permit.

FINDINGS:

1. *The proposed map is consistent with applicable general plan.* Approval of the tentative map is conditioned upon the amendment of the general plan designation to LI (Light Industrial). The minimum lot size for the property will be one acre.

2. *The design or improvements of the proposed subdivision is consistent with applicable general and specific plans.* The proposed division is accessible from a limited Avenue 18 ½ and Road 24 and meets all size requirements for the General Plan and Zoning.

3. *The site is physically suitable for the type of development.* There is adequate access to the site and is located directly adjacent to the needs of motorists using Avenue 12 and SR 99. The site is predominantly flat and is accessible to emergency services.

4. *The site is physically suitable for proposed density or development.* The minimum lot size will be one acre. The proposed division will meet this requirement.

5. *The design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantially and avoidable injure fish or*

wildlife or their habitat. The project has been mitigated so as to avoid sensitive habitats and neighboring owners from light and glare.

6. *The land is not subject to a contract entered into pursuant to the California Land Conservation Act of 1965 (and the resulting parcels following a subdivision of that land would be too small to sustain their agricultural use).* The subject property is not subject to a Williamson Act Contract.

GENERAL PLAN CONSISTENCY:

This application includes a General Plan Amendment from AE (Agriculture Exclusive) to LI (Light Industrial) Designation. The current zone district is IL (Industrial-Light). The proposed amendment will allow for an expansion of the existing industrial uses in the area and allow for the zone district to be utilized to its full potential. The tentative parcel map will meet the minimum parcel size of the zone district.

RECOMMENDATION:

The analysis contained in this report supports approval of Tentative Parcel Map #4230, General Plan Amendment #2017-001, and Mitigated Negative Declaration #2018-14 subject to conditions and Mitigation Monitoring and Reporting Program.

CONDITIONS:

See attached conditions of approval.

ATTACHMENTS:

1. Exhibit A, General Plan Map
2. Exhibit B, Zoning Map
3. Exhibit C, Assessor Map
4. Exhibit D, Tentative Parcel Map
5. Exhibit E, Aerial Map
6. Exhibit F, Topographical Map
7. Exhibit G, Initial Study and Mitigated Negative Declaration
8. Exhibit H, Operational Statement
9. Exhibit I, Environmental Health Division comments
10. Exhibit J, Fire Division comments
11. Exhibit K, Public Works Department comments
12. Exhibit L, Caltrans comments
13. Exhibit M, Traffic Impact Study
14. Exhibit N, Report of Groundwater Conditions

CONDITIONS OF APPROVAL

PROJECT NAME: PM #4230 and GP #2017-001, Madera Creek LLC
PROJECT LOCATION: the project is located on the northwest corner of Road 24 and Ave 18 1/2 (18637 Road 24), Madera.
PROJECT DESCRIPTION: Division of 75.38 acres into 50 industrial parcels and a general plan amendment to allow the reduced parcel sizes

APPLICANT: Madera Creek, LLC
CONTACT PERSON/TELEPHONE NUMBER: (559) 779-7132

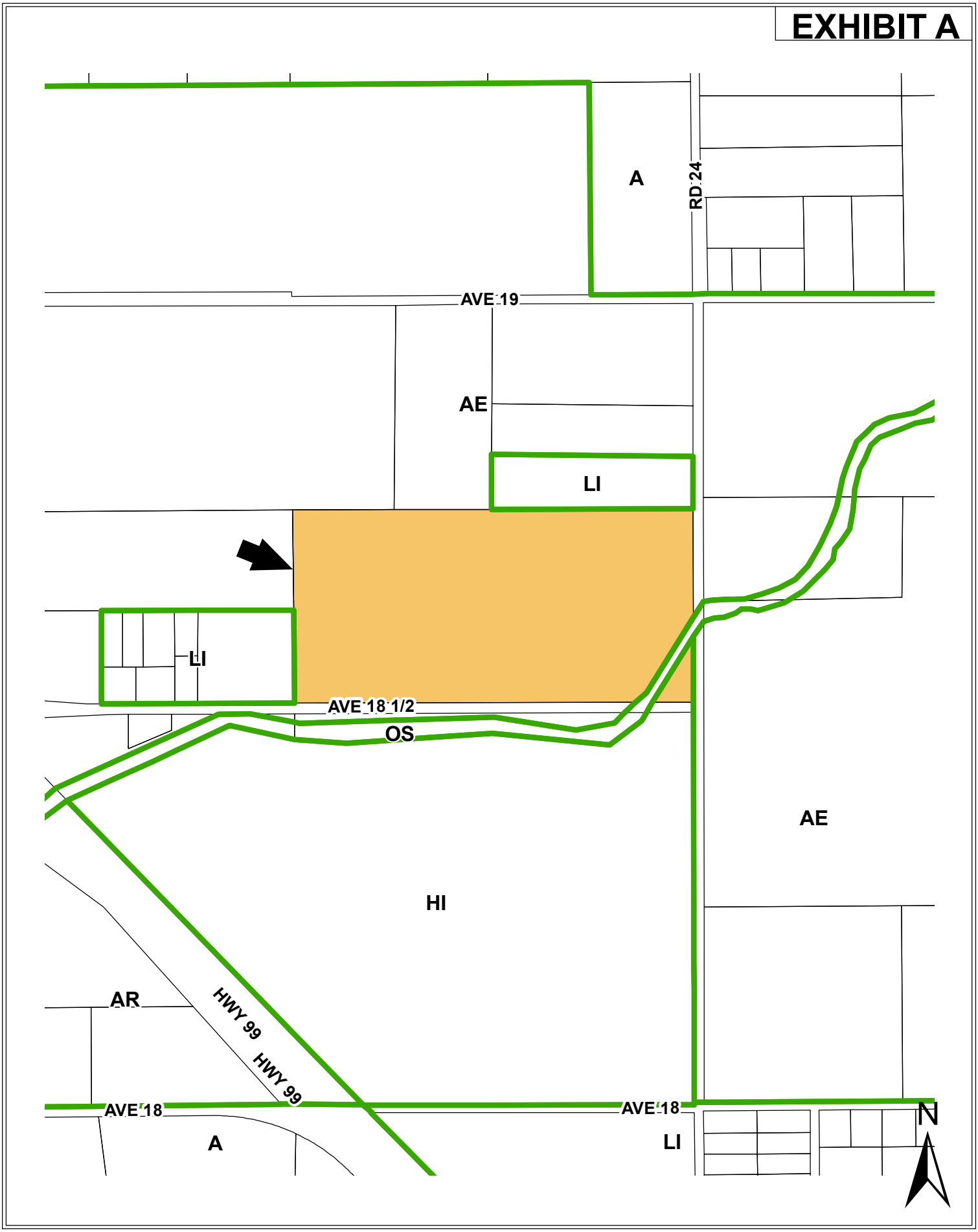
No.	Condition	Department/Agency	Verification of Compliance		
			Initials	Date	Remarks
ENVIRONMENTAL HEALTH DIVISION					
1	The project shall be served by a community water system. Water services for any structure(s), within this parcel map must be connected to an approved community water system that is approved by this Division and/or State Division of Drinking Water.				
2	The project shall be served by a community sewer system to which all of the structure(s) within the parcel map shall connect. Sewer service for all structure(s) within the parcel map must be connected to an approved community sewer system that is approved by Regional Water Quality Control Board (RWQCB).				
3	The construction and then ongoing operation must be done in a manner that shall not allow any type of public nuisance(s) to occur including but not limited to the following nuisance(s); Dust, Odor(s), Noise(s), Lighting, Vector(s) or Litter. This must be accomplished under accepted and approved Best Management Practices (BMP) and as required by the County General Plan, County Ordinances and any other related State and/or Federal jurisdiction.				
4	Solid waste collection with sorting for green, recycle, and garbage is required.				
BUILDING AND FIRE DIVISION					
1	All roads accessing the project site shall be cleared of flammable vegetation over 18 inches in height to a distance of 25 feet from the centerline of the road. Vertical clearance of a minimum 15 feet is required as to provide an unobstructed access for fire apparatus. (CFC, Section 503.2.1 and CVC Section 22500.				
2	The proposed through fire apparatus access road shall be provided, constructed and maintained as follows: The roads shall be constructed to have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than15 feet. The roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an uninterrupted surface width so as to provide all-weather driving capabilities. All streets shall be signed and identified at intersections to allow for speedy response of emergency equipment. All cul-de-sac roads shall be posted “Not a Through Road” and shall terminate in a 50’ radius turn bulb or acceptable hammer head. (CFC, Sections 503.2.1, 503.2.3, 503.2.4, 503.3; CVC Section 22500.				
3	An improvement agreement shall be on file providing timeline for infrastructure improvements. If no agreement is approved, all roads and water system for fire suppression shall be on-site, tested and approved prior to recordation of the final map.				
PLANNING DIVISION					
1	The final map will require the notarized signature(s) of the property owner(s).				
2	The final map will require the completion of the applicant's certificate.				
3	Place an Applicant Notary Public's certificate on the final parcel map.				
4	The final map will require the completion and signature of the property owner's Notary Public.				
5	The final map will require the signature and seal of the project engineer/surveyor.				

No.	Condition	Department/Agency	Verification of Compliance		
			Initials	Date	Remarks
6	The final map will require completion of the surveyor's certificate.				
7	Place all other required certificates on the final parcel map as per Madera County Code Chapter 17.72.				
8	Pursuant to the California Government Code (Subdivision Map Act), the signature(s) of the beneficiary(ies) and/or trustee(s) under deed(s) of trust, if any, must be provided on the map and on any necessary documents required by the map process, such as offers of dedication.				
9	Pursuant to the California Government Code (Subdivision Map Act), public utilities or public entities whose easements are affected by this map have thirty (30) days to determine if the map will unreasonably interfere with the free and complete exercise of the easements. A copy of the map and the easement(s) must be sent by certified mail to the affected public utility or entity by your project surveyor/engineer. Either a copy of the surveyor/engineer's notice to the utility/entity with a copy of the dated certified return receipt or a letter of consent to the recording of the map from the utility/entity must be provided to the Planning Department prior to final map approval.				
10	Supply the Planning Department with a land division guarantee (current within 30 days) covering the entire parcel proposed for division, as well as any portion of road right-of-way being offered for dedication to the County of Madera.				
11	Identify this proposal as Parcel Map #4230				
12	All parcels proposed by this division must be identified as a parcel with a numerical value (i.e., parcel #1, parcel #2, etc.).				
13	The final parcel map shall indicate gross and net acreages for all parcels being created.				
14	Place a north arrow on the final map.				
15	Place a vicinity map on the final map.				
16	The final map shall utilize a written and graphic scale of 1 inch = 100 feet (or larger), unless written authorization is received from the Planning Department to deviate therefrom.				
17	The final map shall indicate all structures which exist on the property with setback distances to the nearest two property lines. If there are no structures, add a note so stating.				
18	The final map shall indicate type of structures together with their dimensions.				
19	Under the provisions of County Code Section 17.72.187, prior to final map recordation the applicant or his authorized agent will provide the Planning Director with "Will Serve" letters from the appropriate water, wastewater, power, and telephone companies.				
20	The final map shall indicate the proposed division lines by means of short dashed lines.				
21	Place the appropriate offer of dedication certificate(s) on that portion of road right-of-way which was offered for dedication to the County of Madera prior to submission of this proposal. The certificate shall read as follows, as appropriate: a. For offers of dedication recorded prior to January 1, 1990: " 60 '-wide road right-of-way previously offered for dedication to the County of Madera in Book ? at page ? , Madera County Official Records." 1. and/or b. For offers of dedication recorded on or after January 1990: " 60 '-wide road right-of-way previously offered for dedication to the County of Madera as Instrument # ? - ? , Madera County Official Records."				
22	The final map will require the completion of all data (i.e., record data, notes, original acreage, references, previous grant deeds and/or offers of dedication, etc.).				
23	The final map shall require letters of approval from the Assessor, Public Works, Environmental Health Division, and Building and Fire Division.				
24	Payment of all payable liens (estimated taxes, pending supplemental taxes, supplemental taxes, current taxes, delinquent taxes, and/or penalties, etc.), if any, must be made to the County of Madera prior to review by the County Counsel's Office.				
25	A recording fee, based upon the number of final map pages, shall be supplied to the Planning Department and made payable to the County of Madera for use in final map recordation.				

No.	Condition	Department/Agency	Verification of Compliance		
			Initials	Date	Remarks
26	A Notice of Right-to-Farm shall be recorded simultaneously with the approved final parcel map in compliance with Madera County Code Section 6.28.060. A separate $17.00 recording fee shall be supplied to the Planning Department by check made payable to the County of Madera for use in recording the required notice.				
27	Each addressable structure shall have its address posted on it. If the posted address is not visible from the roadway to which the address is issued, the address shall also be posted at the intersection of that roadway and the driveway serving the structure. Multiple addresses shall be posted on the same post.				
28	This proposal must complete processing within two (2) years of lead agency tentative approval.				
29	The final map shall be processed in accordance with Title 7 of the California Government Code and Title 17 of the Madera County Code.				
30	Corrective comments pertinent to the final map may be stipulated upon review of the final map for compliance with the aforementioned conditions.				
PUBLIC WORKS DEPARTMENT					
1	Parcel is located in an AO flood zone. All structures need to be elevated above the BFE and submit all proper certification.				
2	At the time of applying for the building permits, all driveway approaches accessing the parcels shall be built to County commercial approach standards as described in the permit. Maximum approach width is 35' wide for commercial uses. Approaches wider than the stated maximum may be allowed subject to prior approval of the Road Commissioner or designee.				
3	Any construction within the County road of right-of-way will require an Encroachment Permit from the Public Works Department. Once this permit is secured, the applicant may commence with construction.				
4	Prior to recordation, all driveway locations shall be indicated on the map for review and approval.				
5	At the time of applying for the building permits, if any grading is to occur, the applicant is required to submit a grading, drainage, and erosion control plans to the Public Works Department for review and approval. Such improvement plans shall be prepared by a licensed professional.				
6	Due to the General Plan Amendment and deviates from its original zoning, the applicant is hereby required to provide a traffic study to demonstrate the difference in traffic impacts associated with amended usage comparing its designated zoning. In the future if there are reasons to believe the developments occur on these parcels generate more traffic impacts than what was anticipated in the traffic study, more than 10% of the estimated values as described in the study, the applicant will be required to update and revise the traffic study to accurately reflect the actual impacts of the developments in the area.				
7	All National Pollution Discharge Elimination System (NPDES) storm water regulations and standards shall be met. It is possible that the quality of storm water may be affected by pollutants. The applicant shall mitigate any impacts associated with storm water contamination caused by this project. A Storm Water Pollution Prevention Plan (SWPPP) is required for all projects 1-acre or more of site disturbance.				
8	All stabilized construction on and off site access locations shall be constructed per the latest edition of the California Stormwater Quality Association (CASQA) details to effectively prevent tracking of sediment onto paved areas. If applicable, all BMPS to be inspected weekly and before and after each rain event. Repair or replace as necessary. The contractor shall abide all of the laws, ordinances, and regulations associated with the NPDES and the Clean Water Act.				
9	Contractor shall be responsible for locating all underground utilities prior to the start of any work by contacting Underground Service Alert (USA) 48 hours prior to any excavation. Contractor shall be responsible for contacting the appropriate party in advance of any work for necessary inspections in compliance to these plans, standard plans and standard specifications.				
ASSESSOR'S OFFICE					
1	The applicant shows all improvements on applicants land.				
2	The applicant files 1 Completed Assessor's Form AO 93 regarding the Subdivision/Parcel Map improvements.				

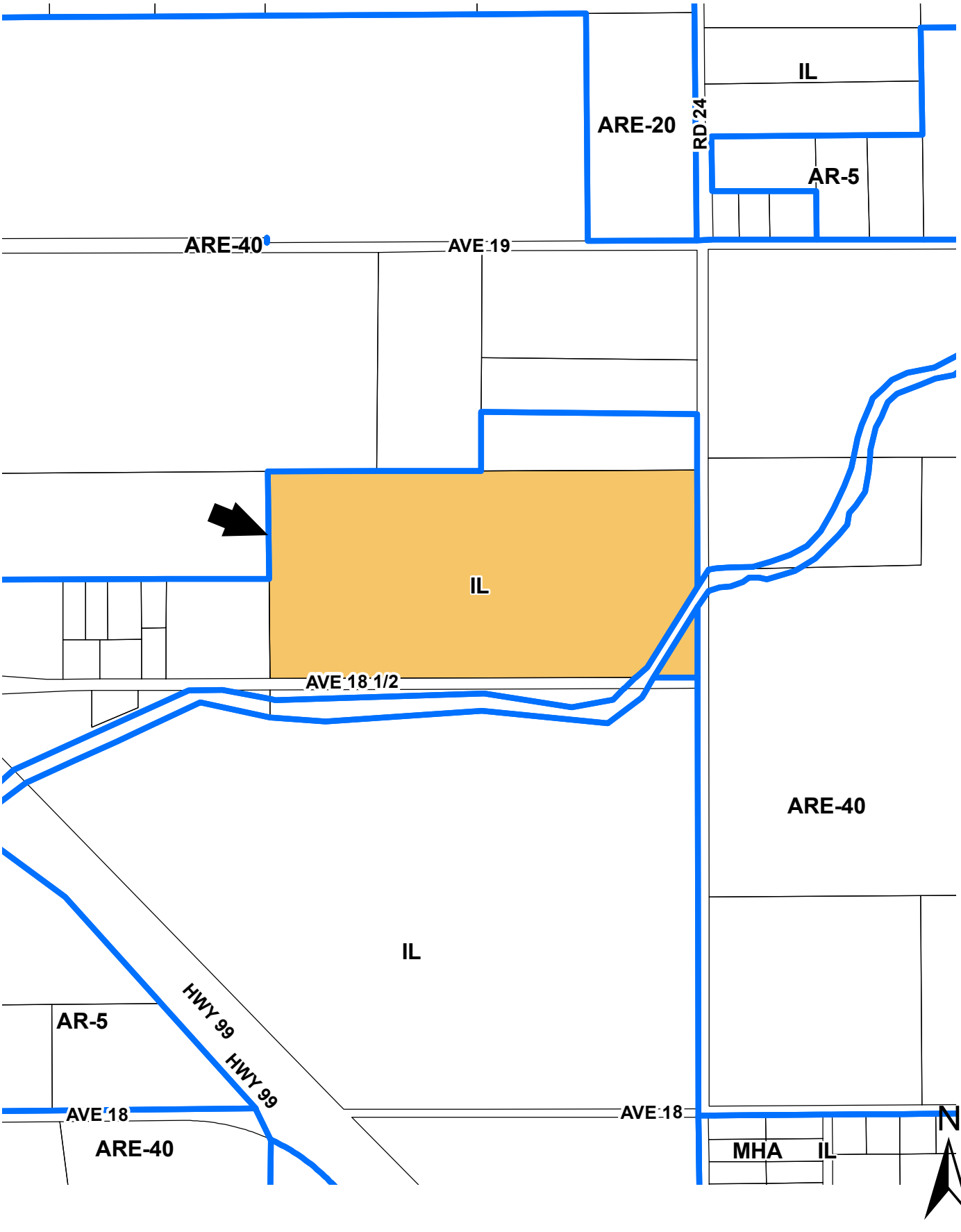
No.	Condition	Department/Agency	Verification of Compliance		
			Initials	Date	Remarks

No.	Condition	Department/Agency	Verification of Compliance		
			Initials	Date	Remarks



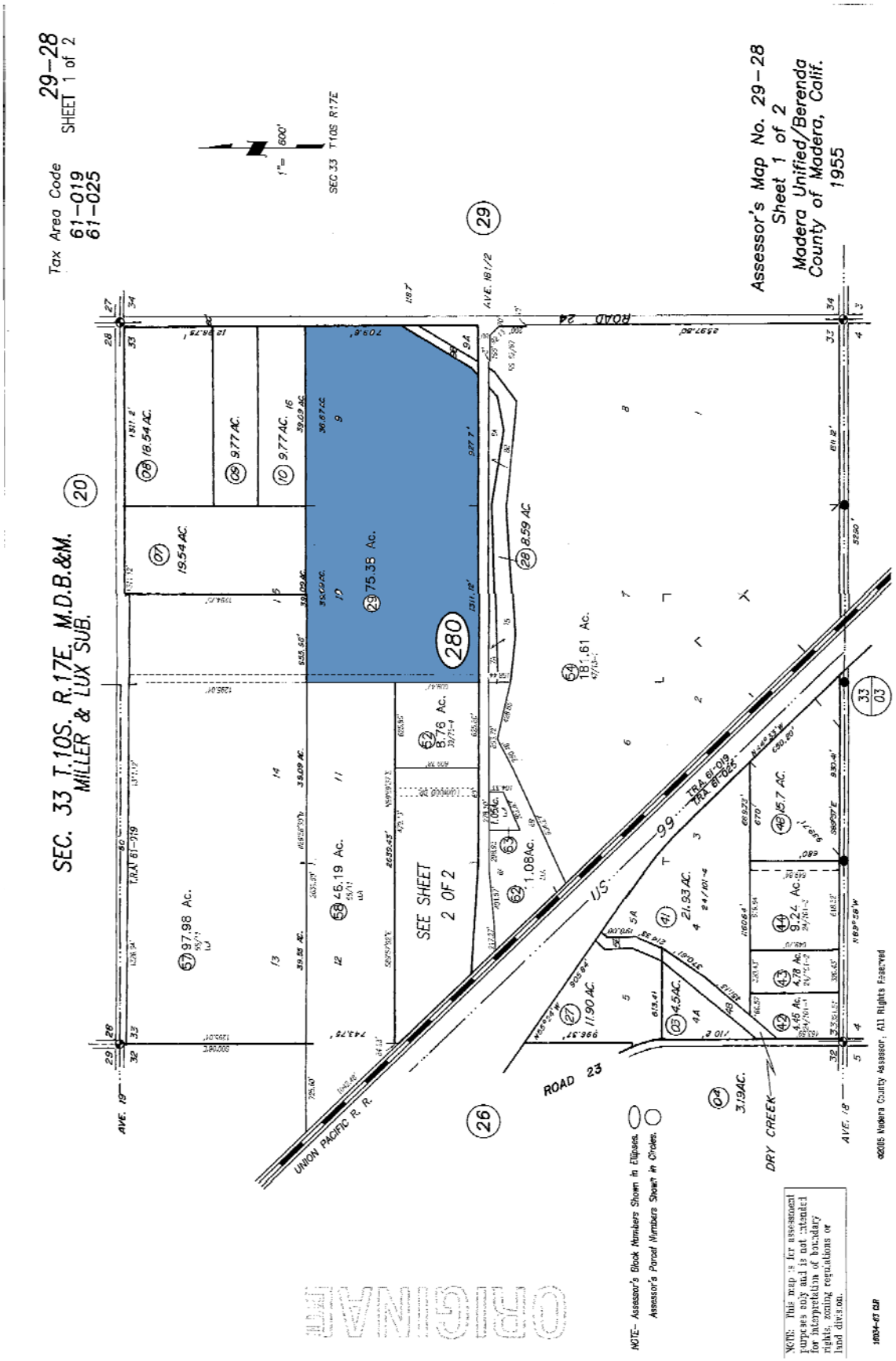
GENERAL PLAN MAP

EXHIBIT B



ZONING MAP

EXHIBIT C



ASSESSOR'S MAP

TENTATIVE PARCEL MAP NO. _____

CONSISTING OF 1 SHEET

IN

COUNTY OF MADERA, STATE OF CALIFORNIA

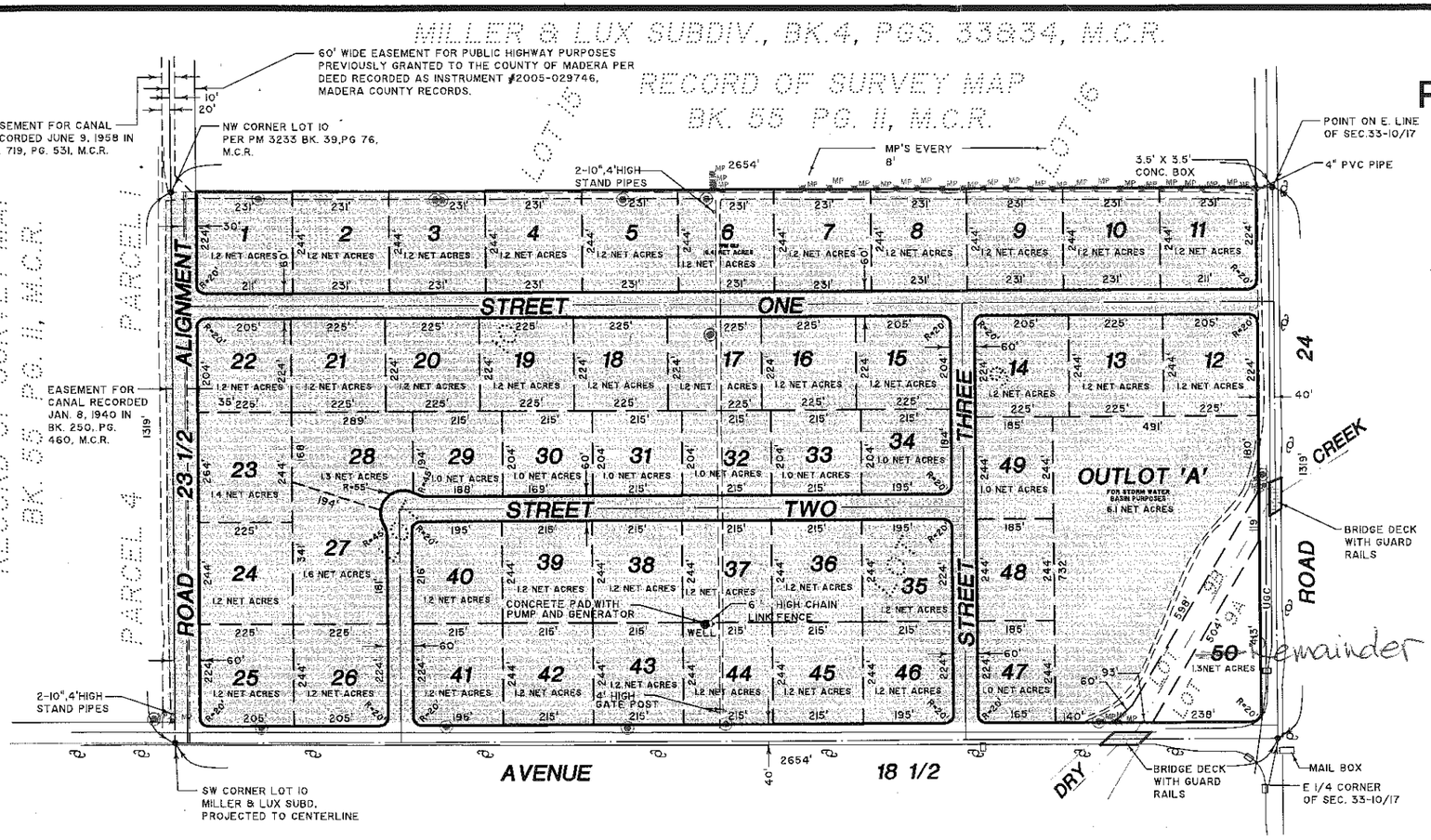
MAY 2017

FOR

MADERA CREEK, LLC

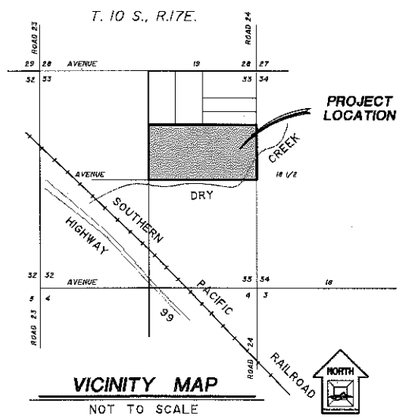
BY

Michael Sutherland and Associates, Inc.
LAND SURVEYING AND CIVIL ENGINEERING SERVICES
3669I Avenue I2 • Madera, CA 93636
(559)447-5815/645-4730 (Fax 645-0241)



LEGEND

- EXISTING PROPERTY LINE
- PROPOSED DIVISION LINE
- EXISTING SECTION LINE
- EXISTING DIRT ROAD
- EXISTING DITCH
- EXISTING EDGE OF PAVEMENT
- UGC — EXISTING UNDERGROUND CABLE LINE
- EXISTING EASEMENT LINE AS NOTED
- WELL — IRRIGATION WELL TO REMAIN
- SECTION CORNER AS NOTED
- EXISTING OVERHEAD POWER POLE
- EXISTING METAL POST
- EXISTING IRRIGATION VALVE
- EXISTING STREET SIGN
- ALMOND TREE ORCHARD



VICINITY MAP
NOT TO SCALE

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA IN COUNTY OF MADERA, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

LOTS 9, 9A, 9B AND 10 IN SECTION 33, TOWNSHIP 10 SOUTH, RANGE 17 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE MAP ENTITLED, MILLER & LUX INCORPORATED, SUBDIVISION OF SECTIONS 28, 32 AND 33, TOWNSHIP 10 SOUTH, RANGE 17 EAST, MOUNT DIABLO BASE AND MERIDIAN, MADERA COUNTY, CALIFORNIA, DATED SEPTEMBER 1915 AND RECORDED FEBRUARY 9, 1916 IN BOOK 4 AT PAGES 33 AND 34 OF MAPS, MADERA COUNTY RECORDS.

EXCEPTING THEREFROM, THE SOUTH 20 FEET THEREOF AS DESCRIBED IN DEED TO THE COUNTY OF MADERA, RECORDED ON OCTOBER 11, 1972 IN BOOK 1138 OF OFFICIAL RECORDS, PAGE 612, ASDOCUMENT NO 14247.

ALSO EXCEPTING THEREFROM, A PORTION OF LOT 9A THEREOF AS DESCRIBED IN DEED TO THE COUNTY OF MADERA, RECORDED ON APRIL 13, 2017 AS DOCUMENT NO. 2017010356 OF OFFICIAL RECORDS

NOTES :

1.) AREAS SHOWN ARE APPROXIMATE.

2.) THIS PROPERTY IS LOCATED IN ZONE 'AH & AO' ACCORDING TO THE FLOOD INSURANCE RATE MAP NUMBER 06039C0825E, 06039C0915E EFFECTIVE DATE: SEPTEMBER 26, 2008.

3.) ALL IRRIGATION WELL LOCATIONS ARE SHOWN TO SCALE.

APPLICANT'S CERTIFICATE

I HEREBY APPLY FOR APPROVAL OF A DIVISION OF REAL PROPERTY SHOWN ON THIS PARCEL MAP AND CERTIFY THAT I AM THE LEGAL OWNER OF SAID PROPERTY AND THAT THE INFORMATION SHOWN HEREON IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

APPROVED BY: _____ DATE

MADERA CREEK, LLC
7571 N. REMINGTON AVE., SUITE #104
FRESNO, CA 93711
(559) 433-3785

APN:

029-280-029

NORTH

SCALE: 1" = 200'

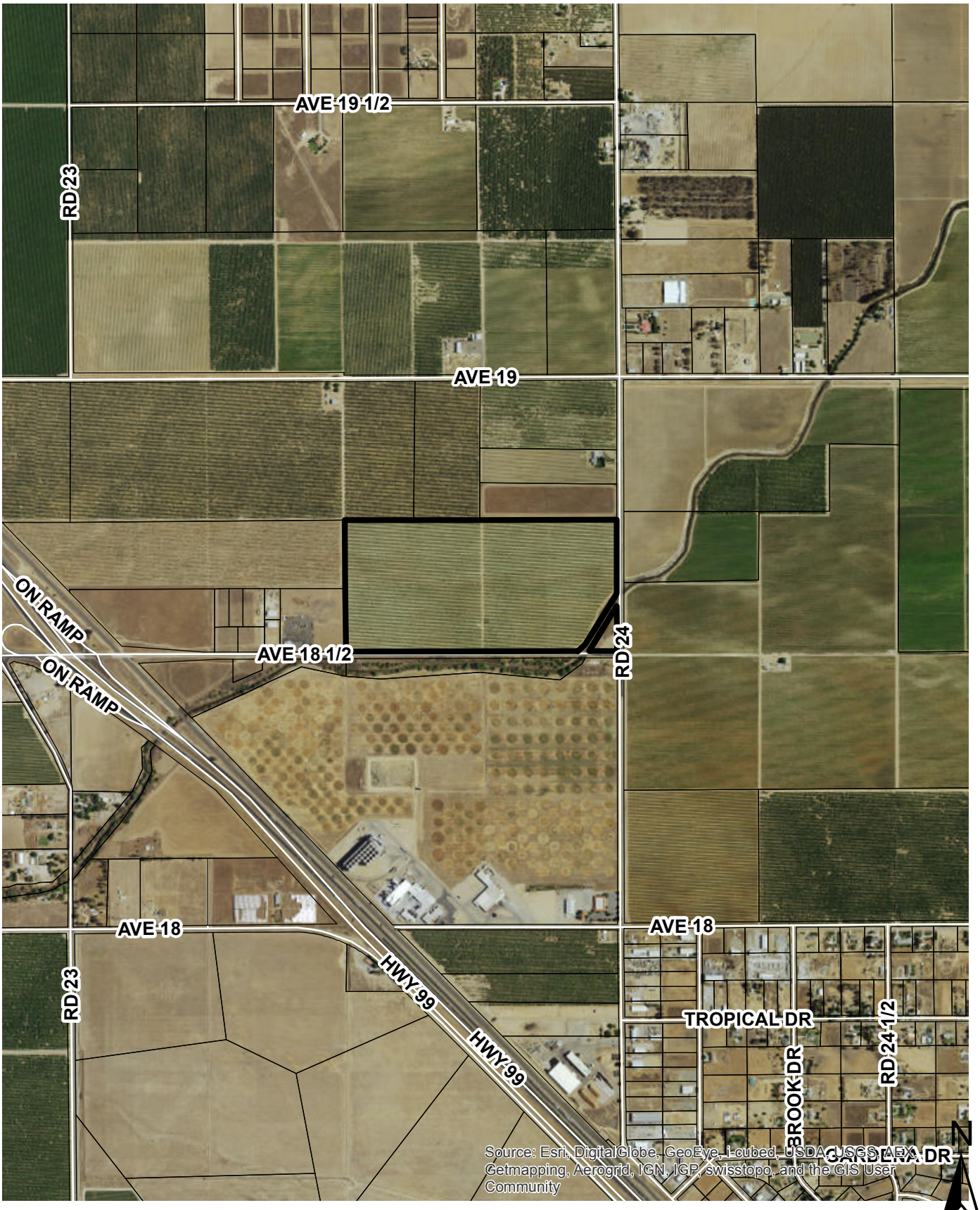
0 100 200 400

LICENSED LAND SURVEYOR
MICHAEL RAY SUTHERLAND
No. 5815
STATE OF CALIFORNIA

SUTHERLAND'S PROJECT NO. 17-2584
SUTHERLAND'S DRAWING NO. T-5008
DATE: 06/05/17
FIELD BOOK No. SEE FILE

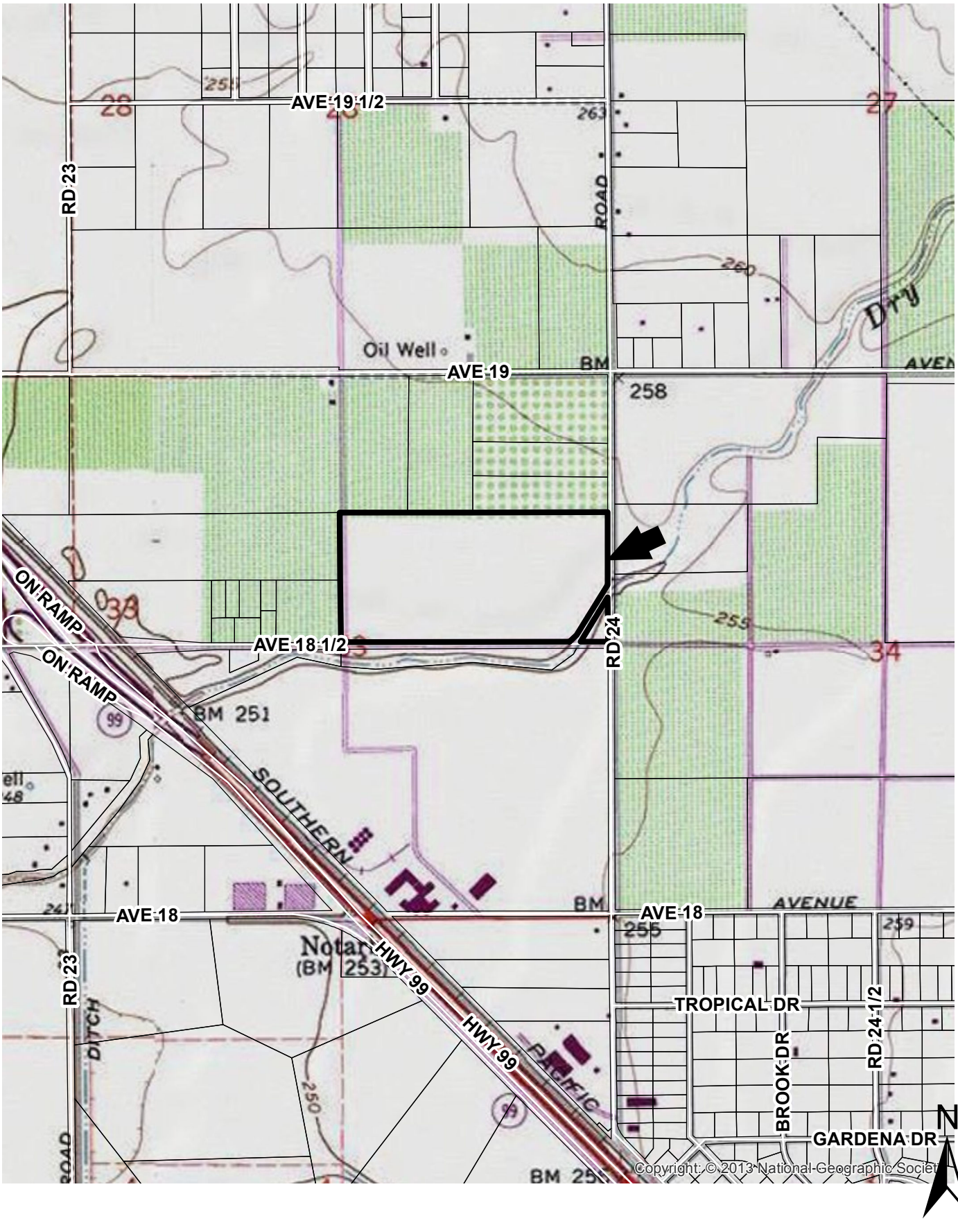
C:\Data\Land Projects 2009\16-2584\dwg\162584 TPM D-5008.dwg June 05, 2017 Time: 12:00 PM

EXHIBIT E



AERIAL MAP

EXHIBIT F



TOPOGRAPHICAL MAP

Environmental Checklist Form

Title of Proposal: Madera Creek LLC – Tentative Parcel Map - Madera (029-280-029-000)

Date Checklist Submitted: 06/13/18

Agency Requiring Checklist: Madera County Planning Department

Agency Contact: Jamie Bax, Senior Planner **Phone:** (559) 675-7821

Description of Initial Study/Requirement

The Initial Study is a public document used by the decision-making lead agency to determine whether a project may have significant effects on the environment. In the case of the proposed project, the Madera County Planning Department, acting as lead agency, will use the Initial Study to determine whether the project has a significant effect on the environment. In accordance with the California Environmental Quality Act (CEQA), Guidelines (Section 15063[a]), an Environmental Impact Report (EIR) must be prepared if there is substantial evidence (such as results of the Initial Study) that a project may have significant effect on the environment. This is true regardless of whether the overall effect of the project would be adverse or beneficial. A Negative Declaration (ND) or Mitigated Negative Declaration (MND) may be prepared if the lead agency determines that the project would have no potentially significant impacts or that revisions to the project, or measures agreed to by the applicant, mitigate the potentially significant impacts to a less-than-significant level.

The Initial Study considers and evaluates all aspects of the project which are necessary to support the proposal. The complete project description includes the site plan, operational statement, and other supporting materials which are available in the project file at the office of the Madera County Planning Department.

Description of Project:

The project consists of a request for a tentative parcel map of 75.38 acres into 49 parcels, one outlot, and a remainder parcel. A General Plan Amendment will also be considered from AE (Agricultural Exclusive) to LI (Light Industrial) to allow for the decreased parcel sizes.

Project Location:

The project is located on the northwest corner of Road 24 and Ave 18 ½ (18637 Road 24), Madera

Applicant Name and Address:

Madera Creek LLC
7571 North Remington, Suite #104
Fresno, CA 93711

General Plan Designation:

AE (Agricultural Exclusive) Designation

Zoning Designation:

IL (Industrial Light) District

Surrounding Land Uses and Setting:

The subject property is located in a predominantly agricultural area with industrial uses immediately to the west and south.

Other Public Agencies whose approval is required:

None

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology /Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities / Service Systems	☐ Mandatory Findings of Significance
☐ Tribal Cultural Resources		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

☐ _____

Prior EIR or ND/MND Number

_____ _____

Signature Date

I. AESTHETICS -- Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

Discussion:

(a - c) Less Than Significant Impact. The project consists of a request for a tentative parcel map and general plan amendment to allow for an industrial parcel map. Areas to the west have already been divided for industrial uses, in addition property to the south is also planned for industrial use. Currently the property is planted in pistachios. While there will be a changed if the property is developed, it will have a less than significant impact for aesthetics in the area.

(d) Less than Significant Impact with Mitigation Incorporation. The potential for light and glare by the project lies primarily in outdoor lighting for the facility. This lighting will be hooded and directed away from surrounding properties and roadways.

A nighttime sky in which stars are readily visible is often considered a valuable scenic/visual resource. In urban areas, views of the nighttime sky are being diminished by “light pollution.” Light pollution, as defined by the International dark-Sky Association, is any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste. Two elements of light pollution may affect city residents: sky glow and light trespass. Sky glow is a result of light fixtures that emit a portion of their light directly upward into the sky where light scatters, creating an orange-yellow glow above a city or town. This light can interfere with views of the nighttime sky and can diminish the number of stars that are visible. Light trespass occurs when poorly shielded or poorly aimed fixtures cast light into unwanted areas, such as neighboring property and homes.

Light pollution is a problem most typically associated with urban areas. Lighting is necessary for nighttime viewing and for security purposes. However, excessive lighting or inappropriately designed lighting fixtures can disturb nearby sensitive land uses through indirect illumination. Land uses which are considered “sensitive” to this unwanted light include residences, hospitals, and care homes.

Daytime sources of glare include reflections off of light-colored surfaces, windows, and metal details on cars traveling on nearby roadways. The amount of glare depends on the intensity and direction of sunlight, which is more acute at sunrise and subset because the angle of the sun is lower during these times.

II.	AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resource Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526) or timberland zoned Timberland Protection (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest land?	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion:

(a - e) No Impact. While the property is currently planted in pistachios, it is actually zoned for industrial use. If the project is approved, the applicant will have to abandon the agricultural use on the property.

General Information

The California Land Conservation Act of 1965 -- commonly referred to as the Williamson Act -- enables

local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

The Department of Conservation oversees the Farmland Mapping and Monitoring Program. The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance. The program's definition of land is below:

PRIME FARMLAND (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

FARMLAND OF STATEWIDE IMPORTANCE (S): Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

UNIQUE FARMLAND (U): Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

FARMLAND OF LOCAL IMPORTANCE (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

GRAZING LAND (G): Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.

URBAN AND BUILT-UP LAND (D): Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

OTHER LAND (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

III.	AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
	a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
	b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
	c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
	d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
	e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion:

(a - e) No Impact. The industrial use of the property will not change as a result of this project. The project will allow for individual lots to be sold, however the impacts to air quality will not change.

Sensitive receptors are facilities that “house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollution. Hospitals, schools, convalescent facilities and residential areas are examples of sensitive receptors.” (GAMAQI, 2002).

The project is consistent with the Air Quality Element of the General Plan and does not impact it at all.

<u>Global Climate Change</u>

Climate change is a shift in the “average weather” that a given region experiences. This is measured by changes in temperature, wind patterns, precipitation, and storms. Global climate is the change in the climate of the earth as a whole. It can occur naturally, as in the case of an ice age, or occur as a result of anthropogenic activities. The extent to which anthropogenic activities influence climate change has been the subject of extensive scientific inquiry in the past several decades. The Intergovernmental Panel on Climate Change (IPCC), recognized as the leading research body on the subject, issued its Fourth Assessment Report in February 2007, which asserted that there is “very high confidence” (by IPCC definition a 9 in 10 chance of being correct) that human activities have resulted in a net warming of the planet since 1750.

The California Environmental Quality Act (CEQA) requires an agency to engage in forecasting “to the extent that an activity could reasonably be expected under the circumstances. An agency cannot be

expected to predict the future course of governmental regulation or exactly what information scientific advances may ultimately reveal" (CEQA Guidelines Section 15144, Office of Planning and Research commentary, citing the California Supreme Court decision in Laurel Heights Improvement Association v. Regents of the University of California [1988] 47 Cal. 3d 376).

Recent concerns over global warming have created a greater interest in greenhouse gases (GHG) and their contribution to global climate change (GCC). However at this time there are no generally accepted thresholds of significance for determining the impact of GHG emissions from an individual project on GCC. Thus, permitting agencies are in the position of developing policy and guidance to ascertain and mitigate to the extent feasible the effects of GHG, for CEQA purposes, without the normal degree of accepted guidance by case law.

IV. BIOLOGICAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion:

(a, b, d) Less Than Significant with Mitigation Incorporated. There are no habitats identified on this parcel, so no modifications are expected as a result of this project. There are no activities associated with this project off-site, therefore there will be no indirect impacts to habitats as a result. While there are candidate species identified in the quadrangle in which this project is located, given the industrial and agricultural uses that have occurred in the area over the years, the chances of any of the listed species being on the parcel are less than likely. Dry Creek runs through the most southeastern corner of the property; however, with mitigation measures of maintaining setbacks from the creek, impacts will be less than significant.

There are no federally protected wetlands on or in the vicinity of this project.

(c, e, f) Less than Significant Impact

The site is a rural lot surrounded by agricultural land. While there is a chance that any of the listed species might migrate through, given the proposed development on the site and its surroundings it is unlikely any habitats exist.

While the list below shows a number of species listed in the quadrangle in which this project is located, this does not necessarily mean that these species are actually located on the project site either in a habitat setting or migrating through. As mentioned, given the development in the immediate area, the chances of disturbing any species are considerably minimal.

General Information

Special Status Species include:

- Plants and animals that are legally protected or proposed for protection under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);
- Plants and animals defined as endangered or rare under the California Environmental Quality Act (CEQA) §15380;
- Animals designated as species of special concern by the U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Game (CDFG);
- Animals listed as “fully protected” in the Fish and Game Code of California (§3511, §4700, §5050 and §5515); and
- Plants listed in the California Native Plant Society’s (CNPS) Inventory of Rare and Endangered Vascular Plants of California.

A review of both the County’s and Department of Fish and Wildlife’s databases for special status species have identified the following species:

Species	Federal Status	State Listing	Dept. of Fish and Game Listing	CNPS Listing
California tiger salamander	Threatened	Threatened	WL	
Western spadefoot	None	None	SSC	
Burrowing owl	None	None	SSC	
Vernal pool fairy shrimp	Threatened	None		
Midvalley fairy shrimp	None	None		
California linderiella	None	None		
Moestan blister beetle	None	None		
Northern hardpan vernal pool	None	None		
San Joaquin Valley Orcutt grass	Endangered	Endangered		1B.1
Hairy orcutt grass	Endangered	Endangered		1B.1
Greene's tuctoria	Endangered	Rare		1B.1
Shining navarretia	None	None		1B.2

Dualton Quadrangle

List 1A: Plants presumed extinct

List 1B: Plants Rare, Threatened, or Endangered in California and elsewhere.

List 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere

List 3 Plants which more information is needed – a review list

List 4: Plants of Limited Distributed - a watch list

Ranking

0.1 – Seriously threatened in California (high degree/immediacy of threat)

0.2 – Fairly threatened in California (moderate degree/immediacy of threat)

0.3 – Not very threatened in California (low degree/immediacy of threats or no current threats known)

SSC Species of Special Concern

WL Watch List

Effective January 1, 2007, Senate Bill 1535 took effect that has changed de minimis findings procedures. The Senate Bill takes the de minimis findings capabilities out of the Lead Agency hands and puts the process into the hands of the California Department of Fish and Wildlife (formally the California Department of Fish and Game). A Notice of Determination filing fee is due each time a NOD is filed at the jurisdictions Clerk's Office. The authority comes under Senate Bill 1535 (SB 1535) and Department of Fish and Wildlife Code 711.4. Each year the fee is evaluated and has the potential of increasing. For the most up-to-date fees, please refer to: http://www.dfg.ca.gov/habcon/cega/cega_changes.html.

The Valley Elderberry Longhorn Beetle (VELB) was listed as a threatened species in 1980. Use of the elderberry bush by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal

stage. According to the USFWWS, the Valley Elderberry Longhorn Beetle habitat is primarily in communities of clustered Elderberry plants located within riparian habitat. The USFWS stated that VELB habitat does not include every Elderberry plant in the Central Valley, such as isolated, individual plants, plants with stems that are less than one inch in basal diameter or plants located in upland habitat.

V. CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion:

(a) No Impact
No historical resources exist on the project site.
(b) Less than Significant Impact
No sites of archeological or historical significant are known to exist on or in the vicinity of the subject property. Though the majority of the project site has been disturbed by previous residential activities, grading and excavating of the areas in question could result in disturbance of unknown cultural resources.
(c) Less than Significant Impact
No known unique geological features in the vicinity of the project site exist. There are no known fossil bearing sediments on the project site.
(d) Less than Significant Impact with Mitigation Incorporated
No known human remains exist on the project site. If human remains are discovered as a result of the construction of additional dwellings, the Coroner's office shall be contacted immediately.
General Information

Public Resource Code 5021.1(b) defines a historic resource as “any object building, structure, site, area or place which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.” These resources are of such import, that it is codified in CEQA (PRC Section 21000) which prohibits actions that “disrupt, or adversely affect a prehistoric or historic archaeological site or a property of historical or cultural significance to a community or ethnic or social groups; or a paleontological site except as part of a scientific study.”

Archaeological importance is generally, although not exclusively, a measure of the archaeological research value of a site which meets one or more of the following criteria:

- Is associated with an event or person of recognized significance in California or American history or of recognized scientific importance in prehistory.
- Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions.
- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind.
- Is at least 100 years old and possesses substantial stratigraphic integrity (i.e. it is essentially undisturbed and intact).
- Involves important research questions that historic research has shown can be answered only with archaeological methods.

Reference CEQA Guidelines §15064.5 for definitions.

VI	TRIBAL CULTURAL RESOURCES – Would the project	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code §21074 **SUBSTANTIATION:** Check if the project is located in the traditional and cultural affiliated geographic area of a California Native American Tribe ☐:	☐	☐	☐	☒

Discussion:

a) No Impact. No impacts have been identified as a result of this project.

VII.	GEOLOGY AND SOILS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a)	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the	☐	☐	☐	☒

	State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				
	ii) Strong seismic ground shaking?	☐	☐	☐	☒
	iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
	iv) Landslides?	☐	☐	☐	☒
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Discussion:
(a – e) No Impact. The parcel is in an area where it is topographically not conducive to landslides, so therefore there will be no impacts. Topographical maps indicate a relatively flat area with minimal increases in elevation heading from west to east on the property. There are no known impacts that will occur as a direct or indirect result of this project.

General Information

Madera County is divided into two major physiographic and geologic provinces: the Sierra Nevada Range and the Central Valley. The Sierra Nevada physiographic province in the northeastern portion of the county is underlain by metamorphic and igneous rock. It consists mainly of homogenous types of granitic rocks, with several islands of older metamorphic rock. The central and western parts of the county are part of the Central Valley province, underlain by marine and non-marine sedimentary rocks.

The foothill area of the County is essentially a transition zone, containing old alluvial soils that have been dissected by the west-flowing rivers and streams which carry runoff from the Sierra Nevada's.

Seismicity varies greatly between the two major geologic provinces represented in Madera County. The Central Valley is an area of relatively low tectonic activity bordered by mountain ranges on either side. The Sierra Nevada's, partly within Madera County, are the result of movement of tectonic plates which resulted in the creation of the mountain range. The Coast Ranges on the west side of the Central Valley are also a result of these forces, and continued movement of the Pacific and North

American tectonic plates continues to elevate the ranges. Most of the seismic hazards in Madera County result from movement along faults associated with the creation of these ranges.

There are no active or potentially active faults of major historic significance within Madera County. The County does not lie within any Alquist Priolo Special Studies Zone for surface faulting or fault creep.

However, there are two significant faults within the larger region that have been and will continue to be, the principle sources of potential seismic activity within Madera County.

San Andreas Fault: The San Andreas Fault lies approximately 45 miles west of the county line. The fault has a long history of activity and is thus a concern in determining activity in the area.

Owens Valley Fault Group: The Owens Valley Fault Group is a complex system containing both active and potentially active faults on the eastern base of the Sierra Nevada Range. This group is located approximately 80 miles east of the County line in Inyo County. This system has historically been the source of seismic activity within the County.

The *Draft Environmental Impact Report* for the state prison project near Fairmead identified faults within a 100 mile radius of the project site. Since Fairmead is centrally located along Highway 99 within the county, this information provides a good indicator of the potential seismic activity which might be felt within the County. Fifteen active faults (including the San Andreas and Owens Valley Fault Group) were identified in the *Preliminary Geotechnical Investigation*. Four of the faults lie along the eastern portion of the Sierra Nevada Range, approximately 75 miles to the northeast of Fairmead. These are the Parker Lake, Hartley Springs, Hilton Creek and Mono Valley Faults. The remaining faults are in the western portion of the San Joaquin Valley, as well as within the Coast Range, approximately 47 miles west of Fairmead. Most of the remaining 11 faults are associated with the San Andreas, Calaveras, Hayward and Rinconada Fault Systems which collectively form the tectonic plate boundary of the Central Valley.

In addition, the Clovis Fault, although not having any historic evidence of activity, is considered to be active within quaternary time (within the past two million years), is considered potentially active. This fault line lies approximately six miles south of the Madera County line in Fresno County. Activity along this fault could potentially generate more seismic activity in Madera County than the San Andreas or Owens Valley fault systems. However, because of the lack of historic activity along the Clovis Fault, there is inadequate evidence for assessing maximum earthquake impacts.

Seismic ground shaking, however, is the primary seismic hazard in Madera County because of the County's seismic setting and its record of historical activity (General Plan Background Element and Program EIR). The project represents no specific threat or hazard from seismic ground shaking, and all new construction will comply with current local and state building codes. Other geologic hazards, such as landslides, lateral spreading, subsidence, and liquefaction have not been known to occur within Madera County.

According to the Madera County General Plan Background Report, groundshaking is the primary seismic hazard in Madera County. The valley portion of Madera County is located on alluvium deposits, which tend to experience greater groundshaking intensities than areas located on hard rock. Therefore, structures located in the valley will tend to suffer greater damage from groundshaking than those located in the foothill and mountain areas.

Liquefaction is a process whereby soil is temporarily transformed to a fluid form during intense and

prolonged ground shaking. According to the Madera County General Plan Background Report, although there are areas of Madera County where the water table is at 30 feet or less below the surface, soil types in the area are not conducive to liquefaction because they are either too coarse in texture or too high in clay content; the soil types mitigate against the potential for liquefaction.

VIII. GREENHOUSE GAS EMISSIONS - Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion:

(a - b) Less than Significant Impact. What little greenhouse gases generated will be from vehicular traffic related to construction on the site.

Greenhouse Gas (GHG) Emissions: The potential effect of greenhouse gas emission on global climate change is an emerging issue that warrants discussion under CEQA. Unlike the pollutants discussed previously that may have regional and local effects, greenhouse gases have the potential to cause global changes in the environment. In addition, greenhouse gas emissions do not directly produce a localized impact, but may cause an indirect impact if the local climate is adversely changed by its cumulative contribution to a change in global climate. Individual development projects contribute relatively small amounts of greenhouse gases that when added to other greenhouse gas producing activities around the world would result in an increase in these emissions that have led many to conclude is changing the global climate. However, no threshold has been established for what would constitute a cumulatively considerable increase in greenhouse gases for individual development projects. The State of California has taken several actions that help to address potential global climate change impacts.

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, outlines goals for local agencies to follow in order to bring Greenhouse Gas (GHG) emissions to 1990 levels (a 25% overall reduction) by the year 2020. The California Air Resources Board (CARB) holds the responsibility of monitoring and reducing GHG emissions through regulations, market mechanisms and other actions. A Draft Scoping Plan was adopted by CARB in order to provide guidelines and policy for the State to follow in its steps to reduce GHG. According to CARB, the scoping plan's GHG reduction actions include: direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

Following the adoption of AB 32, the California State Legislature adopted Senate Bill 375, which became the first major bill in the United States that would aim to limit climate change by linking directly to "smart growth" land use principles and transportation. It adds incentives for projects which intend to be in-fill, mixed use, affordable and self-contained developments. SB 375 includes the creation of

a Sustainable Communities Strategy (SCS) through the local Metropolitan Planning Organizations (MPO) in order to create land use patterns which reduce overall emissions and vehicle miles traveled. Incentives include California Environmental Quality Act streamlining and possible exemptions for projects which fulfill specific criteria.

IX. HAZARDS AND HAZARDOUS MATERIALS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion:

(a - h) No Impact
The proposed project is a division of land that would allow for the same build-out of industrial use as would be allowed without the division. Increases in uses of hazardous materials would not take place as a result of this project.

General Information

Any hazardous material because of its quantity, concentration, physical or chemical properties, pose a significant present or potential hazard to human health and safety, or the environment the California legislature adopted Article I, Chapter 6.95 of the Health and Safety Code, Sections 25500 to 25520 that requires any business handling or storing a hazardous material or hazardous waste to establish a Business Plan. The information obtained from the completed Business Plans will be provided to emergency response personnel for a better-prepared emergency response due to a release or threatened release of a hazardous material and/or hazardous waste.

Business owners that handle or store a hazardous material or mixtures containing a hazardous material, which has a quantity at any one time during the year, equal to or greater than:

1) A total of 55 gallons,
2) A total of 500 pounds,
3) 200 cubic feet at standard temperature and pressure of compressed gas,
4) Any quantity of Acutely Hazardous Material (AHM).

Assembly Bill AB 2286 requires all business and agencies to report their Hazardous Materials Business Plans to the Certified Unified Program Agency (CUPA) information electronically at http://cers.calepa.ca.gov

X. HYDROLOGY AND WATER QUALITY – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for	☐	☐	☒	☐

	which permits have been granted)?				
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☒
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☒	☐	☐
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☒	☐	☐
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☒	☐	☐
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion:

(a) No Impact
Impacts to water quality will remain the same as the industrial uses that would be allowed without the division.
(b) Less than Significant Impact
Water use will dramatically be reduced for any industrial use and the property is currently planted in pistachios, which will be removed with development. The consumptive use for this project would be only about two percent of the existing consumptive use.
(c) Less than Significant Impact
No development is proposed as a part of this project which would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site. Grading will occur with site development, including the construction of interior roads; however, the project will have to comply with Public Works Departments standards for drainage control.
(d) Less than Significant Impact
See c.
(e) Less than Significant Impact

See c.

(f) Less than Significant Impact

See e.

(g) Less than Significant Impact with Mitigation Incorporated

The project site is located within an AO Flood Zone. All structures will need to be elevated above the Base Flood Elevation and submit all proper certification prior to development.

(h) Less than Significant Impact with Mitigation Incorporated

See g.

(i) Less than Significant Impact with Mitigation Incorporated

See g.

(j) No Impact

The project is not located in area affected by seiche, tsunami, or mudflow.

General Information

Groundwater quality contaminants of concern in the Valley Floor include high salinity (total dissolved solids), nitrate, uranium, arsenic, methane gas, iron, manganese, slime production, and dibromochloropropane with the maximum contaminant level exceeded in some areas. Despite the water quality issues noted above, most of the groundwater in the Valley Floor is of suitable quality for irrigation. Groundwater of suitable quality for public consumption has been demonstrated to be present in most of the area at specific depths.

Groundwater quality contaminants of concern in the Foothills and Mountains include manganese, iron, high salinity, hydrogen sulfide gas, uranium, nitrate, arsenic, and methylbutylethylene (MTBE) with the maximum concentration level being exceeded in some areas. Despite these problems, there are substantial amounts of good-quality groundwater in each of the areas evaluated in the Foothills and Mountains. Iron and manganese are commonly removed by treatment. Uranium treatment is being conducted on a well by the Bass Lake Water Company.

A seiche is an occasional and sudden oscillation of the water of a lake, bay or estuary producing fluctuations in the water level and caused by wind, earthquakes or changes in barometric pressure. A tsunami is an unusually large sea wave produced by seaquake or undersea volcanic eruption (from the Japanese language, roughly translated as “harbor wave”). According to the California Division of Mines and Geology, there are no active or potentially active faults of major historic significance within Madera County. As this property is not located near any bodies of water, no impacts are identified.

The flood hazard areas of the County of Madera are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare. These flood losses are caused by uses that are inadequately elevated, floodproofed, or protected from flood damage. The cumulative effect of obstruction in areas of special flood hazards which increase flood height and velocities also contribute to flood loss.

XI. LAND USE AND PLANNING – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

Discussion:

(a) No Impact
The proposed project does not have the potential to divide an established community.
(b) No Impact
The proposed general plan amendment will be consistent with parcels in surrounding areas. In addition the site is located near freeway access making the amendment conducive to property.
(c) Less than Significant Impact
The proposed project will not increase the current allowed use on the property as it will remain industrial. In addition the property has been planted in pistachios. There are no habitat conservation plans or community conservation plans for this site.

XII. MINERAL RESOURCES – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion:

(a) No Impact
The proposed project is not located within an area with the potential for this project to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
(b) No Impact
See a.

XIII. NOISE – Would the project result in:

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☐	☒
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d)	A substantial temporary or periodic increase in ambient levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

(a) No Impact
There is no potential for exposure of persons to or generation of noise levels in excess of standards established in the general plan. The proposed map will not increase uses currently allowed in the industrial zone district.

(b) Less than Significant Impact
If approved, the project will potentially allow internal roads and utilities to be constructed. Temporary groundborne vibrations from normal construction activities may occur with the construction of roadways and utilities.

(c) Less than Significant Impact
Additional structures may raise the amount of noise generated in the area; however, the impact will be less

than significant.

(d) Less than Significant Impact

See c.

(e) No Impact

The project site is not located within an airport land use plan, within two miles of a public airport, or within the vicinity of a private airstrip.

(f) No Impact

See e.

General Discussion

The Noise Element of the Madera County General Plan (Policy 7.A.5) provides that noise which will be created by new non-transportation noise sources shall be mitigated so as not to exceed the Noise Element noise level standards on lands designated for noise-sensitive uses. However, this policy does not apply to noise levels associated with agricultural operations. All the surrounding properties, while include some residential units, are designated and zoned for agricultural uses. This impact is therefore considered less than significant.

Construction noise typically occurs intermittently and varies depending upon the nature or phase of construction (e.g. demolition/land clearing, grading and excavation, erection). The United States Environmental Protection Agency has found that the average noise levels associated with construction activities typically range from approximately 76 dBA to 84 dBA Leq, with intermittent individual equipment noise levels ranging from approximately 75 dBA to more than 88 dBA for brief periods.

Short Term Noise

Noise from localized point sources (such as construction sites) typically decreases by approximately 6 dBA with each doubling of distance from source to receptor. Given the noise attenuation rate and assuming no noise shielding from either natural or human-made features (e.g. trees, buildings, fences), outdoor receptors within approximately 400 feet of construction site could experience maximum noise levels of greater than 70 dBA when onsite construction-related noise levels exceed approximately 89 dBA at the project site boundary. Construction activities that occur during the more noise-sensitive eighteen hours could result in increased levels of annoyance and sleep disruption for occupants of nearby existing residential dwellings. As a result, noise-generating construction activities would be considered to have a potentially significant short-term impact. However with implementation of mitigation measures, this impact would be considered less than significant.

Long Term Noise

Mechanical building equipment (e.g. heating, ventilation and air conditioning systems, and boilers), associated with the proposed structures, could generate noise levels of approximately 90 dBA at 3 feet from the source. However, such mechanical equipment systems are typically shielded from direct public exposure and usually housed on rooftops, within equipment rooms, or within exterior enclosures.

Landscape maintenance equipment, such as leaf blowers and gasoline powered mowers, could result in intermittent noise levels that range from approximately 80 to 100 dBA at 3 feet, respectively. Based on an equipment noise level of 100 dBA, landscape maintenance equipment (assuming a noise attenuation rate of 6 dBA per doubling of distance from the source) may result in exterior noise levels of approximately 75 dBA at 50 feet.

MAXIMUM ALLOWABLE NOISE EXPOSURE FOR
NON-TRANSPORTATION NOISE SOURCES*

		Residential	Commercial	Industrial (L)	Industrial (H)	Agricultural
Residential	AM	50	60	55	60	60
	PM	45	55	50	55	55
Commercial	AM	60	60	60	65	60
	PM	55	55	55	60	55
Industrial (L)	AM	55	60	60	65	60
	PM	50	55	55	60	55
Industrial (H)	AM	60	65	65	70	65
	PM	55	60	60	65	60
Agricultural	AM	60	60	60	65	60
	PM	55	55	55	60	55

*As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers at the property line.

AM = 7:00 AM to 10:00 PM
PM = 10:00 PM to 7:00 AM
L = Light
H = Heavy

Note: Each of the noise levels specified above shall be lowered by 5 dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).

Vibration perception threshold: The minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of one-tenth (0.1) inches per second over the range of one to one hundred Hz.

Reaction of People and Damage to Buildings from Continuous Vibration Levels		
Velocity Level, PPV (in/sec)	**Human Reaction**	**Effect on Buildings**
0.006 to 0.019	Threshold of perception; possibility of intrusion	Damage of any type unlikely
0.08	Vibration readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Continuous vibration begins to annoy people	Virtually no risk of architectural damage to normal buildings

0.20	Vibration annoying to people in buildings	Risk of architectural damage to normal dwellings such as plastered walls or ceilings
0.4 to 0.6	Vibration considered unpleasant by people subjected to continuous vibrations vibration	Architectural damage and possibly minor structural damage
Source: Whiffen and Leonard 1971		

XIV. POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

(a) Less than Significant Impact
The proposed project is a division of land for industrial use. The impact to population growth will be less than significant.
(b) No Impact
No housing will be displaced as a result of the project. No people will be displaced as a result of the project.
(c) No Impact
See b.

XV. PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☒	☐
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☒	☐

Discussion:

(a-i) Less than Significant Impact
The proposed project will not create additional need for public services as the current zone district allows for the build-out of industrial development.
(a-ii) Less than Significant Impact
See a-i.
(a-iii) Less than Significant Impact
See a-i.
(a-iv) Less than Significant Impact
See a-i.
(a-v) Less than Significant Impact
See a-i.

XVI. RECREATION	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial	☐	☐	☐	☒

	physical deterioration of the facility would occur or be accelerated?				
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion:

(a) No Impact
The project will not create the need for additional recreational facilities as it is for industrial use.

(b) No Impact
See a.

The Madera County General Plan allocates three acres of park available land per 1,000 residents' population.

XVII.	TRANSPORTATION/TRAFFIC -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b)	Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures or other standards, established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or	☐	☐	☒	☐

	dangerous intersections) or incompatible uses (e.g., farm equipment)?				
e)	Result in inadequate emergency access?	☐	☐	☐	☒
f)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

Discussion:

(a & b) Less than Significant Impact with Mitigation Incorporated
The proposed project will require major improvements to nearby freeway intersections and internal roadways. A Traffic Impact Study has been prepared for the project.

The analyses indicate that the Project is expected to cause the LOS at the intersection of the SR 99 southbound ramps, Road 23, and Avenue 18½ to drop from B to E during the a.m. peak hour. The analyses indicate that the Project is expected to cause the LOS at the intersection of the SR 99 northbound ramps and Avenue 18½ to drop from D to F during the a.m. peak hour and from C to F during the p.m. peak hour.

The analyses indicate that the approved and pending projects are expected to cause the LOS at the intersection of the SR 99 southbound ramps, Road 23, and Avenue 18½ to drop from B to F during the a.m. peak hour and from C to F during the p.m. peak hour (as compared to the existing conditions).

The analyses indicate that the approved and pending projects are expected to cause the LOS at the intersection of the SR 99 northbound ramps and Avenue 18½ to drop from D to F during the a.m. peak hour and from C to F during the p.m. peak hour (as compared to the existing conditions).

(c) No Impact
The proposed project will not result in changes to air traffic.

(d) Less than Significant Impact
Road improvements are located on the valley floor with grid design which have minimal risk of hazards from design features.

(e) No Impact
There is adequate access to the project site.

(f) No Impact
The proposed project, if approved, will not impact any policies, plans, or programs supporting alternative transportation.

In the area around the proposed project, opportunities for bicycles and pedestrians, especially as an alternative to the private automobile, are significantly limited by lack of developed shoulders, sidewalks or pavement width accommodating either mode. The condition is not uncommon in rural areas where distances between origins and destinations are long and the terrain is either rolling or mountainous. In the locations outside urbanized portions of the County, the number of non-recreational pedestrians/cyclists would likely be low, even if additional facilities were provided.

As with most rural areas, Madera County is served by limited alternative transportation modes. Currently, only limited public transportation facilities or routes exist within the area. Volunteer systems such as the driver escort service, as well as the senior bus system, operate for special purpose activities

and are administered by the Madera County Action Committee. The rural densities which are prevalent throughout the region have typically precluded successful public transit systems, which require more concentrated populations in order to gain sufficient ridership.

Local circulation is largely deficient with these same State Highways and County Roads composing the only existing network of through streets. Most local streets are dead-end drives, many not conforming to current County improvement standards. Existing traffic, particularly during peak hour and key intersections, already exhibits congestion.

Madera County currently uses Level Of Service "D" as the threshold of significance level for roadway and intersection operations. The following charts show the significance of those levels.

Level of Service	Description	Average Control Delay (sec./car)
A	Little or no delay	0 – 10
B	Short traffic delay	>10 – 15
C	Medium traffic delay	> 15 – 25
D	Long traffic delay	> 25 – 35
E	Very long traffic delay	> 35 – 50
F	Excessive traffic delay	> 50

Unsignalized intersections.

Level of Service	Description	Average Control Delay (sec./car)
A	Uncongested operations, all queues clear in single cycle	< 10
B	Very light congestion, an occasional phase is fully utilized	>10 – 20
C	Light congestion; occasional queues on approach	> 20 – 35
D	Significant congestion on critical approaches, but intersection is functional. Vehicles required to wait through more than one cycle during short peaks. No long-standing queues formed.	> 35 – 55
E	Severe congestion with some long-standing queues on critical approaches. Traffic queues may block nearby intersection(s) upstream of critical approach(es)	> 55-80
F	Total breakdown, significant queuing	> 80

Signalized intersections.

Level of service	Freeways	Two-lane rural highway	Multi-lane rural highway	Expressway	Arterial	Collector
A	700	120	470	720	450	300
B	1,100	240	945	840	525	350
C	1,550	395	1,285	960	600	400
D	1,850	675	1,585	1,080	675	450
E	2,000	1,145	1,800	1,200	750	500

Capacity per hour per lane for various highway facilities

Madera County is predicted to experience significant population growth in the coming years (62.27 percent between 2008 and 2030). Accommodating this amount of growth presents a challenge for attaining and maintain air quality standards and for reducing greenhouse gas emissions. The increase in population is expected to be accompanied by a similar increase in vehicle miles traveled (VMT) (61.36 percent between 2008 and 2030).

Horizon Year	Total Population (thousands)	Employment (thousands)	Average Weekday VMT (millions)	Total Lane Miles
2010	175	49	5.4	2,157
2011	180	53	5.5	NA
2017	210	63	6.7	NA
2020	225	68	7.3	2,264
2030	281	85	8.8	2,277

Source: MCTC 2007 RTP

The above table displays the predicted increase in population and travel. The increase in the lane miles of roads that will serve the increase in VMT is estimated at 120 miles or 0.94 percent by 2030. This indicates that roadways in Madera County can be expected to become much more crowded than is currently experienced.

Emissions of CO (Carbon Monoxide) are the primarily mobile-source criteria pollutant of local concern. Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed and delay. Carbon monoxide transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested roadway or intersection may reach unhealthy levels, affecting local sensitive receptors (residents, school children, hospital patients, the elderly, etc.). As a result, the SJVAPCP recommends analysis of CO emissions of at a local rather than regional level. Local CO concentrations at intersections projected to operate at level of service (LOS) D or better do not typically exceed national or state ambient air quality standards. In addition, non-signalized intersections located within areas having relatively low background concentrations do not typically have sufficient traffic volumes to warrant analysis of local CO concentrations.

As this project is not within an airport/airspace overlay district, or in proximity to any airport or airstrip within the County, no impacts to airspace or air flight will occur as a result.

XVIII.	UTILITIES AND SERVICE SYSTEMS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
	a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
	b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
	c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
	d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
	e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
	f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
	g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion:

(a) No Impact
The proposed project is a minor division of land resulting in three additional parcels. There is no potential for the project to exceed wastewater treatment requirements. Individual septic systems are used for the existing dwelling.

(b) Less than Significant Impact
For the buildout of the industrial uses allowed, a public water and wastewater system will be required to be constructed which will be all County and State requirements.

(c) Less than Significant Impact

The proposed project is required to construct storm water drainage facilities; however, when complying with all County regulations and codes, impacts will be less than significant.

(d) Less than Significant Impact

Per the Water Supply Assessment prepared, the industrial use of the property will result in approximately 90% less water use than the existing use of agriculture.

(e) Less than Significant Impact

A community wastewater treatment system will have to comply with all County and State regulations.

(f) Less than Significant Impact

Madera County is served by the landfill in Fairmead which complies with federal, state, and local statutes.

(g) Less than Significant Impact

See f.

General Discussion

Madera County has 34 County Service Areas and Maintenance Districts that together operate 30 small water systems and 16 sewer systems. Fourteen of these special districts are located in the Valley Floor, and the remaining 20 special districts are in the Foothills and Mountains. MD-1 Hidden Lakes, Bass Lake (SA-2B and SA-2C) and SA-16 Sumner Hill have surface water treatment plants, with the remaining special districts relying solely on groundwater.

The major wastewater treatment plants in the County are operated in the incorporated cities of Madera and Chowchilla and the community of Oakhurst. These wastewater systems have been recently or are planned to be upgraded, increasing opportunities for use of recycled water. The cities of Madera and Chowchilla have adopted or are in the process of developing Urban Water Management Plans. Most of the irrigation and water districts have individual groundwater management plans. All of these agencies engage in some form of groundwater recharge and management.

Groundwater provides almost the entire urban and rural water use and about 75 percent of the agricultural water use in the Valley Floor. The remaining water demand is met with surface water. Almost all of the water use in the Foothills and Mountains is from groundwater with only three small water treatment plants relying on surface water from the San Joaquin River and its tributaries.

In areas of higher precipitation (Oakhurst, North Fork, and the topographically higher part of the Coarsegold Area), groundwater recharge is adequate for existing uses. However, some problems have been encountered in parts of these areas due to well interference and groundwater quality issues. In areas of lower precipitation (Raymond-Hensley Lake and the lower part of the Coarsegold area), groundwater recharge is more limited, possibly requiring additional water supply from other sources to support future development.

Madera County is served by a solid waste facility (landfill) in Fairmead. There is a transfer station in North Fork. The Fairmead facility also provides for Household Hazardous Materials collections on Saturdays. The unincorporated portion of the County is served by Red Rock Environmental Group. Above the 1000 foot elevation, residents are served by EMADCO services for solid waste pick-up.

XIX. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Discussion:

CEQA defines three types of impacts or effects:

- Direct impacts are caused by a project and occur at the same time and place (CEQA §15358(a)(1).

- Indirect or secondary impacts are reasonably foreseeable and are caused by a project but occur at a different time or place. They may include growth inducing effects and other effects related to changes in the pattern of land use, population density or growth rate and related effects on air, water and other natural systems, including ecosystems (CEQA §15358(a)(2).

- Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (CEQA §15355(b)). Impacts from individual projects may

be considered minor, but considered retroactively with other projects over a period of time, those impacts could be significant, especially where listed or sensitive species are involved.

(a - c) No Impact. While there have been some minimal impacts identified through this study, none are considered significant in and of themselves, and/or cumulative inducing enough to be considered significant. With appropriate mitigations, those impacts can be reduced to less than significant or not significant.

Documents/Organizations/Individuals Consulted
In Preparation of this
Initial Study

Madera County General Plan

California Department of Finance

California Department of Transportation (CALTRANS)

California Integrated Waste Management Board

California Environmental Quality Act Guidelines

United States Environmental Protection Agency

Caltrans website http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm accessed October 31, 2008

California Department of Fish and Game "California Natural Diversity Database" http://www.dfg.ca.gov/biogeodata/cnddb/

Madera County Air Quality Element of the General Plan (2010)

Madera County Integrated Regional Water Management Plan

Madera County Department of Environmental Health

Madera County Department of Public Works

Madera County Roads Department

State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011 and 2012, with 2010 Benchmark.* Sacramento, California, May 2012

Report on Groundwater Conditions, Kenneth D. Schmidt, March 2018

Traffic Impact Study, Peters Engineering, May 2018

MITIGATION MONITORING REPORT

MND # 2018-14

No.	Mitigation Measure	Monitoring Phase	Enforcement Agency	Monitoring Agency	Action Indicating Compliance	Verification of Compliance		
						Initials	Date	Remarks
Aesthetics								
1	All exterior lighting shall be hooded and downwards, away from adjacent properties.	Construction						
		Construction						
Agricultural Resources								
Air Quality								
Biological Resources								
1	To ensure that impacts do not occur, the development shall place all development 100 feet from the edge of riparian vegetation or the high water mark of all ponds and perennial water features on site, whichever is greater, 50 feet from the edge of high water mark or riparian vegetation for intermittent water features, whichever is greater.	Construction						
Cultural Resources								
1	If any prehistoric resources or human remains are uncovered during construction, work shall stop immediately and a qualified archeologist shall be contacted to determine further mitigation which may be needed. The County Coroner shall be contacted if human remains are found.	Construction						
Geology and Soils								
Hazards and Hazardous Materials								
Hydrology and Water Quality								
1	All structures will need to be elevated above the Base Flood Elevation and submit all proper certification prior to development.	Construction						

No.	Mitigation Measure	Monitoring Phase	Enforcement Agency	Monitoring Agency	Action Indicating Compliance	Verification of Compliance		
						Initials	Date	Remarks
Land Use and Planning								
Mineral Resources								
Noise								
Population and Housing								
Public Services								
Recreation								
Transportation and Traffic								
1	**Intersection of SR 99 Southbound Ramps,** Road 23, and Avenue 18½Signalization of the intersection, including the addition of a left-turn lane on the westbound approach, with split phasing in the north-south direction to accommodate the offset geometry, would result in LOS C or better during the peak hours in the existing-plus-Project condition. A single-lane roundabout is also expected to operate at acceptable LOS. Both mitigation measures are likely to be very costly considering the existing constraints at the intersection (existing ramps, existing bridge, adjacent properties). A determination of the preferred alternative would require very detailed studies, likely a Caltrans Project Study Report (PSR).	Construction						

No.	Mitigation Measure	Monitoring Phase	Enforcement Agency	Monitoring Agency	Action Indicating Compliance	Verification of Compliance		
						Initials	Date	Remarks
2	**Intersection of SR 99 Northbound Ramps and Avenue 18½** Signalization of the intersection with the current lane configurations would result in LOS C during the peak hours in the existing-plus-Project condition. A single-lane roundabout is also expected to operate at acceptable LOS. Signalization is expected to be less costly because minimal roadway reconstruction is expected.	Construction						
3	Comply with all future mitigation for all Existing plus approved and pending project plus project conditions for both short term and long term cumulative impacts as listed in the Traffic Impact Study.							
Utilities and Service Systems								

Community and Economic Development
Planning Division

Norman L. Allinder, AICP
Director

- 200 W 4th Street
- Suite 3100
- Madera, CA 93637
- (559) 675-7821
- FAX (559) 675-6573
- TDD (559) 675-8970
- mc_planning@madera-county.com

OPERATIONAL/ENVIRONMENTAL STATEMENT CHECKLIST

It is important that the operational/environmental statement provides for a complete understanding of your project proposal. Please be as detailed as possible.

1. Please provide the following information:
   Assessor's Parcel Number: 029-280-029
   Applicant's Name: Madera Creek LLC; Melissa L. White, Esq.
   Address: 7571 North Remington, Suite 104, Fresno CA 93711
   Phone Number: 559-779-7132

2. Describe the nature of your proposal/operation.
   General Plan Amendment from Ag to Industrial and Parcel Map approval for 50 parcels on 75.38 acres. The proposed parcel map is attached; a parcel map can be used to create this larger number of parcels legally under the subdivison map act 66426(c) for commerical subdivisions where each proposed parcel has access to a public street or highway.

3. What is the existing use of the property?
   This property has planted 75 acres of almond trees; with this proposal, the applicant request the trees be grandfathered into the general plan amendment. These almond trees will be removed upon the termination of the life of these trees.

4. What products will be produced by the operation? Will they be produced onsite or at some other location? Are these products to be sold onsite?
   At this time, there are not planned products to be produced at this location. The trees will ultimately be removed and the land will be surveyed and roads will be put in place for the parcels to be divided. There is no planned production onsite at this time other than the harvesting of almonds.

5. What are the proposed operational time limits?
   Months (if seasonal): this is not applicable for this application - this is just a General plan amendment and parcel map application.
   Days per week: Daytime
   Hours (from ___ to ___): Total Hours per day:

6. How many customers or visitors are expected?
   Average number per day: with this applicaiton; there are not plans for customers or public until the farming operation ceases and the parcels and roads are installed.
   Maximum number per day:
   What hours will customers/visitors be there? N/A

7. How many employees will there be?
   Current: Currently, there is a farming operation with a few workers coming to the location to water, prune, and harvest the almond trees. These employees only come on a sporadic basis to this property.
   Future:
   Hours they work: mostly during the daytime
   Do any live onsite? If so, in what capacity (i.e. caretaker)? no

8. What equipment, materials, or supplies will be used and how will they be stored? If appropriate, provide pictures or brochures.

Currently, farming equipment is occasionally stored on the property. There will be equipment on the property for the installion of the roads and dividing of the parcels, but not unitl the trees are no longer producing.

9. Will there be any service and delivery vehicles? No delivery or service vehicles are anticipated until after the roads have been constructed.

Number: N/A

Type: N/A

Frequency: N/A

10. Number of parking spaces for employees, customers, and service/delivery vehicles. Type of surfacing on parking area.

N/A

11. How will access be provided to the property/project? (street name)

Street One, Street Two, and Street Three.

12. Estimate the number and type (i.e. cars or trucks) of vehicular trips per day that will be generated by the proposed development.

With the Almond Trees, there are very few vehicles on the property. Occasionally a tractor, ranch manager truck, but with the construction of the roads, we anticipate quite a few construction vehicles.

13. Describe any proposed advertising, inlcuding size, appearance, and placement.

There are no signs on the property except for no tresspassing and priviate property.

14. Will existing buildings be used or will new buildings be constructed? Indicate which building(s) or portion(s) of will be utilized and describe the type of construction materials, height, color, etc. Provide floor plan and elevations, if applicable.

There are no existing buildings and with this application; we are not requesting to construct any new buildings.

15. Is there any landscaping or fencing proposed? Describe type and location.

When we commence construction of the roads, we may need to install temporary or permanent fencing for the protection of the public and equipment.

16. What are the surrounding land uses to the north, south, east and west property boundaries?

Property to the East has General Plan and Zoning for Light industrial; Property to the north is zoned for Light industrial but General plan for agricultrual; Property to the South has General Plan and Zoning for industrial. Madera Creek freely granted to the County of Madera the south east corner of their property to expand the intersection for commerical vehicles.

17. Will this operation or equipment used, generate noise above other existing parcels in the area?

It is anticipated with this application, the noise generate will be consistant with the area. As stated above, this owner freely granted apportion of their property to the County of Madera for an expanstion of the intersection because a commercial property owner south of this property was having a hardtime negotiating this corner with their semi-trucks.

18. On a daily or annual basis, estimate how much water will be used by the proposed development, and how is water to be supplied to the proposed development (please be specific).

It is not known how much water will be used with just the creation of these three roads and the parcels; but the surveyor and planning department have stated it will be much less that what is being currently used to water and maintain 75 acres of almond trees.

19. On a daily or weekly basis, how much wastewater will be generated by the proposed project and how will it be disposed of?

At this time, it is not known how much wastewater will be generated with this general plan amendment and parcel map application.

20. On a daily or weekly basis, how much solid waste (garbage) will be generated by the proposed project and how will it be disposed of?

At this time, there would be no solild waste generated by this proposed project.

21. Will there be any grading? Tree removal? (please state the purpose, i.e. for building pads, roads, drainage, etc.)

Yes, this applicaiton would include moving approximately 75 acres of almond trees, creating 50 parcels, and three roads. In order to prepare the property for the roads and parcels, the property would have to be graded.

22. Are there any archeological or historically significant sits located on this property? If so, describe and show location on site plan.

There is no archeological or historically significant sites on this property.

23. Locate and show all bodies of water on application plot plan or attached map.

There is a small creek on the south west corner of the property. Map is attached.

24. Show any ravines, gullies, and natural drainage courses on the property on the plot plan.

There is a natrual drain with the creek flowing on the south west corner of the property; no other known naturally occuring drainage cources on this property.

25. Will hazardous materials or waste be produced as part of this project? If so, how will they be shipped or disposed of?

There are no known hazardors materials or waste going to be produceds as apart of this project.

26. Will your proposal require use of any public services or facilities? (i.e. schools, parks, fire and police protection or special districts?)

Once the parcels are developed by someone other than this applicant, the businesses or other owners will require some of these services, but this applicant will not require any additional services will this applicaiton.

27. How do you see this development impacting the surrounding area?

This applicaiton will allow for the use of this property to be consistent with the surrounding properties. Given, the area is all zoned either industrial, light industrial and/or commerical, this application would allow for the owner to develope the property to match the surrounding area.

28. How do you see this development impacting schools, parks, fire and police protection or special districts?

Once the parcels and roads are developed, there will be a higher demand for police and fire protection because there will be more buildings and businesses in the area but there will also be more tax revenue to pay for these additional services.

29. If your proposal is for commercial or industrial development, please complete the following; Proposed Use(s): No uses with this applicaiton, any uses will come after the parcels and roads are in place.

Square feet of building area(s): N/A

Total number of employees: N/A

Building Heights: N/A

30. If your proposal is for a land division(s), show any slopes over 10% on the map or on an attached map.

There are not slopes over 10% on this map; please see attached map.

Community and Economic Development

Environmental Health Division

Dexter Marr
Deputy Director

- 200 W. Fourth St.
- Suite 3100
- Madera, CA 93637
- TEL (559) 661-5191
- FAX (559) 675-6573
- TDD (559) 675-8970

MEMORANDUM

TO: Jamie Bax

FROM: Dexter Marr, Environmental Health Division

DATE: June 11, 2018

RE: White, Melissa L. - Parcel Map - Madera (029-280-029-000)

Comments

TO:Planning Division

FROM:Environmental Health Division

DATE:June 6, 2018

RE:Parcel Map PM #4230 - Melissa White, Madera,
APN 029-280-029

Environmental Health Division comments/conditions:

The project shall comply with Senate Bill (SB 1263) Public Water System requirements.

The project shall be served by a community water system. Water services for any structure(s), within this parcel map must be connected to an approved community water system that is approved by this Division and/or State Division of Drinking Water.

The project shall be served by a community sewer system to which all of the structure(s) within the parcel map shall connect. Sewer service for all structure(s) within the parcel map must be connected to an approved community sewer system that is approved by Regional Water Quality Control Board (RWQCB).

Solid waste collection with sorting for green, recycle, and garbage is required.

The construction and then ongoing operation must be done in a manner that shall not allow any type of public nuisance(s) to occur including but not limited to the following nuisance(s); Dust, Odor(s), Noise(s), Lighting, Vector(s) or Litter. This must be accomplished under accepted and approved Best Management Practices (BMP) and as required by the County General Plan, County Ordinances and any other related State and/or Federal jurisdiction.

If there are any questions or comments regarding these conditions please contact this Division at (559) 675-7823.

Statutes

Madera County Code Title 13

Senate Bill 1263

Community and Economic Development
Fire Prevention Division

Deborah Mahler, Fire Marshal
Deputy Director

- *200 W. Fourth St.*
- *Suite 3100*
- *Madera, CA 93637*
- *TEL (559) 661-5191*
- *FAX (559) 675-6573*
- *TDD (559) 675-8970*

M E M O R A N D U M

TO: Jamie Bax

FROM: Deborah Mahler, Fire Marshal

DATE: June 11, 2018

RE: White, Melissa L. - Parcel Map - Madera (029-280-029-000)

Conditions

All roads accessing the project site shall be cleared of flammable vegetation over 18 inches in height to a distance of 25 feet from the centerline of the road. Vertical clearance of a minimum 15 feet is required as to provide an unobstructed access for fire apparatus. (CFC, Section 503.2.1 and CVC Section 22500.

The proposed through fire apparatus access road shall be provided, constructed and maintained as follows: The roads shall be constructed to have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than15 feet. The roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an uninterrupted surface width so as to provide all-weather driving capabilities. All streets shall be signed and identified at intersections to allow for speedy response of emergency equipment. All cul-de-sac roads shall be posted “Not a Through Road” and shall terminate in a 50’ radius turn bulb or acceptable hammer head. (CFC, Sections 503.2.1, 503.2.3, 503.2.4, 503.3; CVC Section 22500.

An improvement agreement shall be on file providing timeline for infrastructure improvements. If no agreement is approved, all roads and water system for fire suppression shall be on-site, tested and approved prior to recordation of the final map.

COUNTY OF MADERA
DEPARTMENT OF PUBLIC WORKS

AHMAD M. ALKHAYYAT
DIRECTOR

200 West 4th Street
Madera, CA 93637-8720
Main Line - (559) 675-7811
Special districts - (559) 675-7820
Fairmead Landfill - (559) 665-1310

MEMORANDUM

DATE: June 11, 2018

TO: Jamie Bax

FROM: Phu Duong, Public Works

SUBJECT: White, Melissa L. - Parcel Map - Madera (029-280-029-000)

Comments

At the time of applying for the building permits, all driveway approaches accessing the parcels shall be built to County commercial approach standards as described in the permit. Maximum approach width is 35' wide for commercial uses. Approaches wider than the stated maximum may be allowed subject to prior approval of the Road Commissioner or designee.

Any construction within the County road of right-of-way will require an Encroachment Permit from the Public Works Department. Once this permit is secured, the applicant may commence with construction.

Prior to recordation, all driveway locations shall be indicated on the map for review and approval.

At the time of applying for the building permits, if any grading is to occur, the applicant is required to submit a grading, drainage, and erosion control plans to the Public Works Department for review and approval. Such improvement plans shall be prepared by a licensed professional.

Due to the General Plan Amendment and deviates from its original zoning, the applicant is hereby required to provide a traffic study to demonstrate the difference in traffic impacts associated with amended usage comparing its designated zoning. In the future if there are reasons to believe the developments occur on these parcels generate more traffic impacts than what was anticipated in the traffic study, more than 10% of the estimated values as described in the study, the applicant will be required to update and revise the traffic study to accurately reflect the actual impacts of the developments in the area.

All National Pollution Discharge Elimination System (NPDES) storm water regulations and standards shall be met. It is possible that the quality of storm water may be affected by pollutants. The applicant shall mitigate any impacts associated with storm water contamination caused by this project. A Storm Water Pollution Prevention Plan (SWPPP) is required for all projects 1-acre or more of site disturbance.

All stabilized construction on and off site access locations shall be constructed per the latest edition of the California Stormwater Quality Association (CASQA) details to effectively prevent tracking of sediment onto paved areas. If applicable, all BMPS to be inspected weekly and before and after each rain event. Repair or replace as necessary. The contractor shall abide all of the laws, ordinances, and regulations associated with the NPDES and the Clean Water Act.

Contractor shall be responsible for locating all underground utilities prior to the start of any work by contacting Underground Service Alert (USA) 48 hours prior to any excavation. Contractor shall be responsible for contacting the appropriate party in advance of any work for necessary inspections in compliance to these plans, standard plans and standard specifications.

COUNTY OF MADERA
DEPARTMENT OF PUBLIC WORKS

AHMAD M. ALKHAYYAT
DIRECTOR

200 West 4th Street
Madera, CA 93637-8720
Main Line - (559) 675-7811
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MEMORANDUM

DATE: June 11, 2018

TO: Jamie Bax

FROM: Madera County Public Works

SUBJECT: White, Melissa L. - Parcel Map - Madera (029-280-029-000)

Comments

parcel is located in an AO flood zone. All structures need to be elevated above the BFE and submit all proper certification.

DEPARTMENT OF TRANSPORTATION
DISTRICT 6
1352 WEST OLIVE AVENUE
P.O. BOX 12616
FRESNO, CA 93778-2616
PHONE (559) 444-2493
FAX (559) 445-5875
TTY 711
www.dot.ca.gov

Making Conservation a California way of life.

July 7, 2017

06-MAD-99-16.331
Tentative Parcel Map No. 4230
Industrial Subdivision

Ms. Jamie Bax, Senior Planner
Community & Economic Development
Planning Division
200 W. 4th Street, Suite 3100
Madera, California 93637

Dear Ms. Bax:

Thank you for including Caltrans in the environmental review process for the project referenced above. To ensure a safe and efficient transportation system, we encourage early consultation and coordination with local jurisdictions and project proponents on all development projects that utilize the multimodal transportation network.

We provide these comments consistent with the State's smart mobility goals that support a vibrant economy, and build communities. The following comments are based on Tentative Parcel Map 4230 to allow for the construction of the following:

A division of 75.38 acres into 50 parcels currently zoned for Light Industrial. The property is location on the on the northwest corner of Road 24 and Avenue 18 ½, approximately ½ mile east of the State Route (SR) 99 / Avenue 18 ½ interchange.

Given that Caltrans current TIS guidelines are in the process of being updated, a scoping document submitted to Caltrans staff for review is highly suggested. At a minimum, the analysis should provide the following:

a. Vicinity maps, regional location map, and a site plan clearly showing project access in relation to nearby roadways and key destinations. Ingress and egress for all project components should be clearly identified. Clearly identify and map: project driveways, the State Highway System and local roads, intersections and interchanges, pedestrian and bicycle routes, car/bike parking, transit routes and transit facilities.

b. Schematic illustrations of walking, biking and auto traffic conditions at the project site and study area roadways, trip distribution percentages, AM / PM peak periods volumes as well as intersection geometrics (i.e. lane configurations, etc). Operational concerns for all road users that may increase the potential for future collisions should be identified and fully mitigated in a manner that does not further raise VMT.

c. The scoping document should include the analysis of SR 99 / Avenue 18 ½ interchange; the intersections of Pistachio Drive / Avenue 18 ½; and Golden State / Avenue18 ½. Additional comments may be added during the review of the scoping document.

If you have any further questions, please contact me at (559) 444-2493.

Sincerely,

DAVID PADILLA
Associate Transportation Planner
Planning North Branch

c: Michael Navarro, Chief, Planning North Branch, Caltrans

Traffic Impact Study

Proposed Tentative Parcel Map 4230

Northwest of the Intersection of Avenue 18½ and Road 24
Madera County, California

Prepared For:

Madera Creek, LLC
7571 North Remington Avenue, Suite 104
Fresno, California 93711

Date:

May 15, 2018

Job No.:

17-033.01

PETERS ENGINEERING GROUP
A CALIFORNIA CORPORATION

PETERS ENGINEERING GROUP
A CALIFORNIA CORPORATION

Ms. Melissa L. White, Esq.
Madera Creek, LLC
7571 North Remington Avenue, Suite 104
Fresno, California 93711

May 15, 2018

Subject: Traffic Impact Study
Proposed Tentative Parcel Map 4230
Northwest of the Intersection of Avenue 18½ and Road 24
Madera County, California

Dear Ms. White:

1.0 INTRODUCTION

This report presents the results of a traffic impact study for a proposed Tentative Parcel Map 4230 in Madera County, California. This analysis focuses primarily on the anticipated effect of vehicle traffic resulting from the Project.

2.0 PROJECT DESCRIPTION

The proposed Tentative Parcel Map 4230 consists of 49 light industrial lots on approximately 80 acres located on the north side of Avenue 18½ between the Road 23½ alignment and Road 24. The lots range in size from 1.0 acre to 1.6 acres. The map also indicates a 6.1-acre outlot for storm drain purposes and 1.3 acres (Lot 50) that will remain open space. The project will construct a portion of Road 23½ along the western edge of the site. Site access will be provided via new local roads, with one connection to Road 23½, one connection to Road 24, and two connections to Avenue 18½.

A vicinity map is presented in the attached Figure 1, Site Vicinity Map, following the text of this report. A site plan is presented in Figure 2, Site Plan.

3.0 STUDY AREA AND TIME PERIOD

The study locations were determined as a result of consultation with County staff and a letter from Caltrans dated July 7, 2017. This report includes analysis of the following intersections:

- Golden State Boulevard / Avenue 18½;
- Pistachio Drive / Avenue 18½;
- State Route (SR) 99 Southbound Ramps / Road 23 / Avenue 18½;
- SR 99 Northbound Ramps / Avenue 18½; and
- Road 24 / Avenue 18.

The study time periods include the weekday a.m. and p.m. peak hours determined between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. The peak hours are analyzed for the following conditions:

- Existing Conditions;
- Existing-Plus-Project Conditions;
- Existing-Plus-Approved-and-Pending-Projects Conditions; and
- Existing-Plus-Approved-and-Pending-Plus-Project Conditions; and
- Cumulative (Year 2039) Conditions With Project.

4.0 LEVEL OF SERVICE

The Transportation Research Board *Highway Capacity Manual*, 2010 (HCM2010) defines level of service (LOS) as, "A quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst." Automobile mode LOS characteristics for both unsignalized and signalized intersections are presented in Tables 1 and 2.

Table 1
Level of Service Characteristics for Unsignalized Intersections

Level of Service	Average Vehicle Delay (seconds)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Reference: *Highway Capacity Manual*, Transportation Research Board, 2010

Table 2
Level of Service Characteristics for Signalized Intersections

Level of Service	Description	Average Vehicle Delay (seconds)
A	Volume-to-capacity ratio is low. Progression is exceptionally favorable or the cycle length is very short.	<10
B	Volume-to-capacity ratio is low. Progression is highly favorable or the cycle length is very short.	>10-20
C	Volume-to-capacity ratio is no greater than 1.0. Progression is favorable or cycle length is moderate.	>20-35
D	Volume-to-capacity ratio is high but no greater than 1.0. Progression is ineffective or cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35-55
E	Volume-to-capacity ratio is high but no greater than 1.0. Progression is unfavorable and cycle length is long. Individual cycle failures are frequent.	>55-80
F	Volume-to-capacity ratio is greater than 1.0. Progression is very poor and cycle length is long. Most cycles fail to clear the queue.	>80

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

5.0 SIGNIFICANCE CRITERIA

5.1 County of Madera Criteria

According to LOS Policy 2.A.8 in the Transportation and Circulation Section of the General Plan Policy Document, the County shall develop and manage its roadway system to maintain a minimum LOS of D on all State and County roadways.

For purposes of this study, a significant traffic impact will be recognized at County locations if:

- the Project will cause the LOS to decrease below D at an intersection or road segment;
- the Project will cause the LOS to drop from E to F at an intersection or road segment; or
- the Project will exacerbate the delay at an intersection already operating below the minimum acceptable LOS by increasing the average delay by 5.0 seconds or more.

5.2 Caltrans Criteria

The Caltrans *Guide for the Preparation of Traffic Impact Studies* dated December 2002 indicates that Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D.

For purposes of this study, a significant traffic impact will be recognized at State locations if:

- the Project will cause the LOS to decrease below C at an intersection or road segment;
- the Project will cause the LOS to drop from D to E, from D to F, or from E to F at an intersection or road segment; or
- the Project will exacerbate the delay at an intersection already operating below the minimum acceptable LOS by increasing the average delay by 5.0 seconds or more.

6.0 LANE CONFIGURATIONS AND INTERSECTION CONTROL

The existing lane configurations and intersection control at the study locations are presented in Figure 3, Existing Lane Configurations and Intersection Control. For purposes of this study it is assumed that these lane configurations will remain through the year 2039.

7.0 EXISTING TRAFFIC VOLUMES

Existing peak-hour traffic volumes at the study intersections were determined by performing manual turning-movement counts between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. on a weekday. The data sheets are attached in Appendix A and indicate the dates the counts were performed. The existing peak-hour turning movement volumes are presented in Figure 4, Existing Peak-Hour Traffic Volumes.

8.0 PROJECT TRIP GENERATION

8.1 Vehicle Trip Generation

Data provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*, are typically used to estimate the number of trips anticipated to be generated by proposed projects. Table 3 presents the trip generation estimates for the Project.

Table 3
Project Trip Generation

ITE Land Use	Units	Daily		A.M. Peak Hour (Occurs Between 7:00 and 9:00 a.m.)					P.M. Peak Hour (Occurs Between 4:00 and 6:00 p.m.)				
		Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
General Light Industrial (110)	80 acres	51.80	4,144	7.51	83:17	499	102	601	7.26	22:78	128	453	581

Reference: *Trip Generation Manual, 9th Edition*, Institute of Transportation Engineers 2012
Rates are reported in trips per acre. In:Out are percentages of the total.

8.2 Project Vehicle Trip Distribution and Assignment

The Project trips were distributed to the adjacent road network using engineering judgment considering the distribution of existing traffic volumes available from other studies, the locations and types of streets in the study area, and complementary land uses in the region. The anticipated percentage distribution of Project trips is presented in Figure 5, Project Trip Distribution Percentages.

The peak-hour Project traffic volumes presented in Table 4 were assigned to the adjacent road network in accordance with the trip distribution percentages described above. The peak-hour Project traffic volumes are presented in Figure 6, Project Trip Assignment.

9.0 EXISTING-PLUS-PROJECT TRAFFIC VOLUMES

The existing-plus-Project peak-hour turning movement volumes are presented in Figure 7, Existing-Plus-Project Peak-Hour Traffic Volumes.

10.0 APPROVED AND PENDING PROJECTS

The cumulative analyses for the near-term and long-term conditions consider the effects of traffic expected to be generated by pending and approved projects in the study area.

A casino project is pending on Golden State Boulevard north of Avenue 17. Traffic volumes for the casino project were obtained from a traffic impact study report dated October 20, 2017 by Peters Engineering Group.

A truck stop is currently under construction southeast of the intersection of Road 23 and Avenue 18½. The truck stop is a by-right use and has not performed a traffic impact study. Data presented in the ITE Trip Generation Handbook dated June 2004 (TGH) suggest that captured-trip reductions are applicable to the truck stop. Captured-trip reductions are applied to account for the interaction between the various individual land uses assumed for the trip generation calculations. A common example of a captured trip occurs in a multi-use

development containing both offices and shops. Trips made by office workers to shops within the site are defined as internal to (i.e., "captured within") the multi-use site. A more complete description of captured trips is presented in the TGH. An example of a captured trip for the truck stop is a traveler who stops to buy gasoline and also eats at one of the restaurants.

An internal capture rate of 20 percent was obtained from Tables 7.1 and 7.2 of the TGH and was applied to the combined restaurant trips to account for internal capture between the restaurants and the gas station. Data are not presented in Tables 7.1 and 7.2 of the TGH for the a.m. peak hour; therefore, the p.m. peak hour internal capture percentage was applied to the a.m. peak hour.

Data available on the Caltrans web site (http://www.dot.ca.gov/trafficops/census/docs/2016_aadt_truck.pdf) indicate that approximately 17 percent of the vehicle trips on State Route 99 at the Madera/Fresno County line are trucks (a ratio of less than four trucks per 20 total vehicles). The proposed truck stop provides four truck fueling positions and 16 automobile fueling positions, which is a ratio of four truck fueling positions per 20 total fueling positions. Since trucks typically require additional time to fuel, for the purposes of trip generation calculations the four truck fueling positions are assumed to generate the same number of trips as two vehicle fueling positions. Therefore, the trip generation estimates are based on a gas station with 18 fueling positions.

Table 4 presents the trip generation estimates for the Project.

Table 4
Truck Stop Trip Generation

Land Use	Units	Weekday		A.M. Peak Hour					P.M. Peak Hour				
		Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
Fast-Food Restaurant With Drive-Through (934)	6,601 sq. ft.	496.12	3,275	45.42	51:49	153	147	300	32.65	52:48	112	104	216
Fast-Food Restaurant Without Drive-Through (933)	1,225 sq. ft.	496.12 *	608	43.87	60:40	32	22	54	26.15	51:49	16	16	32
Gasoline/Service Station With Convenience Market (945)	18 Fuel Pos	162.78	2,930	10.16	50:50	92	91	183	13.51	50:50	122	122	244
Internal Capture **	-	-	-586	-	-	-18	-18	-36	-	-	-24	-24	-48
TOTALS:	**-**	**-**	**6,227**	**-**	**-**	**259**	**242**	**501**	**-**	**-**	**226**	**218**	**444**

Reference: *Trip Generation Manual, 9th Edition*, Institute of Transportation Engineers 2012
Rates are reported in trips per unit or per 1,000 square feet, as applicable
In:Out are percentages of the total.

* Daily rate not available for Code 933. Rate obtained from Code 934 (Fast Food With Drive through).

** Internal capture rate of 20% based on information provided in Tables 7.1 and 7.2 of the *Trip Generation Handbook, Second Edition*, Institute of Transportation Engineers, June 2004 applied to the gas station trips because they are less than restaurant trips.

11.0 EXISTING-PLUS-APPROVED-AND-PENDING-PROJECTS CONDITIONS

The existing-plus-approved-and-pending-projects peak-hour turning movement volumes include the casino and truck stop trip generation estimates and are presented in Figure 8,

Existing-Plus-Approved-And-Pending-Projects Peak-Hour Traffic Volumes. The existing-plus-approved-and-pending-projects-plus-Project peak-hour turning movement volumes are presented in Figure 9, Existing-Plus-Approved-And-Pending-Projects-Plus-Project Peak-Hour Traffic Volumes.

12.0 CUMULATIVE YEAR 2039 TRAFFIC VOLUMES

Cumulative year 2039 traffic volume forecasts were estimated based on the cumulative 2040 Madera County travel model maintained by the Madera County Transportation Commission (MCTC) using an increment method. The increment method forecasts future traffic volumes by adding the growth projected by the model to the existing traffic volumes. The travel model output is attached in Appendix B.

Year 2039 turning movement volumes were estimated based on the methods presented in Chapter 8 of the Transportation Research Board National Cooperative Highway Research Program Report 255 entitled "Highway Traffic Data for Urbanized Area Project Planning and Design." Projected year 2039 cumulative-with-Project traffic volumes are presented in Figure 10, Year 2039 Cumulative With-Project Peak-Hour Traffic Volumes.

13.0 IMPACT ANALYSES

The levels of service at the study intersections were determined using the computer program Synchro 9, which is based on the HCM2010 procedures for calculating levels of service. The intersection analysis sheets are included in the attached Appendix C.

Tables 5 through 9 present the results of the intersection analyses. For no-project scenarios, delays and levels of service below the minimum acceptable levels are indicated bold type. For Project scenarios, significant LOS impacts are presented in bold type.

Table 5
Intersection LOS Summary – Existing Conditions

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden St / Ave 18½	One-way stop	11.4	B	11.7	B
Pistachio Dr / Ave 18½	One-way stop	16.8	C	19.7	C
SR 99 SB ramps / Rd 23 / Ave 18½	Two-way stop	13.6	B	15.7	C
SR 99 NB Ramps / Ave 18½	One-way stop	**25.1**	**D**	18.3	C
Rd 24 / Ave 18	Two-way stop	9.6	A	9.7	A

Table 6
Intersection LOS Summary – Existing-Plus-Project Conditions

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden St / Ave 18½	One-way stop	11.6	B	11.9	B
Pistachio Dr / Ave 18½	One-way stop	17.1	C	20.1	C
SR 99 SB ramps / Rd 23 / Ave 18½	Two-way stop	**41.7**	**E**	21.1	C
SR 99 NB Ramps / Ave 18½	One-way stop	**169.0**	**F**	**59.1**	**F**
Rd 24 / Ave 18	Two-way stop	9.8	A	9.9	A

Table 7
Intersection LOS Summary – Existing-Plus-Project-Approved-And-Pending Projects Conditions

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden St / Ave 18½	One-way stop	11.9	B	12.5	B
Pistachio Dr / Ave 18½	One-way stop	17.8	C	20.7	C
SR 99 SB ramps / Rd 23 / Ave 18½	Two-way stop	**148.9**	**F**	**216.7**	**F**
SR 99 NB Ramps / Ave 18½	One-way stop	**259.6**	**F**	**124.1**	**F**
Rd 24 / Ave 18	Two-way stop	9.9	A	10.1	B

Table 8
Intersection LOS Summary – Existing-Plus-Project-Approved-And-Pending Projects-Plus-Project Conditions

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden St / Ave 18½	One-way stop	12.1	B	12.6	B
Pistachio Dr / Ave 18½	One-way stop	18.2	C	21.2	C
SR 99 SB ramps / Rd 23 / Ave 18½	Two-way stop	**>300**	**F**	**>300**	**F**
SR 99 NB Ramps / Ave 18½	One-way stop	**>300**	**F**	**>300**	**F**
Rd 24 / Ave 18	Two-way stop	10.2	B	10.3	B

Table 9
Intersection LOS Summary – Cumulative (2039) With-Project Conditions

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden St / Ave 18½	One-way stop	12.7	B	13.3	B
Pistachio Dr / Ave 18½	One-way stop	27.8	D	**47.3**	**E**
SR 99 SB ramps / Rd 23 / Ave 18½	Two-way stop	**>300**	**F**	**>300**	**F**
SR 99 NB Ramps / Ave 18½	One-way stop	**>300**	**F**	**>300**	**F**
Rd 24 / Ave 18	Two-way stop	10.8	B	11.0	B

14.0 DISCUSSION OF IMPACT ANALYSIS

14.1 Existing Conditions

The results of the intersection analyses indicate that the intersection of the SR 99 northbound ramps and Avenue 18½ currently operates at LOS D (below the Caltrans target LOS) on the northbound approach during the a.m. peak hour. The other study intersections are operating at acceptable levels of service.

14.2 Existing-Plus-Project Conditions

The existing-plus-Project conditions analyses represent conditions that would occur after construction of the Project in the absence of other pending projects and regional growth. This scenario isolates the specific impacts of the Project.

The analyses indicate that the Project is expected to cause the LOS at the intersection of the SR 99 southbound ramps, Road 23, and Avenue 18½ to drop from B to E during the a.m. peak hour. This is a significant impact.

The analyses indicate that the Project is expected to cause the LOS at the intersection of the SR 99 northbound ramps and Avenue 18½ to drop from D to F during the a.m. peak hour and from C to F during the p.m. peak hour. This is a significant impact.

The other study locations are expected to continue to operate at acceptable levels of service.

The recommended improvements to mitigate the Project's significant impacts are discussed below.

Intersection of SR 99 Southbound Ramps, Road 23, and Avenue 18½

Signalization of the intersection, including the addition of a left-turn lane on the westbound approach, with split phasing in the north-south direction to accommodate the offset geometry, would result in LOS C or better during the peak hours in the existing-plus-Project condition. A single-lane roundabout is also expected to operate at acceptable LOS. Both mitigation measures are likely to be very costly considering the existing constraints at the intersection (existing ramps, existing bridge, adjacent properties). A determination of the preferred alternative would require very detailed studies, likely a Caltrans Project Study Report (PSR). The mitigated intersection analysis sheets are presented in the attached Appendix D.

Intersection of SR 99 Northbound Ramps and Avenue 18½

Signalization of the intersection with the current lane configurations would result in LOS C during the peak hours in the existing-plus-Project condition. A single-lane roundabout is also expected to operate at acceptable LOS. Signalization is expected to be less costly because minimal roadway reconstruction is expected. The mitigated intersection analysis sheets are presented in the attached Appendix D.

14.3 Existing-Plus-Approved-and-Pending-Projects Conditions

The existing-plus-approved-and-pending-projects conditions analyses represent conditions that would occur after construction of the approved and pending projects, including the truck stop and casino, in the absence of the proposed Project. This scenario isolates the near-term cumulative impacts of the approved and pending projects without the proposed Project.

The analyses indicate that the approved and pending projects are expected to cause the LOS at the intersection of the SR 99 southbound ramps, Road 23, and Avenue 18½ to drop from B to F during the a.m. peak hour and from C to F during the p.m. peak hour. The primary impact is a result of the truck stop, although the it was previously determined that the casino project would cause a significant impact requiring signalization of the intersection.

The analyses indicate that the approved and pending projects are expected to cause the LOS at the intersection of the SR 99 northbound ramps and Avenue 18½ to drop from D to F during the a.m. peak hour and from C to F during the p.m. peak hour. The primary impact is a result of the truck stop, although the it was previously determined that the casino project would cause a significant impact requiring signalization of the intersection.

The other study locations are expected to continue to operate at acceptable levels of service.

14.4 Existing-Plus-Approved-and-Pending-Projects-Plus-Project Conditions

The existing-plus-approved-and-pending-projects-plus-Project conditions analyses represent conditions that would occur after construction of the approved and pending projects, including the truck stop and casino, and the proposed Project. This scenario reveals the near-term cumulative impacts with the proposed Project.

The analyses indicate that the approved and pending projects are expected to cause the LOS at the intersection of the SR 99 southbound ramps, Road 23, and Avenue 18½ to drop from B to F during the a.m. peak hour and from C to F during the p.m. peak hour (as compared to the existing conditions).

The analyses indicate that the approved and pending projects are expected to cause the LOS at the intersection of the SR 99 northbound ramps and Avenue 18½ to drop from D to F during the a.m. peak hour and from C to F during the p.m. peak hour (as compared to the existing conditions).

The other study locations are expected to continue to operate at acceptable levels of service.

The recommended improvements to mitigate the near-term cumulative significant impacts are discussed below.

Intersection of SR 99 Southbound Ramps, Road 23, and Avenue 18½

Signalization and widening of the intersection, with split phasing in the north-south direction to accommodate the offset geometry, would result in LOS C during the peak hours in the existing-plus-approved-and-pending-projects-plus-Project condition. The widening would include the addition of a left-turn lane on the westbound approach and modifying the southbound approach to include a dedicated left-turn lane, one through lane, and a dedicated right-turn lane. The calculated 95th-percentile queue length in the proposed westbound left-turn lane is 216 feet; therefore, it is anticipated that a left-turn lane could be installed without widening of the bridge structure. A single-lane roundabout is also expected to operate at acceptable LOS. Both mitigation measures are likely to be very costly considering the existing constraints at the intersection (existing ramps, existing bridge, adjacent properties). A determination of the preferred alternative would require very detailed studies, likely a Caltrans PSR. The mitigated intersection analysis sheets are presented in the attached Appendix D and include calculated 95th-percentile queue lengths.

Intersection of SR 99 Northbound Ramps and Avenue 18½

Signalization of the intersection with widening of the northbound approach to provide a dedicated right-turn lane and the addition of a dedicated right-turn lane on the westbound approach would result in LOS C during the peak hours in the existing-plus-approved-and-

pending-projects-plus-Project condition. The calculated 95th-percentile queue length in the existing eastbound left-turn lane is 246 feet; therefore, it is anticipated that the existing left-turn lane could be lengthened without widening of the bridge structure. A single-lane roundabout is also expected to operate at acceptable LOS. Signalization is expected to be less costly because minimal roadway reconstruction is expected. The mitigated intersection analysis sheets are presented in the attached Appendix D and include calculated 95th-percentile queue lengths.

14.5 Cumulative (Year 2039) Conditions With Project

The year 2039 with-Project conditions analyses are based on the assumption that the Project is in operation and generating the trips discussed above, and that other development and growth in the region occurs, resulting in increased traffic as discussed in preceding sections of this report.

The results of the intersection analyses indicate that the cumulative long-term effect of the pending and approved projects, projected regional growth, and the proposed Project is LOS F during both the a.m. and p.m. peak hours at the two SR 99 ramp intersections. In addition, the LOS at the intersection of Pistachio Drive and Avenue 18½ is expected to drop to E during the p.m. peak hour.

The other study locations are expected to continue to operate at acceptable levels of service.

The recommended improvements to mitigate the long-term cumulative significant impacts are discussed below.

Intersection of SR 99 Southbound Ramps, Road 23, and Avenue 18½

Signalization and widening of the intersection, with split phasing in the north-south direction to accommodate the offset geometry, would result in LOS C during the peak hours in the year 2039 condition. The widening would include the addition of a left-turn lane on the westbound approach and modifying the southbound approach to include a dedicated left-turn lane, one through lane, and a dedicated right-turn lane. The calculated 95th-percentile queue length in the proposed westbound left-turn lane is 244 feet; therefore, it is anticipated that a left-turn lane could be installed without widening of the bridge structure. A single-lane roundabout is also expected to operate at acceptable LOS. Both mitigation measures are likely to be very costly considering the existing constraints at the intersection (existing ramps, existing bridge, adjacent properties). A determination of the preferred alternative would require very detailed studies, likely a Caltrans PSR. This recommended mitigation measure is identical to the recommended near-term mitigation measure. The mitigated intersection analysis sheets are presented in the attached Appendix D and include calculated 95th-percentile queue lengths.

Intersection of SR 99 Northbound Ramps and Avenue 18½

Signalization of the intersection with widening of the northbound approach to provide a dedicated right-turn lane and the addition of a dedicated right-turn lane on the westbound approach would result in LOS C during the peak hours in the year 2039 condition. The calculated 95th-percentile queue length in the existing eastbound left-turn lane is 266 feet;

therefore, it is anticipated that the existing left-turn lane could be lengthened without widening of the bridge structure. A single-lane roundabout is also expected to operate at acceptable LOS. Signalization is expected to be less costly because minimal roadway reconstruction is expected. This recommended mitigation measure is identical to the recommended near-term mitigation measure. The mitigated intersection analysis sheets are presented in the attached Appendix D and include calculated 95th-percentile queue lengths.

Intersection of Pistachio Drive and Avenue 18½

Striping a dedicated right-turn lane on the westbound approach is expected to result in LOS D during the p.m. peak hour at the intersection of Pistachio Drive and Avenue 18½. The mitigated intersection analysis sheets are presented in the attached Appendix D.

15.0 EQUITABLE SHARE CALCULATIONS

Where required future mitigations are not included in established development fees and are not the sole responsibility of a particular project, but rather a cumulative result of regional growth, the responsibility for mitigations is determined based on equitable share calculations as presented in the Caltrans *Guide for the Preparation of Traffic Impact Studies*. Caltrans recommends the following equation to determine a project's equitable share of the cost of improvements:

$$P = \frac{T}{T_B - T_E}$$

where:

P = The equitable share of the project's traffic impact;
T = The project trips generated during the peak hour of the adjacent State Highway facility;
T_B = The forecasted (future with project) traffic volume on the impacted State highway facility;
T_E = The existing traffic on the State Highway facility plus approved projects traffic.

Table 10 presents equitable share responsibility calculations. Any of the ultimate facilities that are constructed by the Project would be credited against the equitable share requirement. In addition, if the cost of facilities constructed by the Project exceeds the Project's equitable share amount, the Project should be reimbursed by other subsequent projects.

Table 10
Equitable Share Responsibility Calculations – Weekday P.M. Peak Hour

Location	Recommended Improvement	Project Trips	Existing Plus Approved Projects Traffic	Future Traffic	Equitable Share
SR 99 SB ramps / Rd 23 / Ave 18½	Signals and Widening	296	1,412	2,127	41%
SR 99 NB Ramps / Ave 18½	Signals and Widening	493	729	1,318	84%

Cost estimates for actual mitigations should be developed in coordination with County of Madera and Caltrans staff based on the actual improvements anticipated to be constructed by 2039. If required, cost estimates and mitigation fees would be presented under separate cover.

16.0 CONCLUSIONS AND RECOMMENDATIONS

Generally-accepted traffic engineering principles and methods were employed to estimate the amount of traffic expected to be generated by the Project, to analyze the existing traffic conditions, and to analyze the traffic conditions projected to occur in the future.

The traffic impact study found that the Project will contribute to significant impacts that will require mitigation as described in this report. In general, the intersections at the SR 99 northbound and southbound ramps at Avenue 18½ will be significantly impacted by pending and approved projects, and the proposed Project will exacerbate those impacts. The significant impacts can be mitigated by signalization or construction of roundabouts. A determination of the preferred alternative would require very detailed studies, likely a Caltrans PSR.

Any of the year 2039 mitigation measures, or portions thereof, that are constructed by the Project would be credited against the equitable share requirement. In addition, if the cost of facilities constructed by the Project exceeds the Project's equitable share amount, the Project should be reimbursed by other subsequent projects.

At the intersection of Pistachio Drive and Avenue 18½, additional striping to create a dedicated right-turn lane on the westbound approach is recommended by the year 2039.

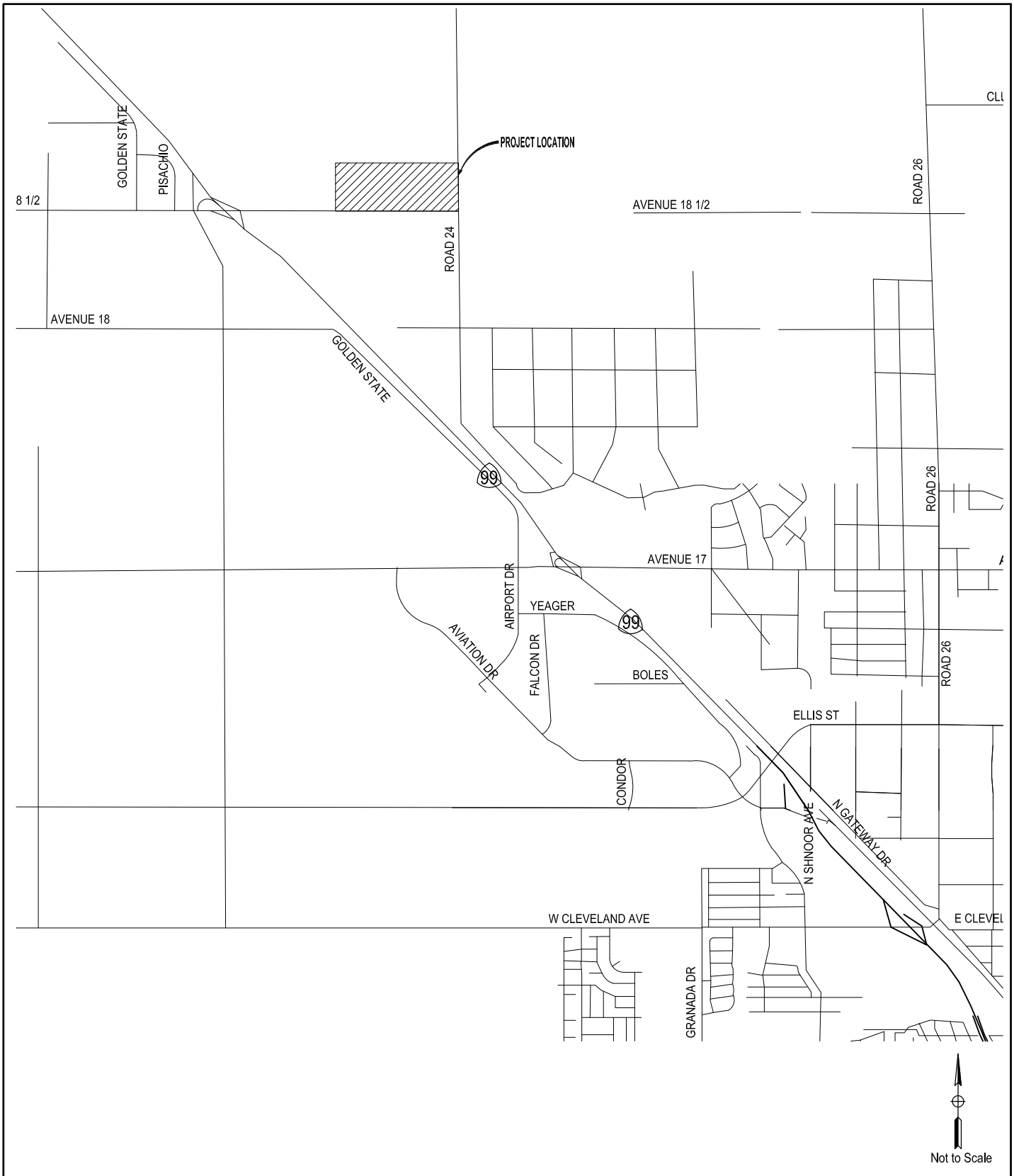
Thank you for the opportunity to perform this traffic impact study. Please feel free to contact our office if you have any questions.

PETERS ENGINEERING GROUP

John Rowland, PE, TE

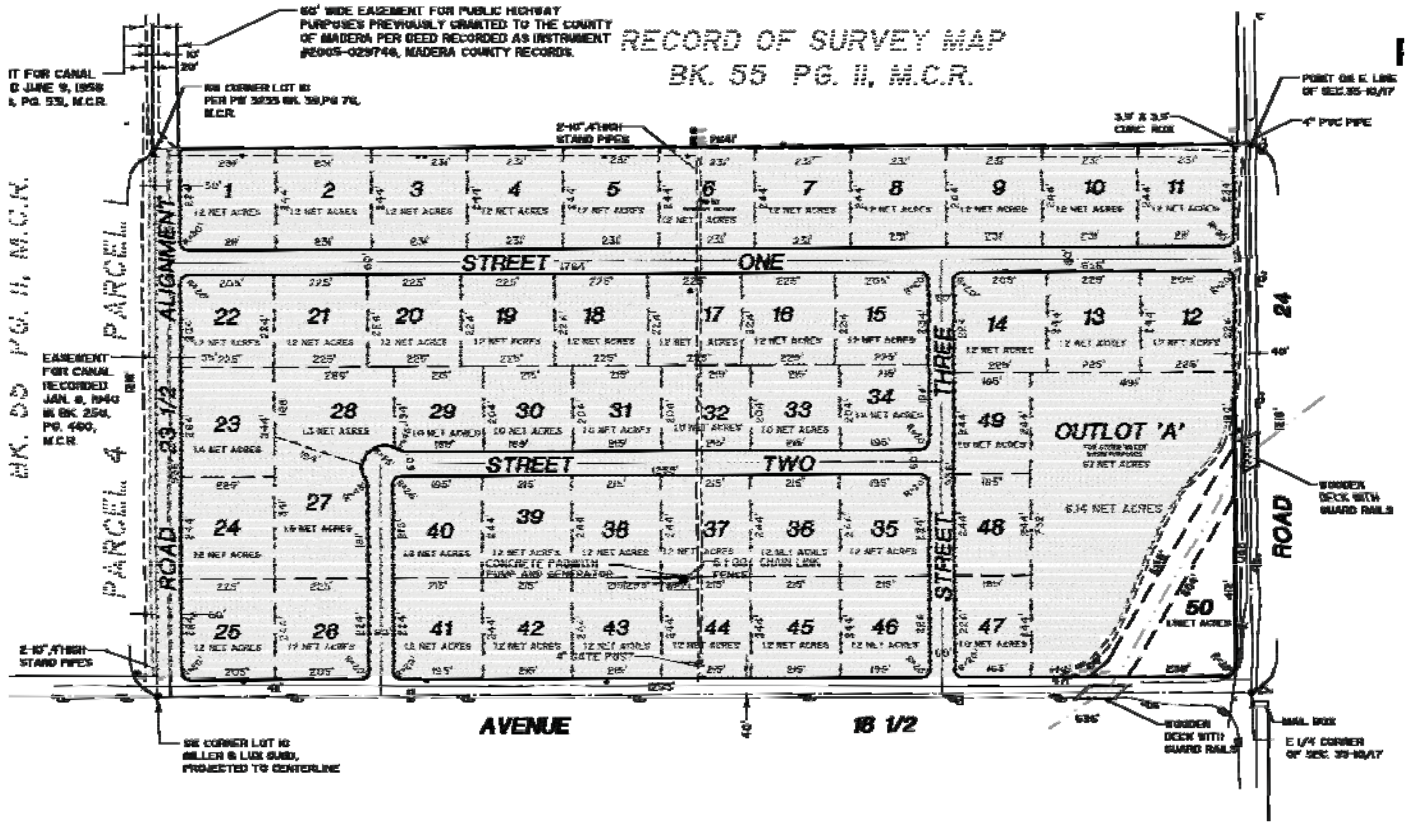
Attachments: Figures 1 through 10
Appendix A - Traffic Count Data Sheets
Appendix B - Madera County Travel Model
Appendix C - Intersection Analysis Sheets
Appendix D - Mitigated Intersection Analysis Sheets

FIGURES



Proposed Tentative Parcel Map 4230
Madera County, California

SITE VICINITY MAP



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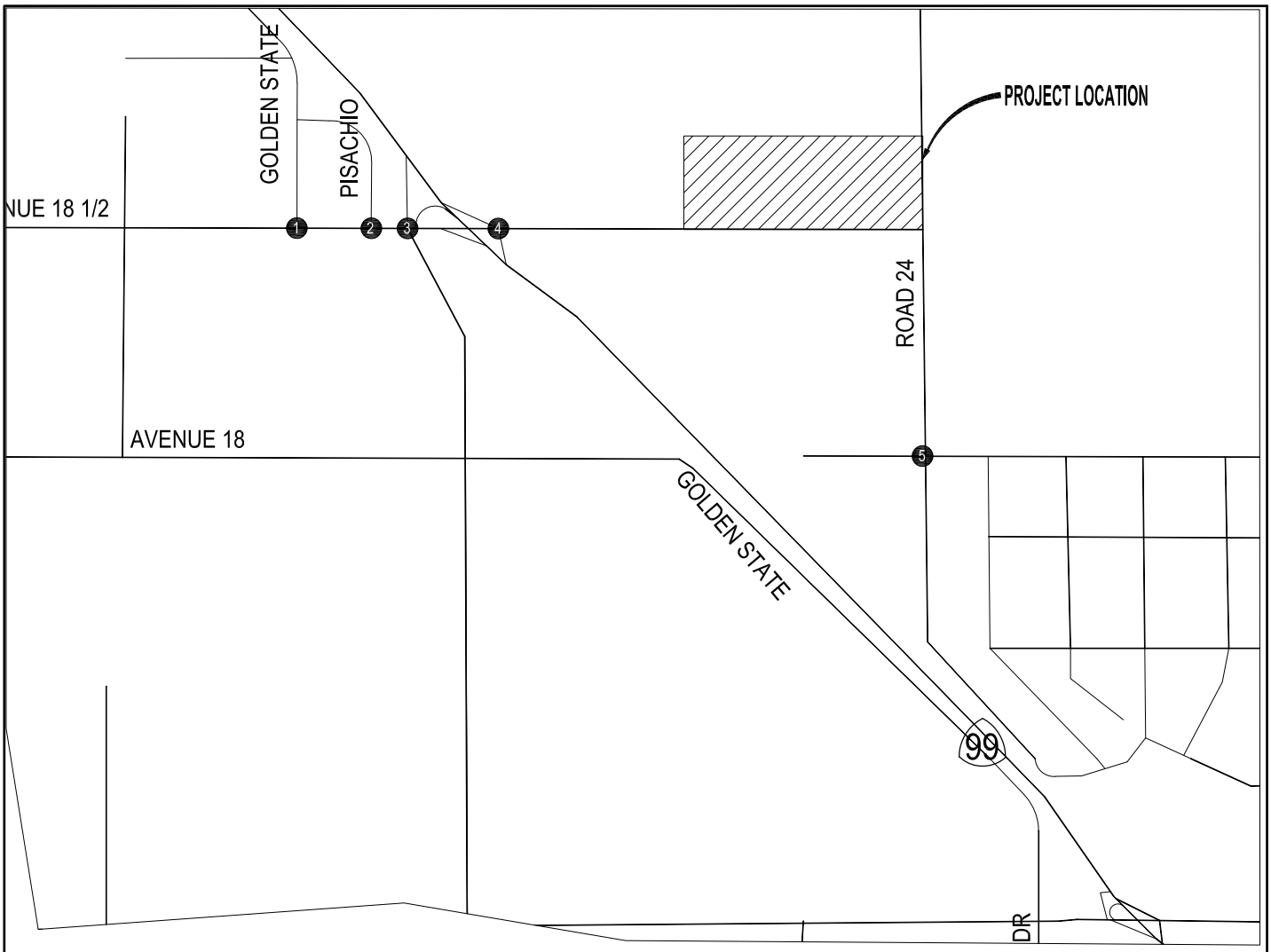
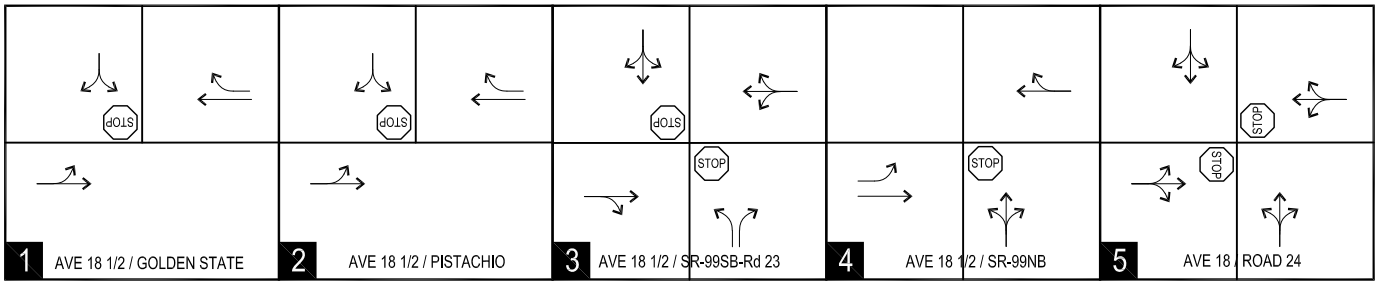
Proposed Tentative Parcel Map 4230
Madera County, California

SITE PLAN





LEGEND

- XX STUDY AREA INTERSECTIONS
- PROJECT SITE
- SIGNALIZED INTERSECTION
- STOP STOP SIGN
- DIRECTION OF TRAVEL

Proposed Tentative Parcel Map 4230
Madera County, California

EXISTING LANE CONFIGURATIONS AND INTERSECTION CONTROL

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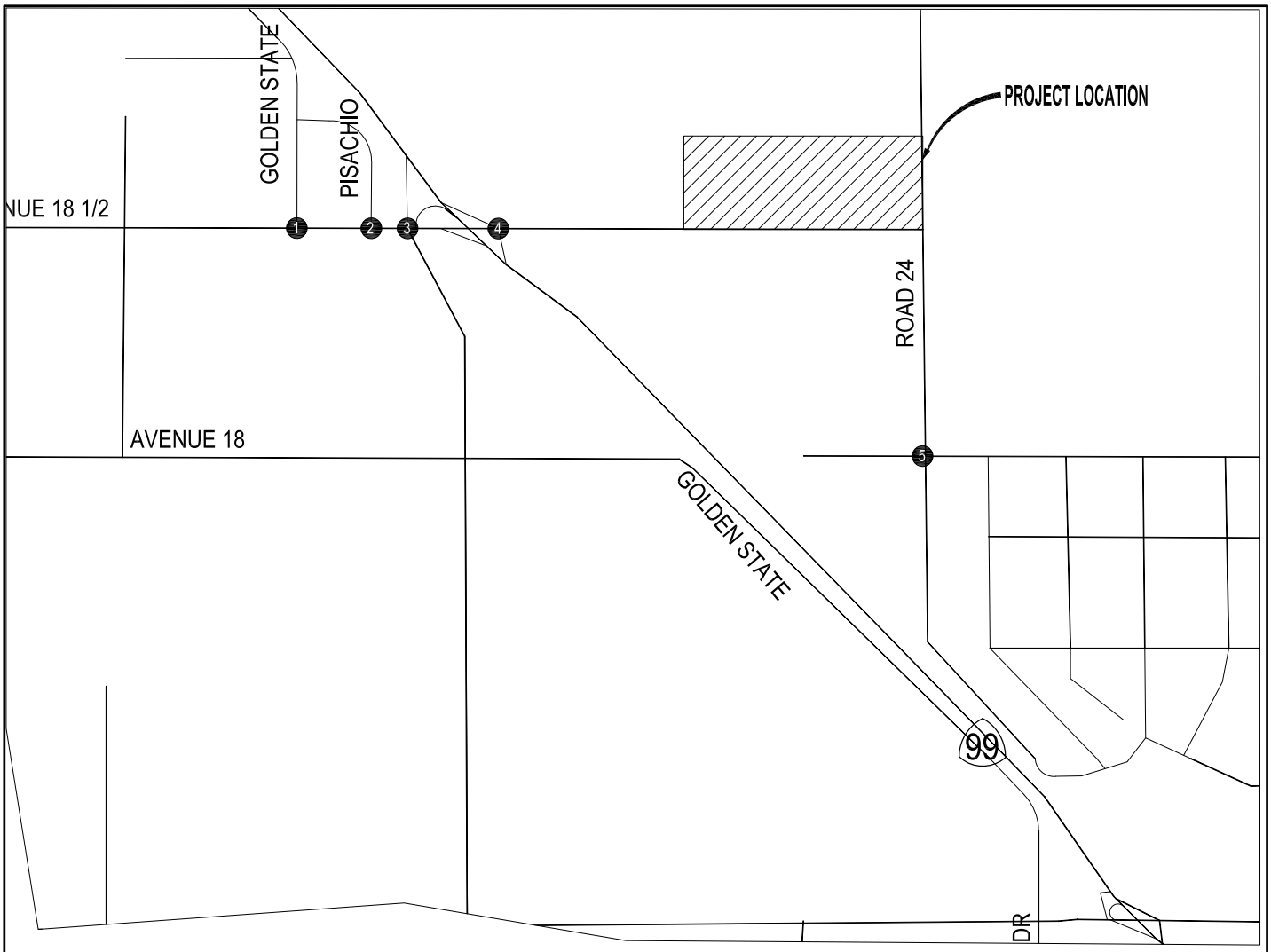

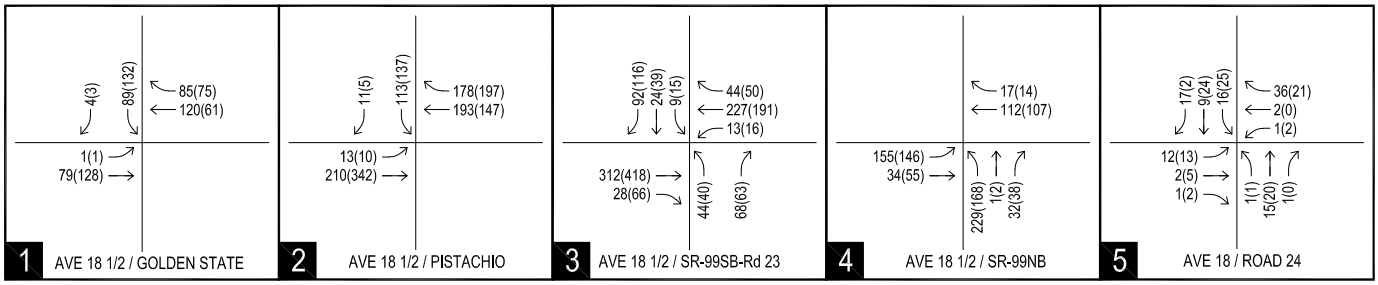

LEGEND

- XX STUDY AREA INTERSECTIONS
- PROJECT SITE
- XX - AM Peak Hour Volumes
- (YY) - PM Peak Hour Volumes

Proposed Tentative Parcel Map 4230
Madera County, California

EXISTING PEAK HOUR TRAFFIC VOLUMES

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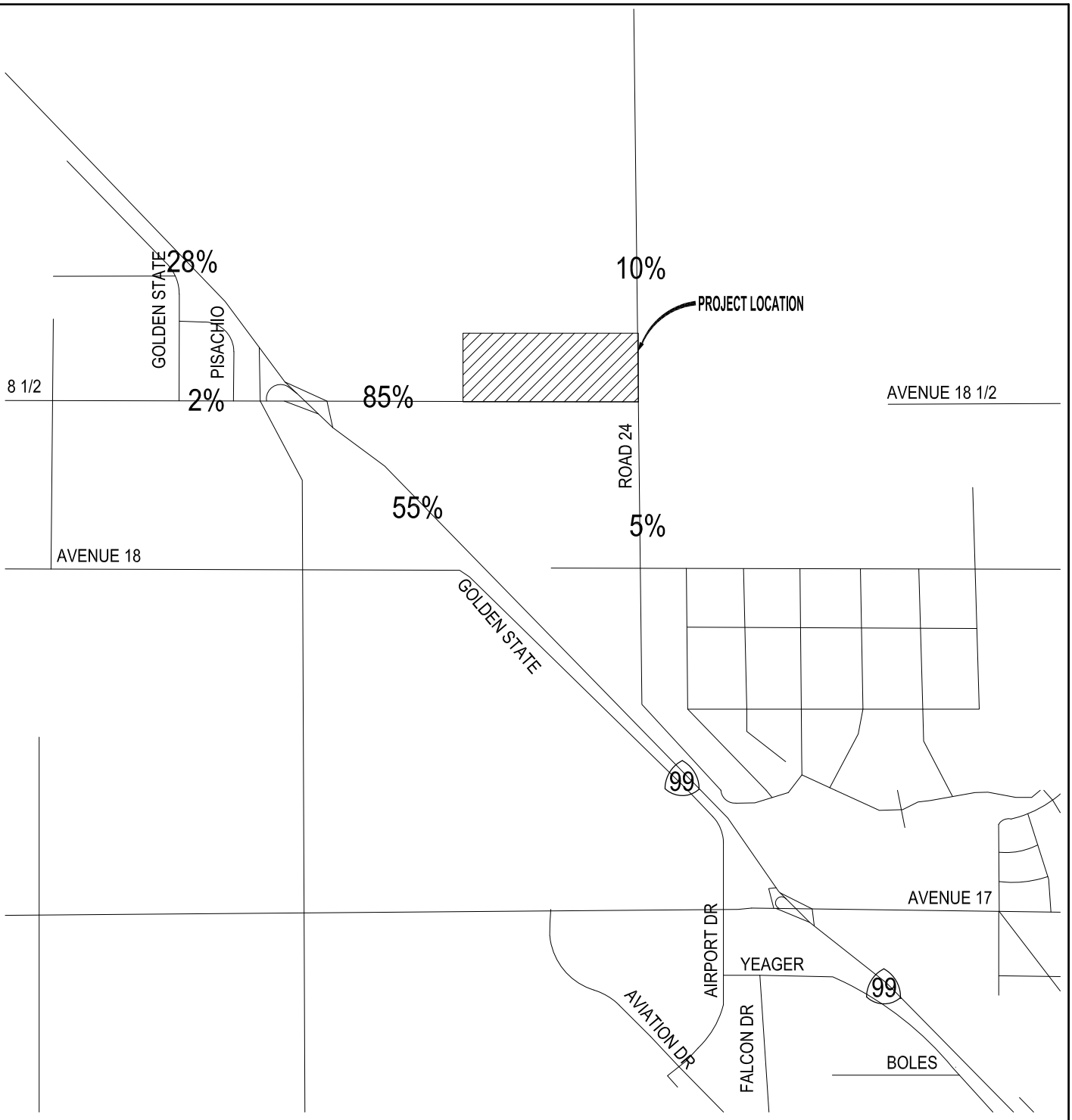

Proposed Tentative Parcel Map 4230
Madera County, California

PEAK-HOUR PROJECT TRAFFIC DISTRIBUTION PERCENTAGE

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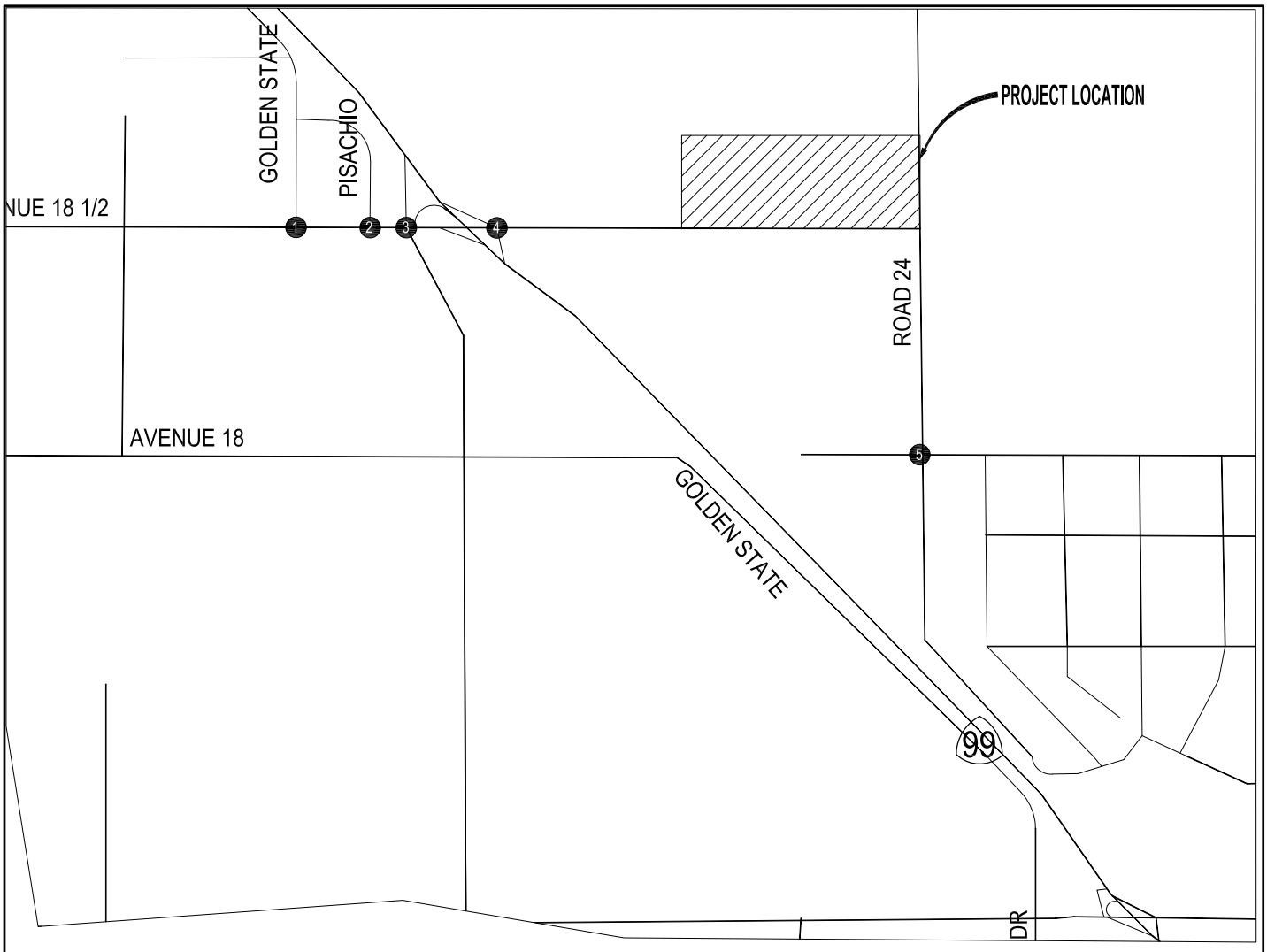

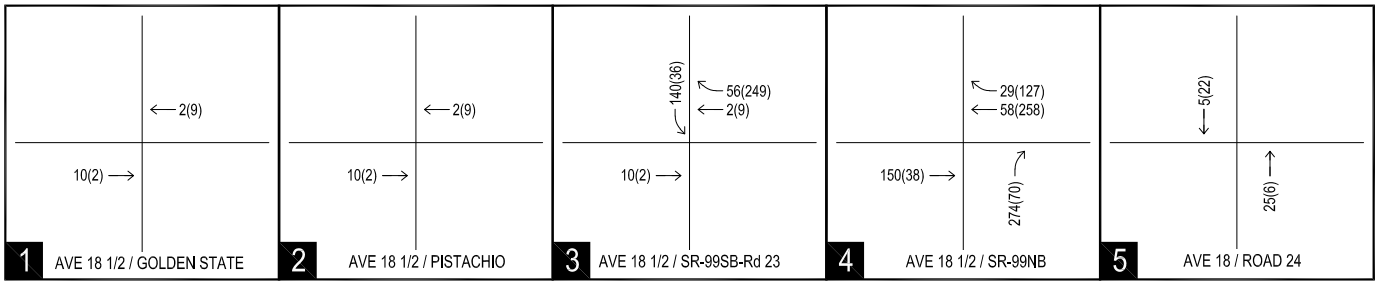

LEGEND

XX STUDY AREA INTERSECTIONS

PROJECT SITE

XX - AM Peak Hour Volumes

(YY) - PM Peak Hour Volumes

Proposed Tentative Parcel Map 4230
Madera County, California

PEAK HOUR PROJECT TRAFFIC VOLUMES

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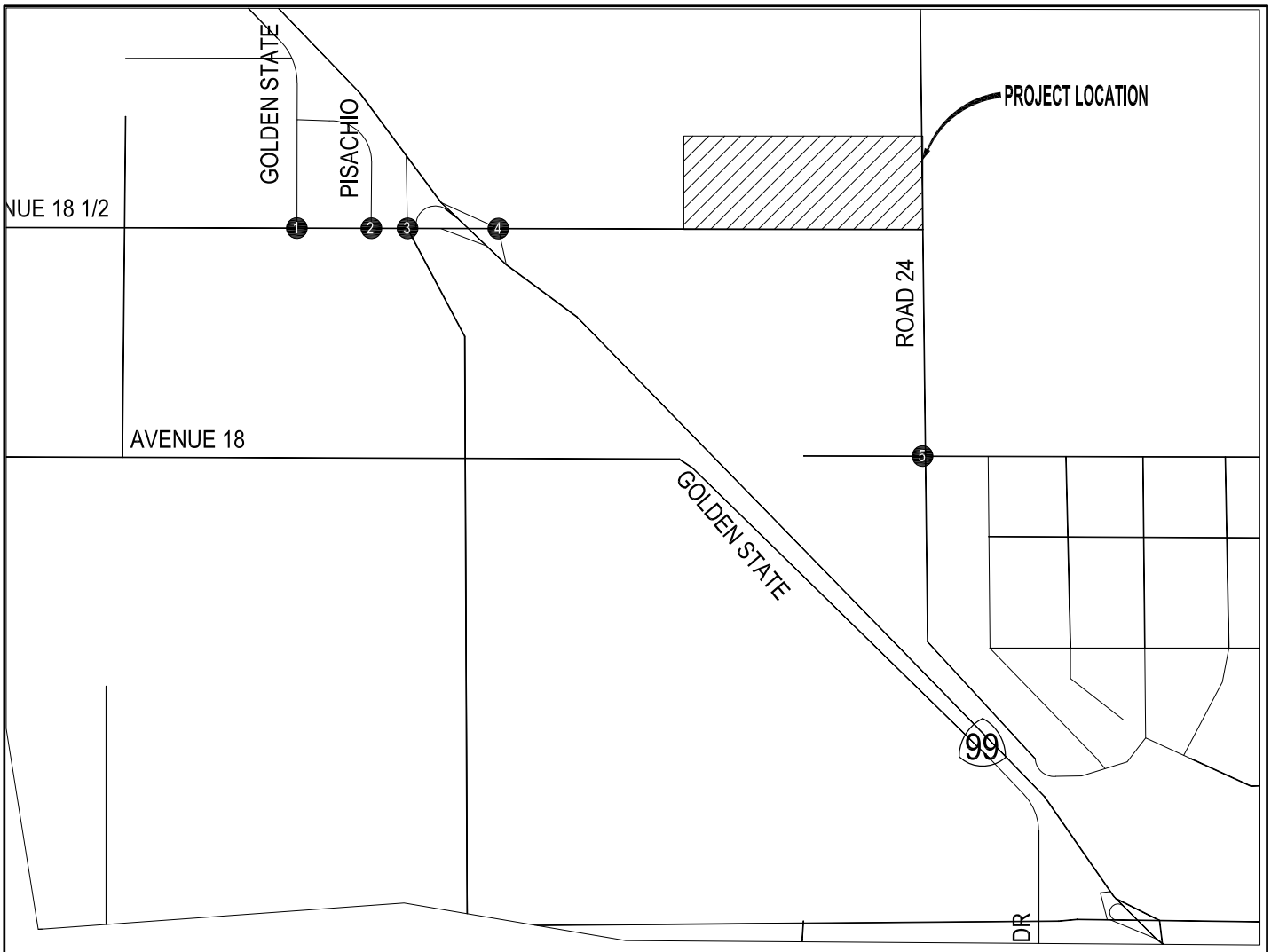

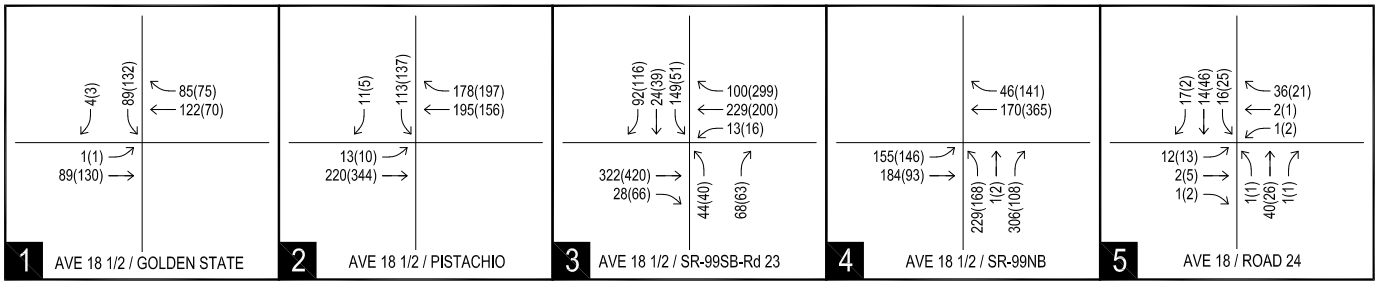

LEGEND

- XX STUDY AREA INTERSECTIONS
- PROJECT SITE
- XX - AM Peak Hour Volumes
- (YY) - PM Peak Hour Volumes

Proposed Tentative Parcel Map 4230
Madera County, California

EXISTING PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

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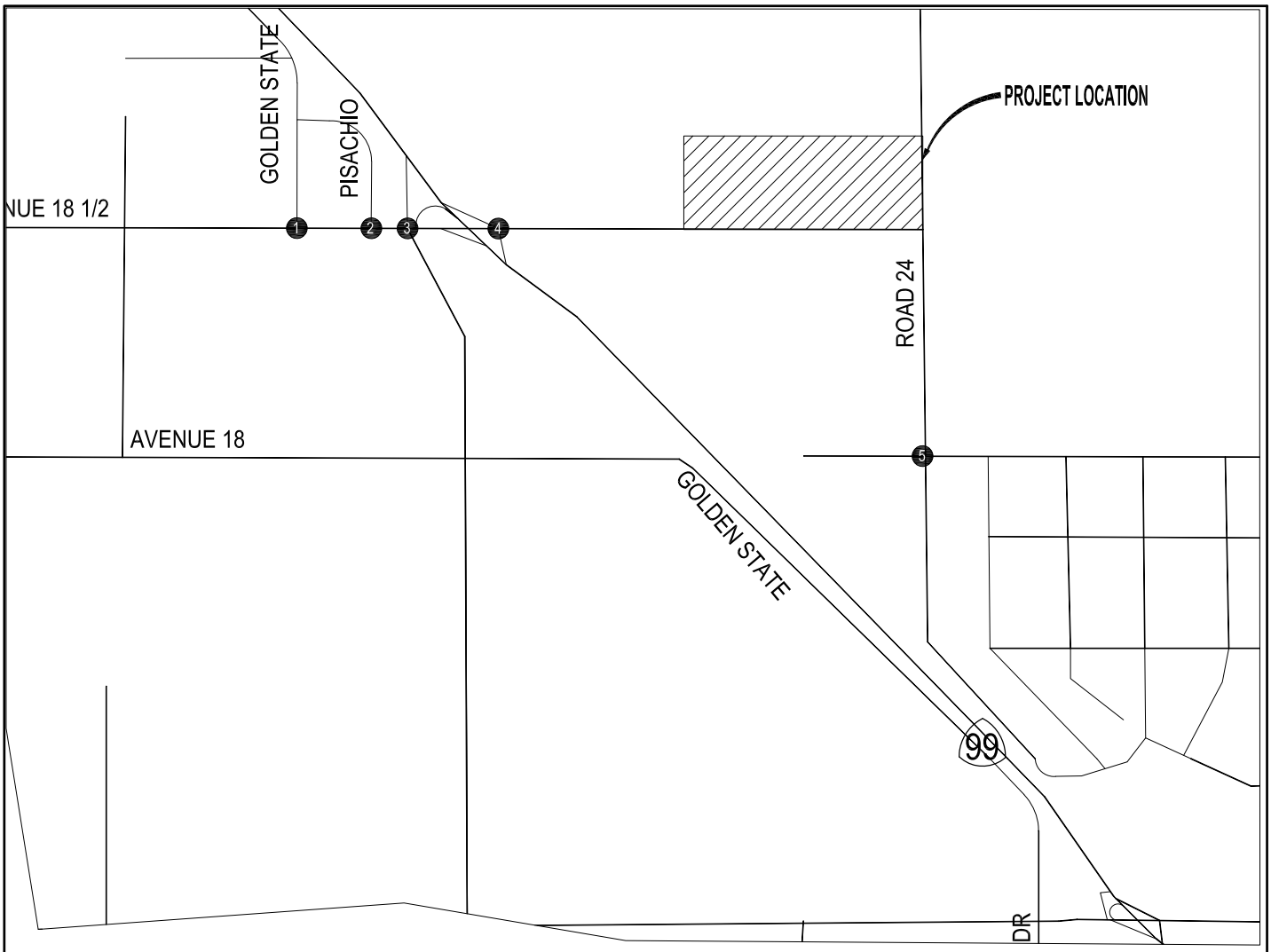

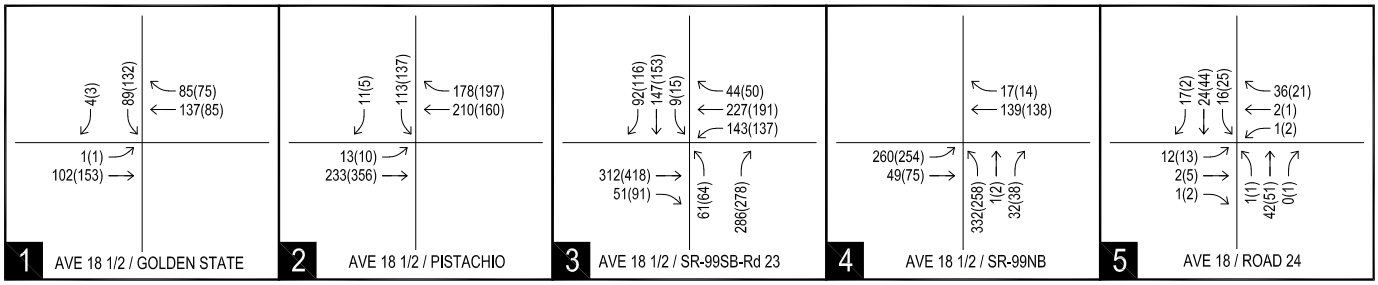

LEGEND

XX STUDY AREA INTERSECTIONS

PROJECT SITE

XX - AM Peak Hour Volumes

(YY) - PM Peak Hour Volumes

Proposed Tentative Parcel Map 4230

Madera County, California

EXISTING PLUS APPROVED AND PENDING PROJECTS PEAK HOUR TRAFFIC VOLUMES

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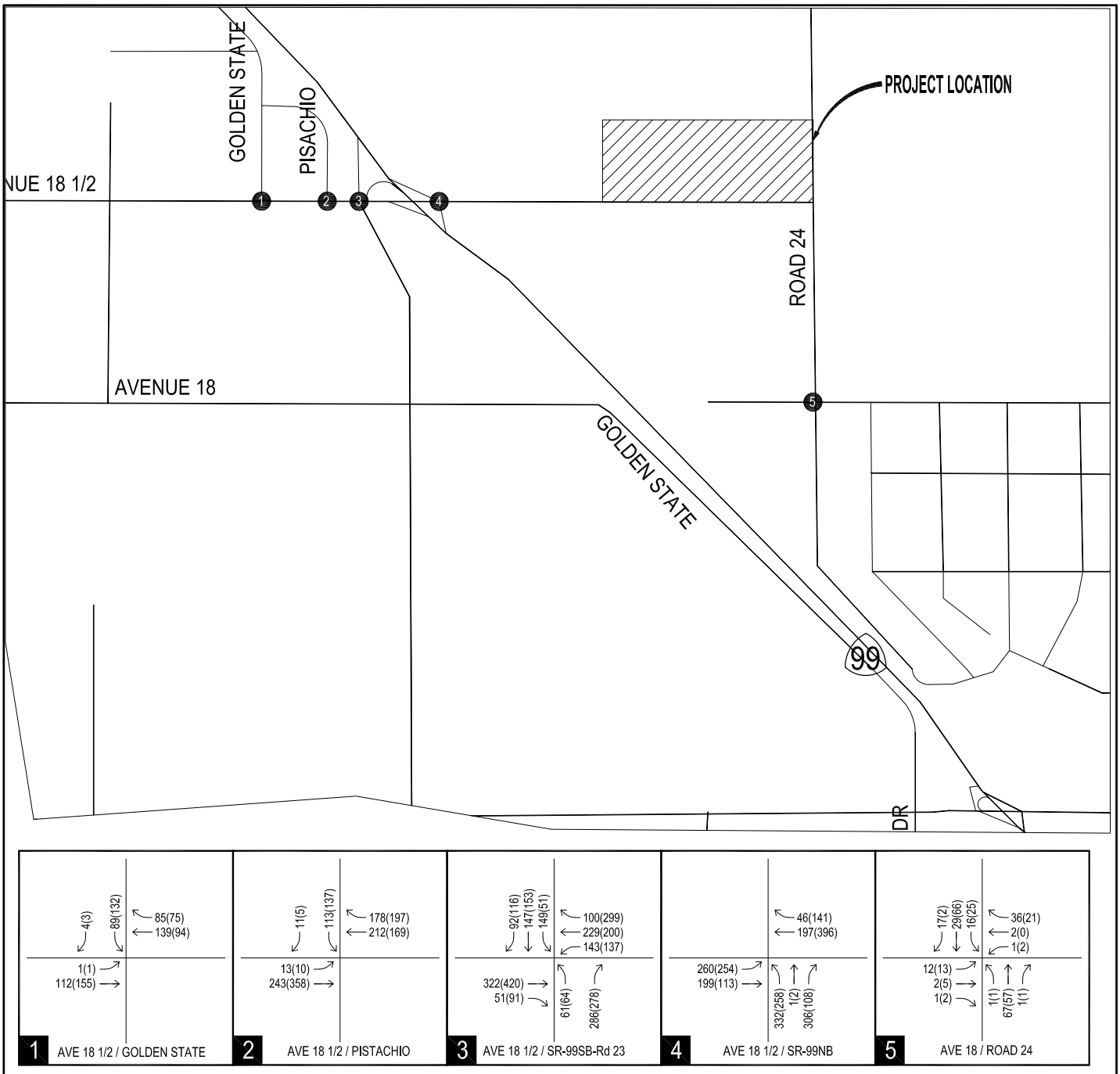

LEGEND

- XX STUDY AREA INTERSECTIONS
- PROJECT SITE
- XX - AM Peak Hour Volumes
- (YY) - PM Peak Hour Volumes

Proposed Tentative Parcel Map 4230
Madera County, California

EXISTING PLUS APPROVED AND PENDING PROJECTS PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

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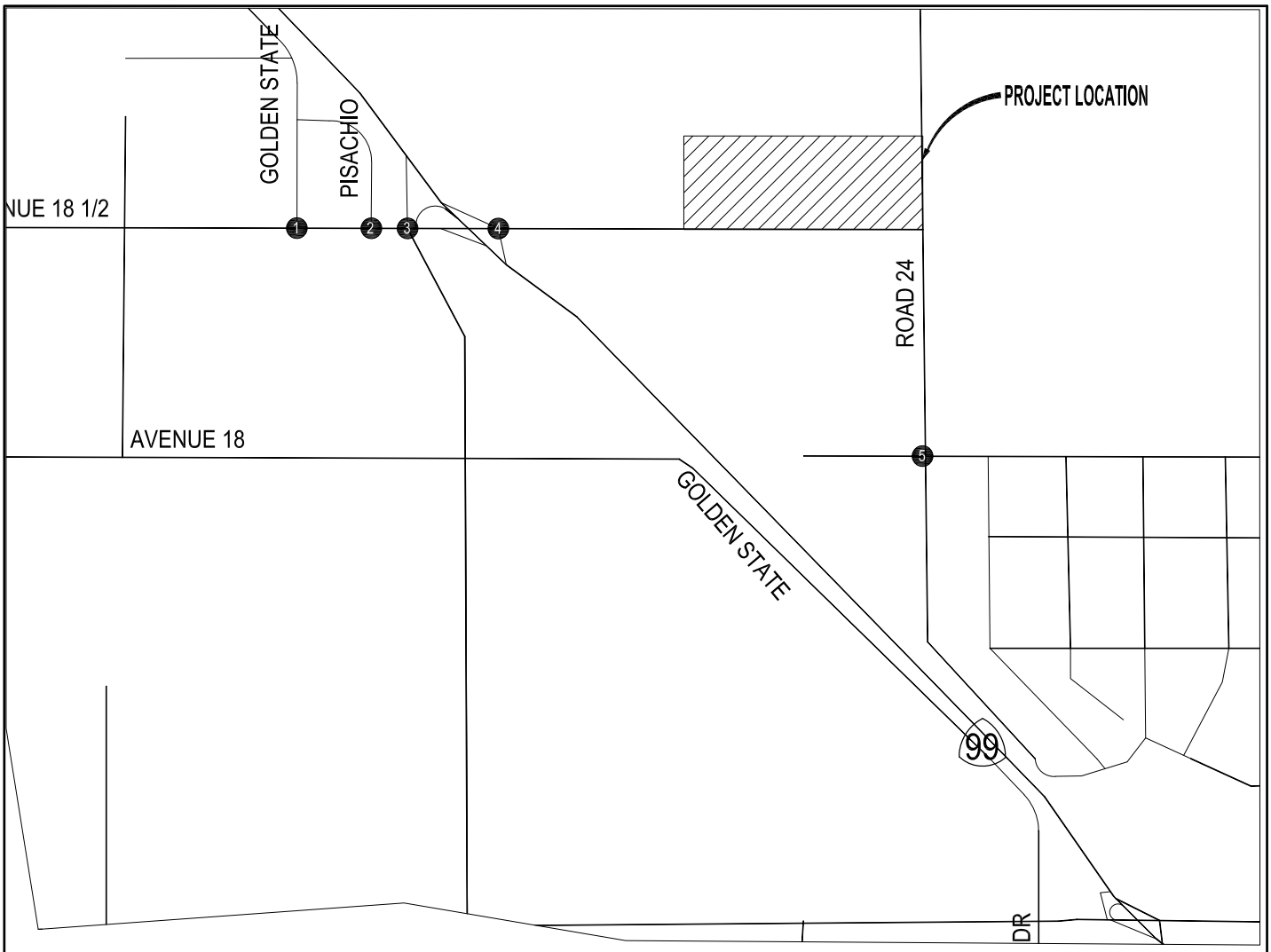
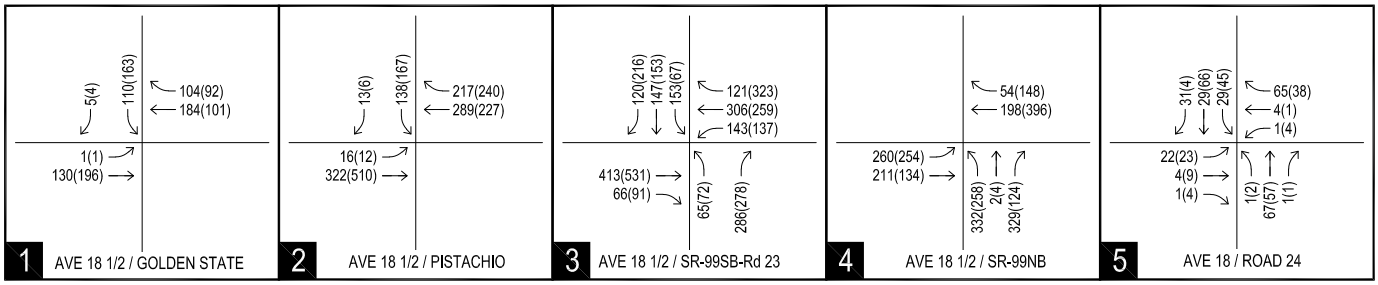




LEGEND

XX STUDY AREA INTERSECTIONS

PROJECT SITE

XX - AM Peak Hour Volumes

(YY) - PM Peak Hour Volumes

Proposed Tentative Parcel Map 4230

Madera County, California

CUMULATIVE YEAR 2039 WITH PROJECT PEAK HOUR TRAFFIC VOLUMES

Not to Scale

APPENDIX A
TRAFFIC COUNT DATA SHEETS

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

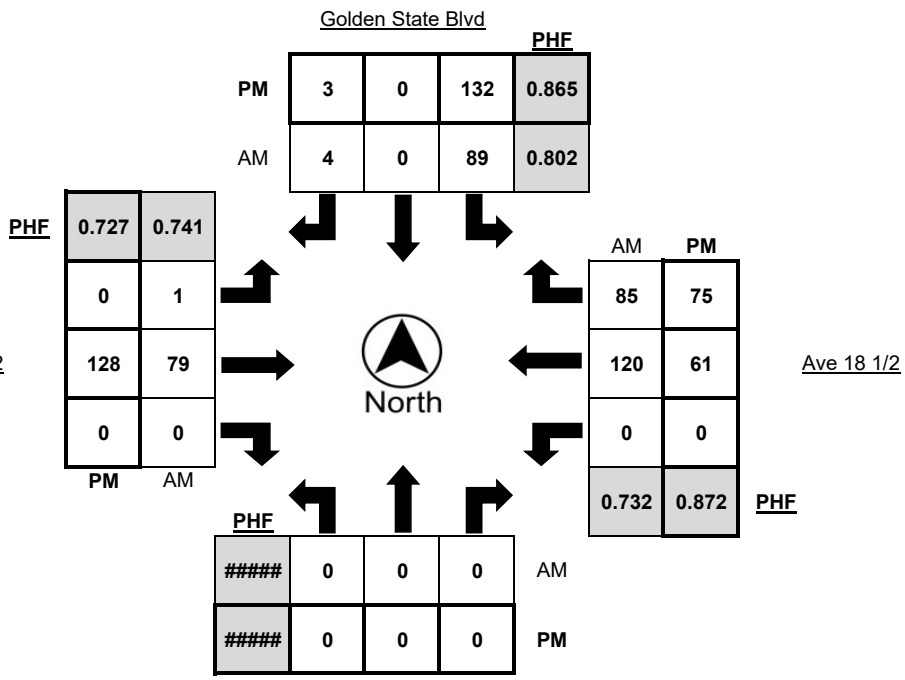
LOCATION Ave 18 1/2 @ Golden State Blvd
LATITUDE 37.018248°
COUNTY Madera
LONGITUDE -120.134516°
COLLECTION DATE Wednesday, October 25, 2017
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	0	0	13	0	0	12	0	7	0	1	0	23	15	16
7:15 AM - 7:30 AM	0	0	0	0	16	0	2	12	0	8	0	0	0	29	17	10
7:30 AM - 7:45 AM	0	0	0	0	18	0	1	18	1	26	0	1	0	43	27	20
7:45 AM - 8:00 AM	0	0	0	0	26	0	1	22	0	24	0	3	0	38	22	10
8:00 AM - 8:15 AM	0	0	0	0	29	0	0	24	0	21	0	0	0	10	19	19
8:15 AM - 8:30 AM	0	0	0	0	23	0	0	20	0	16	0	2	0	12	13	13
8:30 AM - 8:45 AM	0	0	0	0	11	0	0	10	2	14	0	3	0	10	18	17
8:45 AM - 9:00 AM	0	0	0	0	15	0	0	10	0	17	0	5	0	12	18	16
TOTAL	**0**	**0**	**0**	**0**	**151**	**0**	**4**	**128**	**3**	**133**	**0**	**15**	**0**	**177**	**149**	**121**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	0	0	36	0	2	22	0	25	0	1	0	16	16	15
4:15 PM - 4:30 PM	0	0	0	0	30	0	0	12	0	27	0	1	0	11	16	10
4:30 PM - 4:45 PM	0	0	0	0	38	0	1	13	0	44	0	3	0	15	23	18
4:45 PM - 5:00 PM	0	0	0	0	28	0	0	18	0	32	0	0	0	19	20	21
5:00 PM - 5:15 PM	0	0	0	0	22	0	1	17	1	25	0	2	0	16	18	15
5:15 PM - 5:30 PM	0	0	0	0	18	0	1	13	3	24	0	2	0	19	23	23
5:30 PM - 5:45 PM	0	0	0	0	23	0	0	16	0	25	0	1	0	22	17	16
5:45 PM - 6:00 PM	0	0	0	0	16	0	0	14	0	20	0	0	0	18	21	20
TOTAL	**0**	**0**	**0**	**0**	**211**	**0**	**5**	**125**	**4**	**222**	**0**	**10**	**0**	**136**	**154**	**138**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	0	0	0	89	0	4	76	1	79	0	4	0	120	85	59
4:00 PM - 5:00 PM	0	0	0	0	132	0	3	65	0	128	0	5	0	61	75	64

	PHF	Trucks
AM	0.815	36.8%
PM	0.824	33.6%



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952 Pollasky Avenue
Clovis, CA 93612

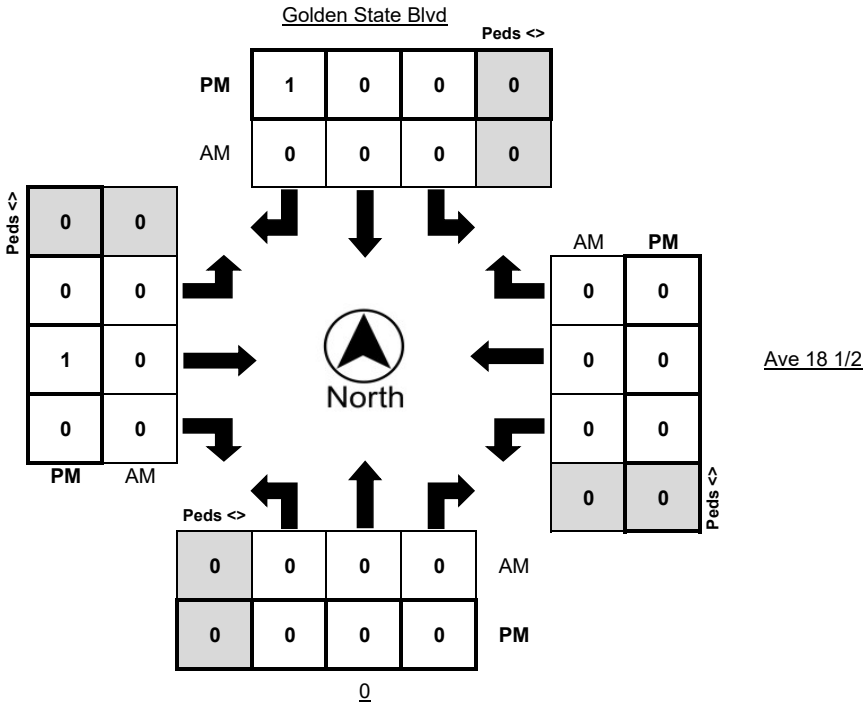
LOCATION Ave 18 1/2 @ Golden State Blvd
LATITUDE 37.018248°
COUNTY Madera
LONGITUDE -120.134516°
COLLECTION DATE Wednesday, October 25, 2017
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**2**	**0**



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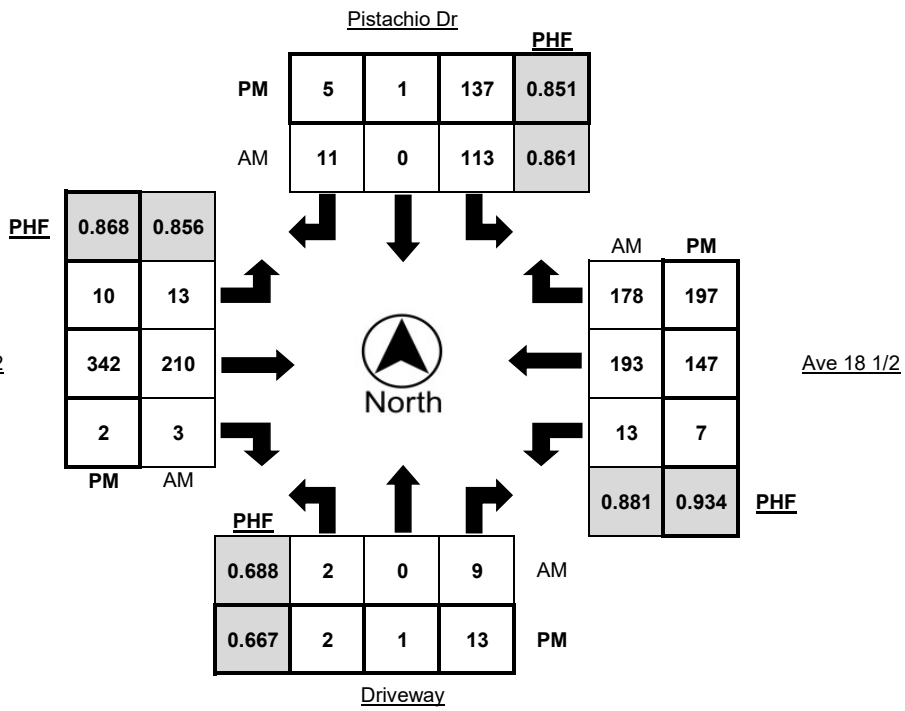
LOCATION Ave 18-1/2 @ Pistachio Dr
LATITUDE 37.018252°
COUNTY Madera
LONGITUDE -120.132135°
COLLECTION DATE Wednesday, October 25, 2017
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	1	1	31	0	3	2	1	37	0	12	3	40	45	16
7:15 AM - 7:30 AM	0	0	2	1	29	0	2	3	1	33	0	13	2	51	47	15
7:30 AM - 7:45 AM	1	0	3	1	27	0	3	1	4	62	0	21	3	59	47	27
7:45 AM - 8:00 AM	1	0	1	0	24	0	3	3	5	56	2	27	5	55	45	11
8:00 AM - 8:15 AM	0	0	3	0	33	0	3	3	3	59	1	22	3	28	39	23
8:15 AM - 8:30 AM	0	0	2	0	22	0	1	1	2	55	1	22	0	31	45	21
8:30 AM - 8:45 AM	0	0	1	0	29	0	1	3	2	42	0	16	2	29	42	22
8:45 AM - 9:00 AM	0	0	3	1	31	1	1	4	0	52	0	19	0	31	43	19
TOTAL	**2**	**0**	**16**	**4**	**226**	**1**	**17**	**20**	**18**	**396**	**4**	**152**	**18**	**324**	**353**	**154**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	1	0	5	0	40	0	2	2	1	79	0	23	2	38	52	17
4:15 PM - 4:30 PM	0	1	2	1	36	0	0	3	2	81	1	16	1	26	52	10
4:30 PM - 4:45 PM	0	0	2	0	26	1	1	1	3	98	1	16	3	43	40	20
4:45 PM - 5:00 PM	1	0	4	0	35	0	2	0	4	84	0	19	1	40	53	25
5:00 PM - 5:15 PM	0	0	1	0	24	1	2	0	1	70	0	20	2	34	36	18
5:15 PM - 5:30 PM	0	0	2	3	29	0	3	1	1	55	0	13	1	37	48	25
5:30 PM - 5:45 PM	0	0	3	1	27	0	1	0	3	70	1	18	1	42	48	20
5:45 PM - 6:00 PM	0	0	0	0	25	0	2	1	3	57	0	15	0	33	43	20
TOTAL	**2**	**1**	**19**	**5**	**242**	**2**	**13**	**8**	**18**	**594**	**3**	**140**	**11**	**293**	**372**	**155**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	2	0	9	2	113	0	11	10	13	210	3	83	13	193	178	76
4:00 PM - 5:00 PM	2	1	13	1	137	1	5	6	10	342	2	74	7	147	197	72

	PHF	Trucks
AM	0.891	23.0%
PM	0.964	17.7%



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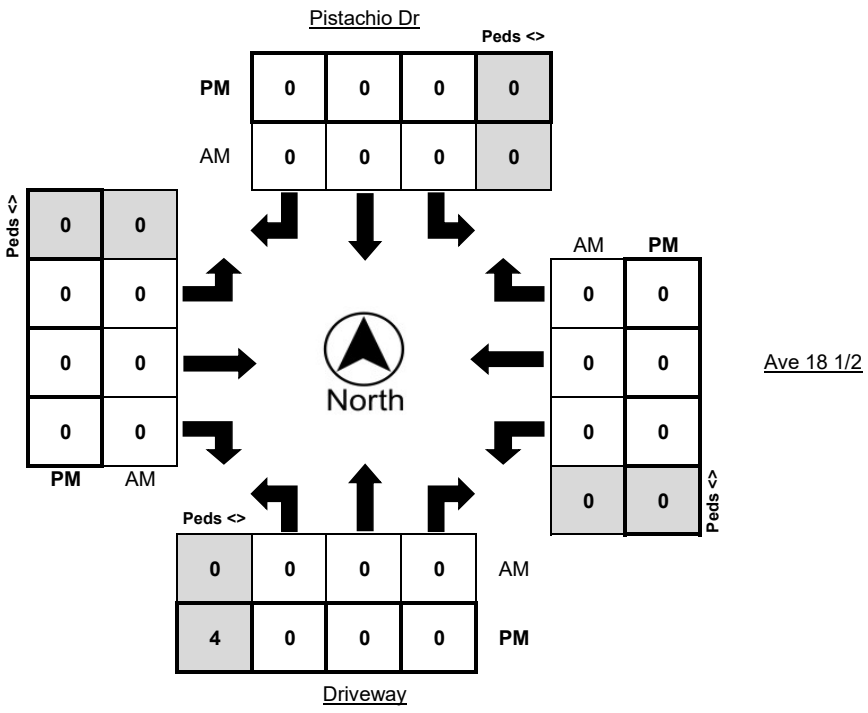
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**4**



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LOCATION Ave 18-1/2 @ SR 99 SB Ramps / Rd 23 **LATITUDE** 37.018252°

COUNTY Madera **LONGITUDE** -120.130879°

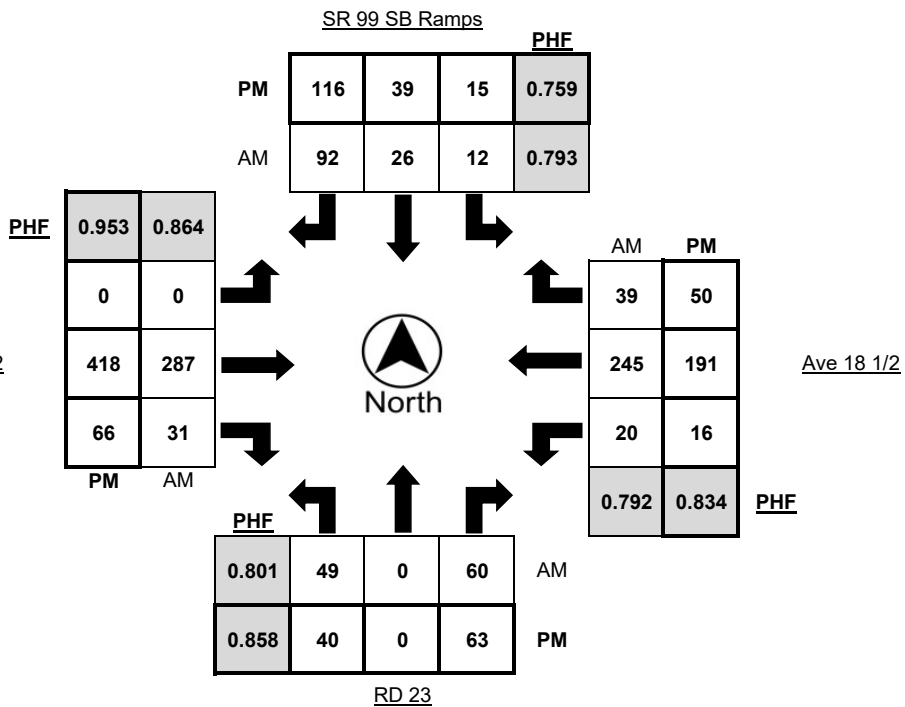
COLLECTION DATE Wednesday, October 25, 2017 **WEATHER** Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	6	0	19	3	0	6	16	9	0	59	8	16	1	71	10	11
7:15 AM - 7:30 AM	11	0	10	0	5	7	21	13	0	52	9	17	9	65	6	10
7:30 AM - 7:45 AM	12	0	20	5	1	4	24	6	0	82	6	22	5	74	17	21
7:45 AM - 8:00 AM	11	0	11	2	4	9	28	5	0	73	4	28	4	68	10	5
8:00 AM - 8:15 AM	15	0	19	5	2	6	19	10	0	80	12	23	2	38	6	14
8:15 AM - 8:30 AM	6	0	18	6	2	5	21	12	0	77	6	24	2	47	11	8
8:30 AM - 8:45 AM	9	0	8	4	1	12	28	15	0	63	8	17	2	38	7	10
8:45 AM - 9:00 AM	12	0	15	4	2	4	20	7	0	80	10	27	1	43	4	15
TOTAL	**82**	**0**	**120**	**29**	**17**	**53**	**177**	**77**	**0**	**566**	**63**	**174**	**26**	**444**	**71**	**94**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	10	0	20	11	4	15	37	13	0	110	12	23	4	42	8	6
4:15 PM - 4:30 PM	12	0	17	2	3	9	25	8	0	106	14	21	2	44	9	6
4:30 PM - 4:45 PM	7	0	13	1	4	11	28	13	0	104	23	17	7	46	18	10
4:45 PM - 5:00 PM	11	0	13	2	4	4	26	11	0	98	17	18	3	59	15	17
5:00 PM - 5:15 PM	6	0	10	2	8	10	24	11	0	91	10	21	9	43	16	10
5:15 PM - 5:30 PM	13	0	9	2	5	8	34	13	0	77	8	18	6	39	14	8
5:30 PM - 5:45 PM	11	0	8	2	3	5	32	12	0	89	11	15	2	48	11	9
5:45 PM - 6:00 PM	9	0	6	1	9	6	27	10	0	76	5	17	2	41	8	6
TOTAL	**79**	**0**	**96**	**23**	**40**	**68**	**233**	**91**	**0**	**751**	**100**	**150**	**35**	**362**	**99**	**72**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	49	0	60	12	12	26	92	34	0	287	31	90	20	245	39	50
4:00 PM - 5:00 PM	40	0	63	16	15	39	116	45	0	418	66	79	16	191	50	39

	PHF	Trucks
AM	0.879	21.6%
PM	0.968	17.7%



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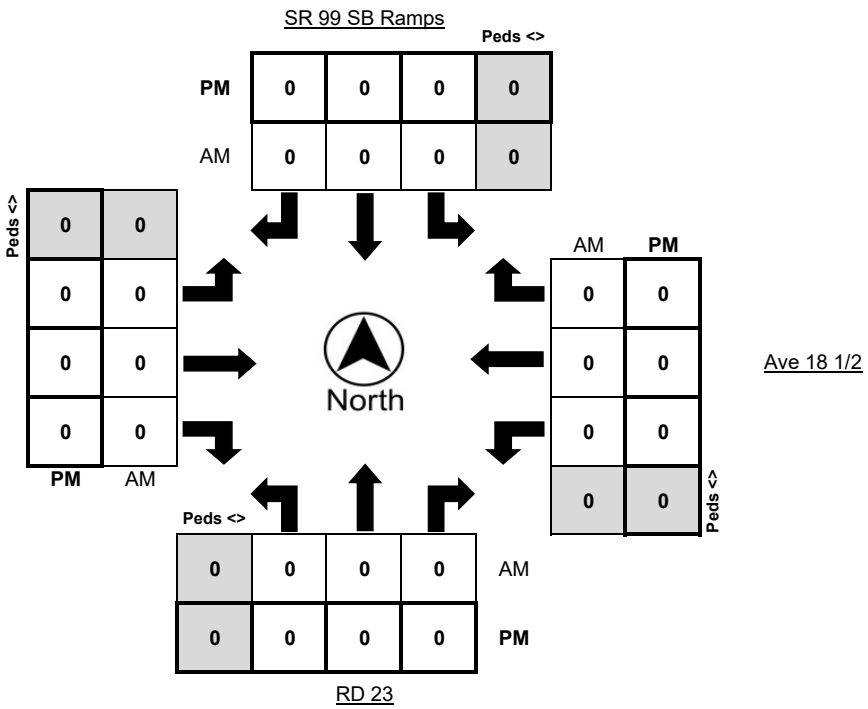
	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**0**



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Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION SR 99 NB Ramps @ Ave 18-1/2 **LATITUDE** 37.018256°

COUNTY Madera **LONGITUDE** -120.127929°

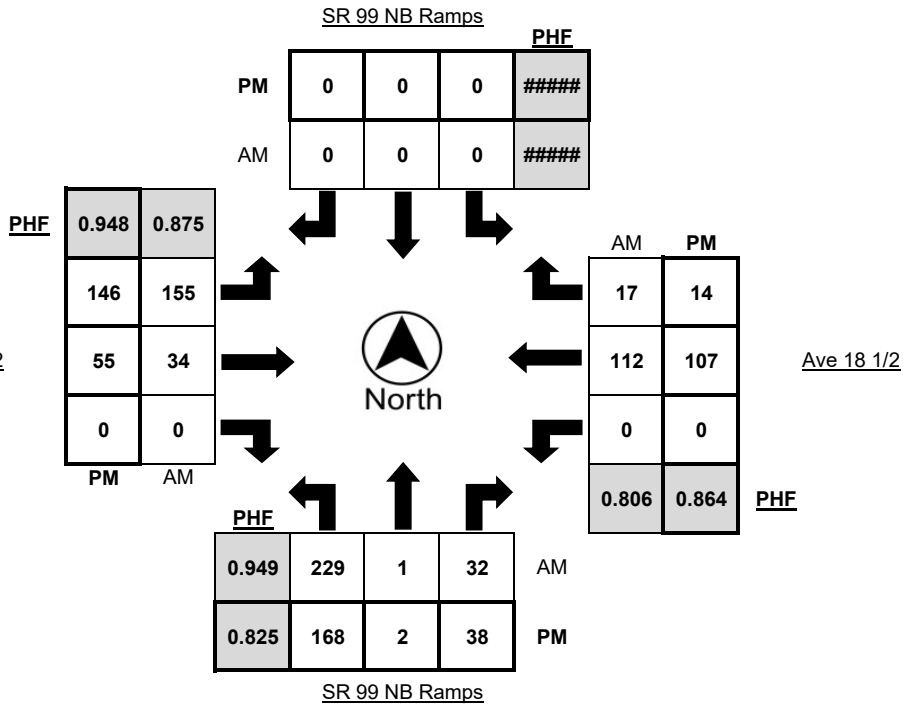
COLLECTION DATE Wednesday, October 25, 2017 **WEATHER** Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	55	1	5	8	0	0	0	0	44	5	0	8	0	25	5	1
7:15 AM - 7:30 AM	57	0	8	10	0	0	0	0	37	6	0	13	0	24	3	3
7:30 AM - 7:45 AM	60	0	7	18	0	0	0	0	41	13	0	12	0	37	3	5
7:45 AM - 8:00 AM	57	0	12	5	0	0	0	0	33	10	0	15	0	26	6	1
8:00 AM - 8:15 AM	31	0	13	14	0	0	0	0	45	14	0	16	0	15	5	1
8:15 AM - 8:30 AM	42	2	7	12	0	0	0	0	35	10	0	16	0	20	3	1
8:30 AM - 8:45 AM	35	0	5	10	0	0	0	0	28	6	0	11	0	11	3	0
8:45 AM - 9:00 AM	42	0	9	17	0	0	0	0	41	12	0	13	0	6	4	4
TOTAL	**379**	**3**	**66**	**94**	**0**	**0**	**0**	**0**	**304**	**76**	**0**	**104**	**0**	**164**	**32**	**16**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	37	0	7	4	0	0	0	0	39	17	0	16	0	17	0	3
4:15 PM - 4:30 PM	37	1	11	4	0	0	0	0	35	16	0	14	0	21	3	4
4:30 PM - 4:45 PM	41	0	8	9	0	0	0	0	33	17	0	6	0	32	3	3
4:45 PM - 5:00 PM	53	0	10	15	0	0	0	0	38	9	0	8	0	22	5	2
5:00 PM - 5:15 PM	37	1	9	9	0	0	0	0	40	13	0	11	0	32	3	3
5:15 PM - 5:30 PM	49	0	4	12	0	0	0	0	29	25	0	12	0	10	0	0
5:30 PM - 5:45 PM	43	0	7	6	0	0	0	0	37	13	0	11	0	19	3	2
5:45 PM - 6:00 PM	41	0	7	10	0	0	0	0	36	16	0	8	0	10	1	0
TOTAL	**338**	**2**	**63**	**69**	**0**	**0**	**0**	**0**	**287**	**126**	**0**	**86**	**0**	**163**	**18**	**17**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 8:00 AM	229	1	32	41	0	0	0	0	155	34	0	48	0	112	17	10
4:15 PM - 5:15 PM	168	2	38	37	0	0	0	0	146	55	0	39	0	107	14	12

	PHF	Trucks
AM	0.901	17.1%
PM	0.967	16.6%



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Prepared For:

Peters Engineering Group
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Clovis, CA 93612

LOCATION SR 99 NB Ramps @ Ave 18-1/2 **LATITUDE** 37.018256°

COUNTY Madera **LONGITUDE** -120.127929°

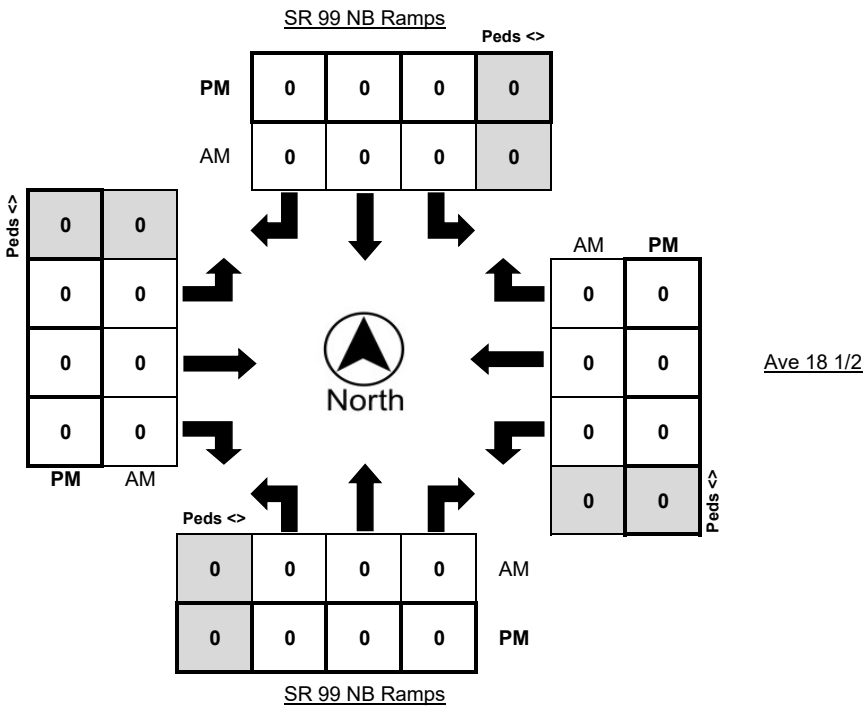
COLLECTION DATE Wednesday, October 25, 2017 **WEATHER** Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**0**



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Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION Rd 24 @ Ave 18 **LATITUDE** 37.010992°

COUNTY Madera **LONGITUDE** -120.110564°

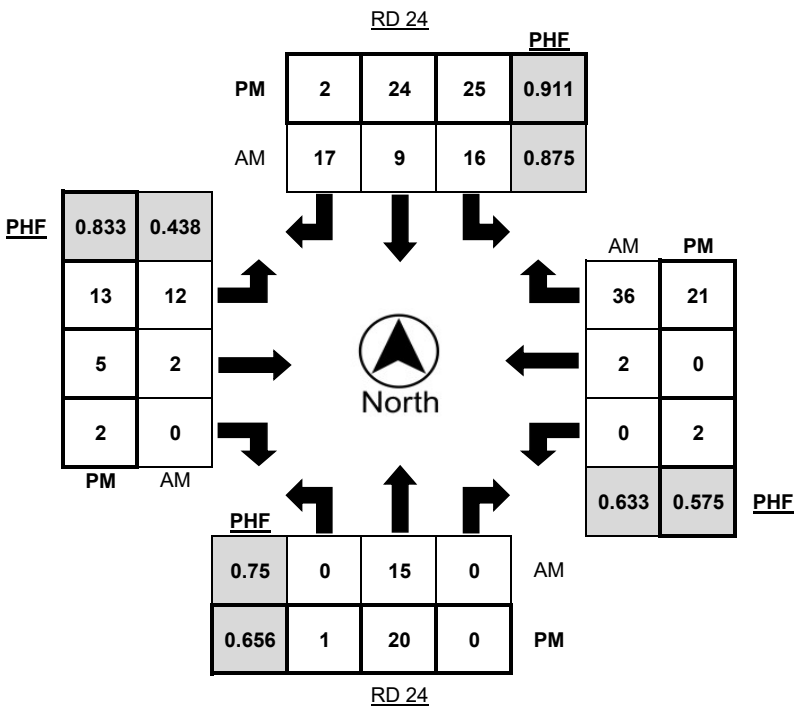
COLLECTION DATE Wednesday, October 25, 2017 **WEATHER** Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	4	0	1	5	2	4	2	2	0	0	0	0	1	6	0
7:15 AM - 7:30 AM	0	3	0	1	5	2	5	3	3	0	0	2	0	1	14	0
7:30 AM - 7:45 AM	0	3	0	1	2	3	2	1	6	2	0	1	0	0	5	1
7:45 AM - 8:00 AM	0	5	0	0	4	2	6	1	1	0	0	0	0	0	11	1
8:00 AM - 8:15 AM	0	1	0	0	5	3	1	0	3	0	0	0	0	0	1	0
8:15 AM - 8:30 AM	0	1	0	0	1	6	4	3	0	0	0	0	0	0	1	0
8:30 AM - 8:45 AM	0	4	0	0	2	2	3	4	1	0	0	0	0	1	0	0
8:45 AM - 9:00 AM	0	3	0	2	2	5	1	3	1	0	0	1	0	1	2	0
TOTAL	**0**	**24**	**0**	**5**	**26**	**25**	**26**	**17**	**17**	**2**	**0**	**4**	**0**	**4**	**40**	**2**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	2	0	0	6	3	4	2	3	1	0	1	0	0	4	2
4:15 PM - 4:30 PM	0	3	0	0	5	7	1	1	2	1	1	2	0	0	4	1
4:30 PM - 4:45 PM	1	4	0	1	8	6	0	2	5	0	1	2	0	0	4	0
4:45 PM - 5:00 PM	0	5	0	1	7	3	0	2	3	1	0	3	0	0	10	0
5:00 PM - 5:15 PM	0	8	0	1	5	8	1	1	3	3	0	1	2	0	3	0
5:15 PM - 5:30 PM	0	1	1	0	8	3	2	3	1	0	0	0	0	0	2	0
5:30 PM - 5:45 PM	0	2	1	1	7	2	1	0	4	1	0	2	0	0	3	0
5:45 PM - 6:00 PM	0	2	0	0	5	4	1	0	1	0	0	0	0	0	2	0
TOTAL	**1**	**27**	**2**	**4**	**51**	**36**	**10**	**11**	**22**	**7**	**2**	**11**	**2**	**0**	**32**	**3**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 8:00 AM	0	15	0	3	16	9	17	7	12	2	0	3	0	2	36	2
4:15 PM - 5:15 PM	1	20	0	3	25	24	2	6	13	5	2	8	2	0	21	1

	PHF	Trucks
AM	0.826	13.8%
PM	0.871	15.7%



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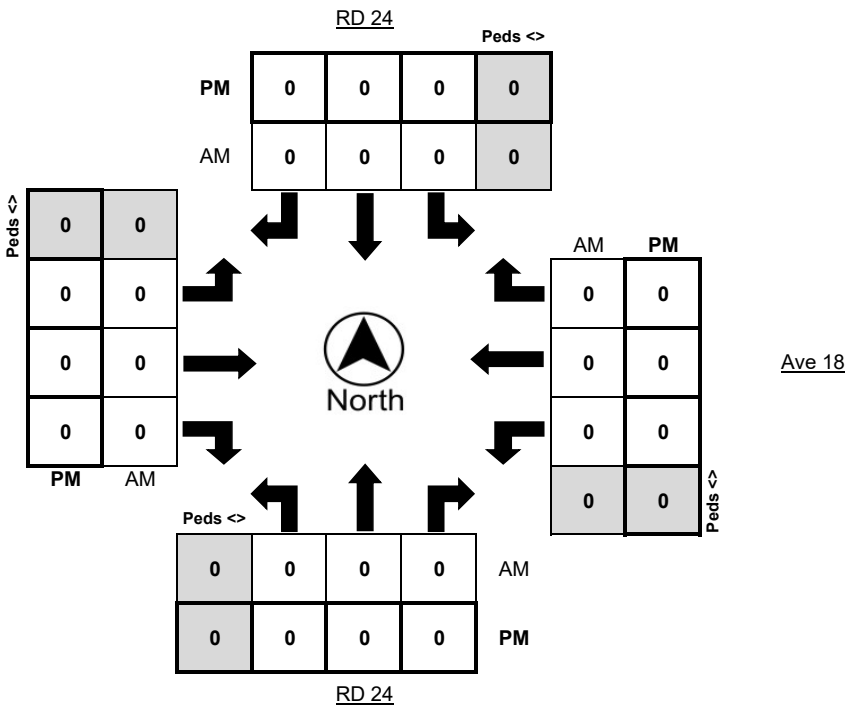
COLLECTION DATE Wednesday, October 25, 2017 **WEATHER** Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

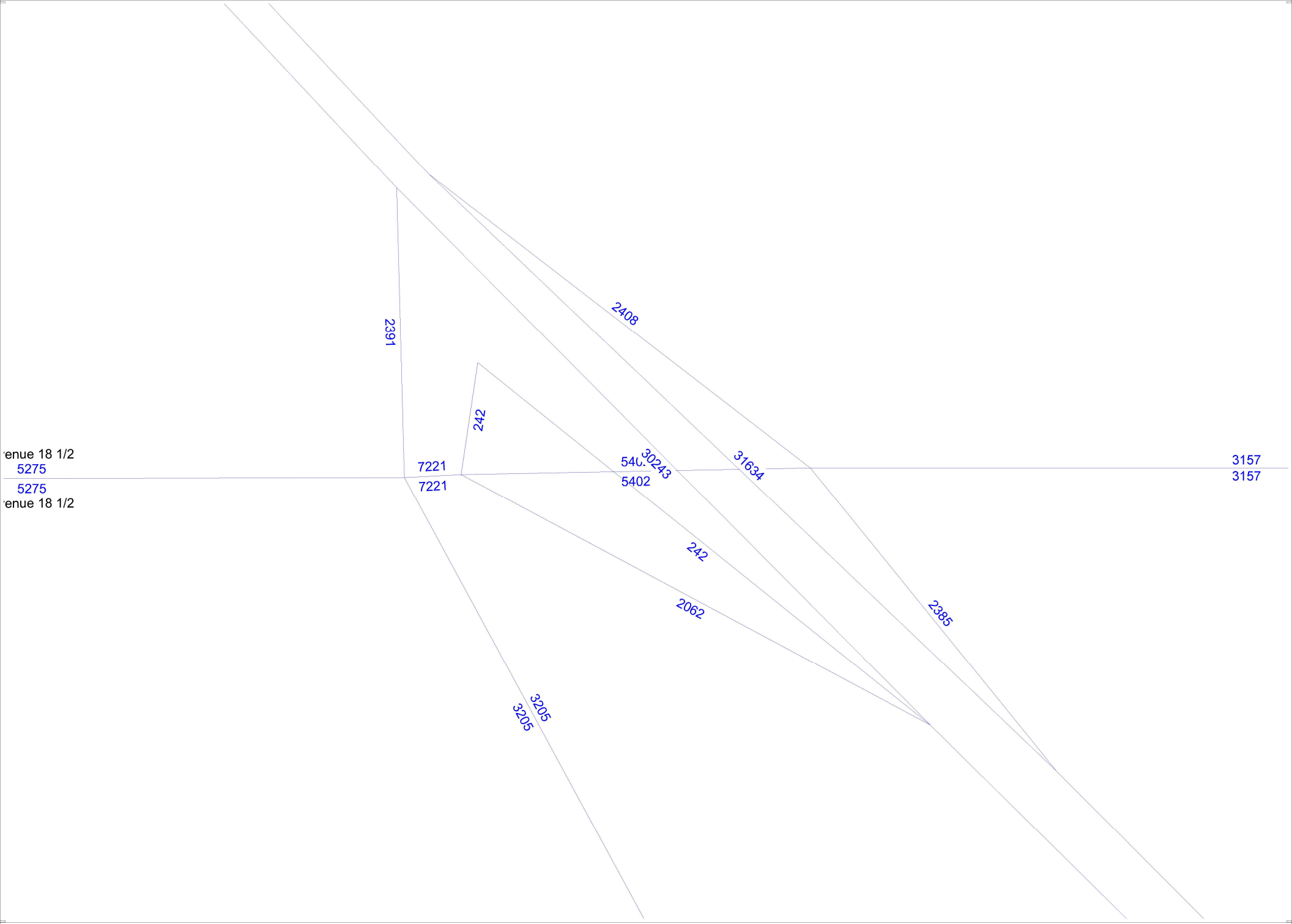
	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

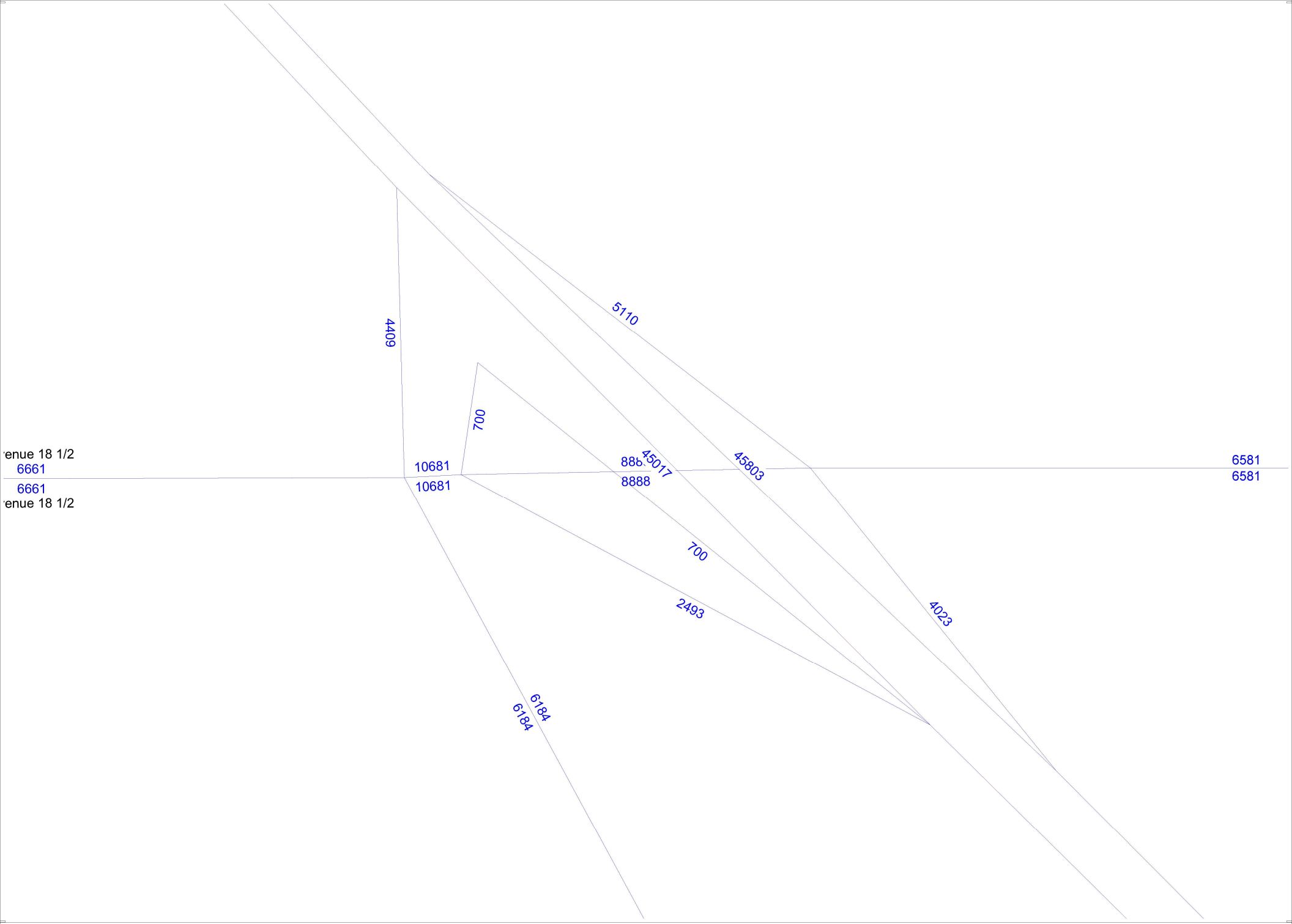
	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**0**



APPENDIX B
MADERA COUNTY TRAVEL MODEL



2010 Madera County Travel Model
Daily Traffic Volumes



2040 Madera County Travel Model
Daily Traffic Volumes

APPENDIX C
INTERSECTION ANALYSIS SHEETS

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	79	120	85	89	4
Future Vol, veh/h	1	79	120	85	89	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	38	38	38	38	38	38
Mvmt Flow	1	96	146	104	109	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	146	0	-	0	245	146
Stage 1	-	-	-	-	146	-
Stage 2	-	-	-	-	99	-
Critical Hdwy	4.48	-	-	-	6.78	6.58
Critical Hdwy Stg 1	-	-	-	-	5.78	-
Critical Hdwy Stg 2	-	-	-	-	5.78	-
Follow-up Hdwy	2.542	-	-	-	3.842	3.642
Pot Cap-1 Maneuver	1243	-	-	-	671	814
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	842	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1243	-	-	-	670	814
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	841	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1243	-	-	-	675
HCM Lane V/C Ratio	0.001	-	-	-	0.168
HCM Control Delay (s)	7.9	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	210	193	178	113	11
Future Vol, veh/h	13	210	193	178	113	11
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	23	23	23	23	23
Mvmt Flow	14	233	214	198	126	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	417	0	-	0	585	323
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	267	-
Critical Hdwy	4.33	-	-	-	6.63	6.43
Critical Hdwy Stg 1	-	-	-	-	5.63	-
Critical Hdwy Stg 2	-	-	-	-	5.63	-
Follow-up Hdwy	2.407	-	-	-	3.707	3.507
Pot Cap-1 Maneuver	1038	-	-	-	440	672
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1033	-	-	-	429	666
Mov Cap-2 Maneuver	-	-	-	-	429	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1033	-	-	-	443
HCM Lane V/C Ratio	0.014	-	-	-	0.311
HCM Control Delay (s)	8.5	0	-	-	16.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.3

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	312	28	13	227	44	44	0	68	9	24	92
Future Vol, veh/h	0	312	28	13	227	44	44	0	68	9	24	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	0	355	32	15	258	50	50	0	77	10	27	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	386	0	0	723	-	370	658	674	258
Stage 1	-	-	-	-	-	-	370	-	-	288	288	-
Stage 2	-	-	-	-	-	-	353	-	-	370	386	-
Critical Hdwy	-	-	-	4.31	-	-	7.31	-	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Follow-up Hdwy	-	-	-	2.389	-	-	3.689	-	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	0	-	-	1076	-	0	318	0	635	353	353	737
Stage 1	0	-	-	-	-	0	613	0	-	680	641	-
Stage 2	0	-	-	-	-	0	626	0	-	613	578	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1076	-	-	253	-	635	306	347	737
Mov Cap-2 Maneuver	-	-	-	-	-	-	253	-	-	306	347	-
Stage 1	-	-	-	-	-	-	613	-	-	680	631	-
Stage 2	-	-	-	-	-	-	506	-	-	538	578	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	15.9	13.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	253	635	-	-	1076	-	560
HCM Lane V/C Ratio	0.198	0.122	-	-	0.014	-	0.254
HCM Control Delay (s)	22.7	11.5	-	-	8.4	0	13.6
HCM Lane LOS	C	B	-	-	A	A	B
HCM 95th %tile Q(veh)	0.7	0.4	-	-	0	-	1

Intersection	
Int Delay, s/veh	13.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	155	34	0	0	112	17	229	1	32	0	0	0
Future Vol, veh/h	155	34	0	0	112	17	229	1	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	172	38	0	0	124	19	254	1	36	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	143	0	-	-	-	0	516	525	38
Stage 1	-	-	-	-	-	-	382	382	-
Stage 2	-	-	-	-	-	-	134	143	-
Critical Hdwy	4.27	-	-	-	-	-	6.57	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.57	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.57	5.67	-
Follow-up Hdwy	2.353	-	-	-	-	-	3.653	4.153	3.453
Pot Cap-1 Maneuver	1353	-	0	0	-	-	494	437	993
Stage 1	-	-	0	0	-	-	658	587	-
Stage 2	-	-	0	0	-	-	857	751	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1353	-	-	-	-	-	430	0	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	0	-
Stage 1	-	-	-	-	-	-	572	0	-
Stage 2	-	-	-	-	-	-	857	0	-

Approach	EB	WB	NB
HCM Control Delay, s	6.6	0	25.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	462	1353	-	-	-
HCM Lane V/C Ratio	0.63	0.127	-	-	-
HCM Control Delay (s)	25.1	8	0	-	-
HCM Lane LOS	D	A	A	-	-
HCM 95th %tile Q(veh)	4.3	0.4	-	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	12	2	1	1	2	36	1	15	1	16	9	17
Future Vol, veh/h	12	2	1	1	2	36	1	15	1	16	9	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	14	14	14	14	14	14	14	14	14	14	14	14
Mvmt Flow	15	2	1	1	2	44	1	18	1	20	11	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	105	82	21	83	92	19	32	0	0	20	0	0
Stage 1	60	60	-	21	21	-	-	-	-	-	-	-
Stage 2	45	22	-	62	71	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.64	6.34	7.24	6.64	6.34	4.24	-	-	4.24	-	-
Critical Hdwy Stg 1	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.126	3.426	3.626	4.126	3.426	2.326	-	-	2.326	-	-
Pot Cap-1 Maneuver	847	786	1023	876	776	1025	1506	-	-	1521	-	-
Stage 1	922	822	-	968	854	-	-	-	-	-	-	-
Stage 2	939	854	-	920	813	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	800	775	1023	864	765	1025	1506	-	-	1521	-	-
Mov Cap-2 Maneuver	800	775	-	864	765	-	-	-	-	-	-	-
Stage 1	921	811	-	967	853	-	-	-	-	-	-	-
Stage 2	895	853	-	904	802	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	8.8	0.4	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1506	-	-	808	1003	1521	-	-
HCM Lane V/C Ratio	0.001	-	-	0.023	0.047	0.013	-	-
HCM Control Delay (s)	7.4	0	-	9.6	8.8	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	128	61	75	132	3
Future Vol, veh/h	1	128	61	75	132	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	33	33	33	33	33	33
Mvmt Flow	1	154	73	90	159	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	73	0	-	0	230	73
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.43	-	-	-	6.73	6.53
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	2.497	-	-	-	3.797	3.597
Pot Cap-1 Maneuver	1352	-	-	-	695	909
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1352	-	-	-	694	909
Mov Cap-2 Maneuver	-	-	-	-	694	-
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	800	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1352	-	-	-	698
HCM Lane V/C Ratio	0.001	-	-	-	0.233
HCM Control Delay (s)	7.7	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.9

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	342	147	197	137	5
Future Vol, veh/h	10	342	147	197	137	5
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	11	372	160	214	149	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	379	0	-	0	670	277
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.27	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.353	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1102	-	-	-	400	727
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	647	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1097	-	-	-	391	720
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	736	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1097	-	-	-	397
HCM Lane V/C Ratio	0.01	-	-	-	0.389
HCM Control Delay (s)	8.3	0	-	-	19.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.8

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	418	66	16	191	50	40	0	63	15	39	116
Future Vol, veh/h	0	418	66	16	191	50	40	0	63	15	39	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	0	454	72	17	208	54	43	0	68	16	42	126

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	526	0	0	817	-	490	732	768	208
Stage 1	-	-	-	-	-	-	490	-	-	242	242	-
Stage 2	-	-	-	-	-	-	327	-	-	490	526	-
Critical Hdwy	-	-	-	4.27	-	-	7.27	-	6.37	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Follow-up Hdwy	-	-	-	2.353	-	-	3.653	-	3.453	3.653	4.153	3.453
Pot Cap-1 Maneuver	0	-	-	969	-	0	278	0	549	318	315	796
Stage 1	0	-	-	-	-	0	533	0	-	729	679	-
Stage 2	0	-	-	-	-	0	655	0	-	533	505	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	969	-	-	206	-	549	274	309	796
Mov Cap-2 Maneuver	-	-	-	-	-	-	206	-	-	274	309	-
Stage 1	-	-	-	-	-	-	533	-	-	729	665	-
Stage 2	-	-	-	-	-	-	506	-	-	467	505	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	18.2	15.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	206	549	-	-	969	-	520
HCM Lane V/C Ratio	0.211	0.125	-	-	0.018	-	0.355
HCM Control Delay (s)	27.1	12.5	-	-	8.8	0	15.7
HCM Lane LOS	D	B	-	-	A	A	C
HCM 95th %tile Q(veh)	0.8	0.4	-	-	0.1	-	1.6

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	55	0	0	107	14	168	2	38	0	0	0
Future Vol, veh/h	146	55	0	0	107	14	168	2	38	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	16	16	16	16	16	16	16	16	16	16	16	16
Mvmt Flow	159	60	0	0	116	15	183	2	41	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	132	0	-	-	-	0	501	509	60
Stage 1	-	-	-	-	-	-	377	377	-
Stage 2	-	-	-	-	-	-	124	132	-
Critical Hdwy	4.26	-	-	-	-	-	6.56	6.66	6.36
Critical Hdwy Stg 1	-	-	-	-	-	-	5.56	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.56	5.66	-
Follow-up Hdwy	2.344	-	-	-	-	-	3.644	4.144	3.444
Pot Cap-1 Maneuver	1371	-	0	0	-	-	505	448	967
Stage 1	-	-	0	0	-	-	664	592	-
Stage 2	-	-	0	0	-	-	868	761	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1371	-	-	-	-	-	444	0	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	444	0	-
Stage 1	-	-	-	-	-	-	584	0	-
Stage 2	-	-	-	-	-	-	868	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.8	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	493	1371	-	-	-
HCM Lane V/C Ratio	0.459	0.116	-	-	-
HCM Control Delay (s)	18.3	8	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	2.4	0.4	-	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	5	2	2	0	21	1	20	0	25	24	2
Future Vol, veh/h	13	5	2	2	0	21	1	20	0	25	24	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	15	6	2	2	0	24	1	23	0	29	28	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	123	111	29	115	112	23	30	0	0	23	0	0
Stage 1	86	86	-	25	25	-	-	-	-	-	-	-
Stage 2	37	25	-	90	87	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	822	755	1010	832	754	1017	1503	-	-	1512	-	-
Stage 1	891	799	-	960	849	-	-	-	-	-	-	-
Stage 2	946	849	-	886	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	790	739	1010	812	738	1017	1503	-	-	1512	-	-
Mov Cap-2 Maneuver	790	739	-	812	738	-	-	-	-	-	-	-
Stage 1	890	783	-	959	848	-	-	-	-	-	-	-
Stage 2	923	848	-	860	782	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	8.7	0.4	3.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1503	-	-	794	995	1512	-	-
HCM Lane V/C Ratio	0.001	-	-	0.029	0.027	0.019	-	-
HCM Control Delay (s)	7.4	0	-	9.7	8.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	89	122	85	89	4
Future Vol, veh/h	1	89	122	85	89	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	38	38	38	38	38	38
Mvmt Flow	1	109	149	104	109	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	149	0	-	0	260	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	4.48	-	-	-	6.78	6.58
Critical Hdwy Stg 1	-	-	-	-	5.78	-
Critical Hdwy Stg 2	-	-	-	-	5.78	-
Follow-up Hdwy	2.542	-	-	-	3.842	3.642
Pot Cap-1 Maneuver	1239	-	-	-	658	811
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	831	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1239	-	-	-	657	811
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	830	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1239	-	-	-	662
HCM Lane V/C Ratio	0.001	-	-	-	0.171
HCM Control Delay (s)	7.9	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	220	195	178	113	11
Future Vol, veh/h	13	220	195	178	113	11
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	23	23	23	23	23
Mvmt Flow	14	244	217	198	126	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	419	0	-	0	599	326
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.33	-	-	-	6.63	6.43
Critical Hdwy Stg 1	-	-	-	-	5.63	-
Critical Hdwy Stg 2	-	-	-	-	5.63	-
Follow-up Hdwy	2.407	-	-	-	3.707	3.507
Pot Cap-1 Maneuver	1036	-	-	-	432	669
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1031	-	-	-	421	663
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	708	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1031	-	-	-	435
HCM Lane V/C Ratio	0.014	-	-	-	0.317
HCM Control Delay (s)	8.5	0	-	-	17.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.3

Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	322	28	13	229	100	44	0	68	149	24	92
Future Vol, veh/h	0	322	28	13	229	100	44	0	68	149	24	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	0	366	32	15	260	114	50	0	77	169	27	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	398	0	0	738	-	382	672	688	260
Stage 1	-	-	-	-	-	-	382	-	-	290	290	-
Stage 2	-	-	-	-	-	-	356	-	-	382	398	-
Critical Hdwy	-	-	-	4.31	-	-	7.31	-	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Follow-up Hdwy	-	-	-	2.389	-	-	3.689	-	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	0	-	-	1065	-	0	311	0	625	345	346	735
Stage 1	0	-	-	-	-	0	604	0	-	679	639	-
Stage 2	0	-	-	-	-	0	624	0	-	604	571	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1065	-	-	247	-	625	299	340	735
Mov Cap-2 Maneuver	-	-	-	-	-	-	247	-	-	299	340	-
Stage 1	-	-	-	-	-	-	604	-	-	679	629	-
Stage 2	-	-	-	-	-	-	504	-	-	529	571	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	16.2	41.7
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	247	625	-	-	1065	-	382
HCM Lane V/C Ratio	0.202	0.124	-	-	0.014	-	0.788
HCM Control Delay (s)	23.2	11.6	-	-	8.4	0	41.7
HCM Lane LOS	C	B	-	-	A	A	E
HCM 95th %tile Q(veh)	0.7	0.4	-	-	0	-	6.7

Intersection	
Int Delay, s/veh	84.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	155	184	0	0	170	46	229	1	306	0	0	0
Future Vol, veh/h	155	184	0	0	170	46	229	1	306	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	172	204	0	0	189	51	254	1	340	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	240	0	-	-	-	0	763	789	204
Stage 1	-	-	-	-	-	-	549	549	-
Stage 2	-	-	-	-	-	-	214	240	-
Critical Hdwy	4.27	-	-	-	-	-	6.57	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.57	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.57	5.67	-
Follow-up Hdwy	2.353	-	-	-	-	-	3.653	4.153	3.453
Pot Cap-1 Maneuver	1244	-	0	0	-	-	352	306	800
Stage 1	-	-	0	0	-	-	550	493	-
Stage 2	-	-	0	0	-	-	787	680	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1244	-	-	-	-	-	297	0	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	0	-
Stage 1	-	-	-	-	-	-	464	0	-
Stage 2	-	-	-	-	-	-	787	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.8	0	169
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	464	1244	-	-	-
HCM Lane V/C Ratio	1.284	0.138	-	-	-
HCM Control Delay (s)	169	8.4	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	25.3	0.5	-	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	2	1	1	2	36	1	40	1	16	14	17
Future Vol, veh/h	12	2	1	1	2	36	1	40	1	16	14	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	14	14	14	14	14	14	14	14	14	14	14	14
Mvmt Flow	15	2	1	1	2	44	1	49	1	20	17	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	141	118	27	120	129	49	38	0	0	50	0	0
Stage 1	66	66	-	52	52	-	-	-	-	-	-	-
Stage 2	75	52	-	68	77	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.64	6.34	7.24	6.64	6.34	4.24	-	-	4.24	-	-
Critical Hdwy Stg 1	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.126	3.426	3.626	4.126	3.426	2.326	-	-	2.326	-	-
Pot Cap-1 Maneuver	802	750	1015	828	740	987	1498	-	-	1483	-	-
Stage 1	915	817	-	931	828	-	-	-	-	-	-	-
Stage 2	905	828	-	913	808	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	756	739	1015	815	729	987	1498	-	-	1483	-	-
Mov Cap-2 Maneuver	756	739	-	815	729	-	-	-	-	-	-	-
Stage 1	914	806	-	930	827	-	-	-	-	-	-	-
Stage 2	861	827	-	896	797	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	8.9	0.2	2.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1498	-	-	767	964	1483	-	-
HCM Lane V/C Ratio	0.001	-	-	0.024	0.049	0.013	-	-
HCM Control Delay (s)	7.4	0	-	9.8	8.9	7.5	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	70	75	132	3
Future Vol, veh/h	1	130	70	75	132	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	33	33	33	33	33	33
Mvmt Flow	1	157	84	90	159	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	84	0	-	0	243	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	4.43	-	-	-	6.73	6.53
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	2.497	-	-	-	3.797	3.597
Pot Cap-1 Maneuver	1338	-	-	-	682	896
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	800	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1338	-	-	-	681	896
Mov Cap-2 Maneuver	-	-	-	-	681	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1338	-	-	-	685
HCM Lane V/C Ratio	0.001	-	-	-	0.237
HCM Control Delay (s)	7.7	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.9

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	344	156	197	137	5
Future Vol, veh/h	10	344	156	197	137	5
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	11	374	170	214	149	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	389	0	-	0	683	287
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	401	-
Critical Hdwy	4.27	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.353	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1092	-	-	-	393	718
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1087	-	-	-	384	711
Mov Cap-2 Maneuver	-	-	-	-	384	-
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	634	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	20.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1087	-	-	-	390
HCM Lane V/C Ratio	0.01	-	-	-	0.396
HCM Control Delay (s)	8.3	0	-	-	20.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.8

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	420	66	16	200	299	40	0	63	51	39	116
Future Vol, veh/h	0	420	66	16	200	299	40	0	63	51	39	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	0	457	72	17	217	325	43	0	68	55	42	126

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	528	0	0	828	-	492	744	780	217
Stage 1	-	-	-	-	-	-	492	-	-	252	252	-
Stage 2	-	-	-	-	-	-	336	-	-	492	528	-
Critical Hdwy	-	-	-	4.27	-	-	7.27	-	6.37	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Follow-up Hdwy	-	-	-	2.353	-	-	3.653	-	3.453	3.653	4.153	3.453
Pot Cap-1 Maneuver	0	-	-	967	-	0	274	0	548	312	310	787
Stage 1	0	-	-	-	-	0	531	0	-	720	672	-
Stage 2	0	-	-	-	-	0	648	0	-	531	504	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	967	-	-	202	-	548	269	304	787
Mov Cap-2 Maneuver	-	-	-	-	-	-	202	-	-	269	304	-
Stage 1	-	-	-	-	-	-	531	-	-	720	659	-
Stage 2	-	-	-	-	-	-	499	-	-	465	504	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	18.4	21.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	202	548	-	-	967	-	443
HCM Lane V/C Ratio	0.215	0.125	-	-	0.018	-	0.505
HCM Control Delay (s)	27.6	12.5	-	-	8.8	0	21.1
HCM Lane LOS	D	B	-	-	A	A	C
HCM 95th %tile Q(veh)	0.8	0.4	-	-	0.1	-	2.8

Intersection	
Int Delay, s/veh	17.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	93	0	0	365	141	168	2	108	0	0	0
Future Vol, veh/h	146	93	0	0	365	141	168	2	108	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	16	16	16	16	16	16	16	16	16	16	16	16
Mvmt Flow	159	101	0	0	397	153	183	2	117	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	550	0	-	-	-	0	891	968	101
Stage 1	-	-	-	-	-	-	418	418	-
Stage 2	-	-	-	-	-	-	473	550	-
Critical Hdwy	4.26	-	-	-	-	-	6.56	6.66	6.36
Critical Hdwy Stg 1	-	-	-	-	-	-	5.56	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.56	5.66	-
Follow-up Hdwy	2.344	-	-	-	-	-	3.644	4.144	3.444
Pot Cap-1 Maneuver	953	-	0	0	-	-	296	240	917
Stage 1	-	-	0	0	-	-	635	567	-
Stage 2	-	-	0	0	-	-	599	494	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	953	-	-	-	-	-	244	0	917
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	0	-
Stage 1	-	-	-	-	-	-	523	0	-
Stage 2	-	-	-	-	-	-	599	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.8	0	59.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	342	953	-	-	-
HCM Lane V/C Ratio	0.884	0.167	-	-	-
HCM Control Delay (s)	59.1	9.5	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	8.4	0.6	-	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	5	2	2	1	21	1	26	1	25	46	2
Future Vol, veh/h	13	5	2	2	1	21	1	26	1	25	46	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	15	6	2	2	1	24	1	30	1	29	53	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	156	144	54	149	146	30	55	0	0	31	0	0
Stage 1	111	111	-	33	33	-	-	-	-	-	-	-
Stage 2	45	33	-	116	113	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	782	724	978	790	722	1008	1471	-	-	1501	-	-
Stage 1	863	779	-	951	842	-	-	-	-	-	-	-
Stage 2	937	842	-	858	777	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	750	709	978	771	707	1008	1471	-	-	1501	-	-
Mov Cap-2 Maneuver	750	709	-	771	707	-	-	-	-	-	-	-
Stage 1	862	763	-	950	841	-	-	-	-	-	-	-
Stage 2	912	841	-	833	761	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	8.8	0.3	2.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1471	-	-	757	966	1501	-	-
HCM Lane V/C Ratio	0.001	-	-	0.03	0.029	0.019	-	-
HCM Control Delay (s)	7.4	0	-	9.9	8.8	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	102	137	85	89	4
Future Vol, veh/h	1	102	137	85	89	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	38	38	38	38	38	38
Mvmt Flow	1	124	167	104	109	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	167	0	-	0	294	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.48	-	-	-	6.78	6.58
Critical Hdwy Stg 1	-	-	-	-	5.78	-
Critical Hdwy Stg 2	-	-	-	-	5.78	-
Follow-up Hdwy	2.542	-	-	-	3.842	3.642
Pot Cap-1 Maneuver	1220	-	-	-	628	792
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	817	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1220	-	-	-	627	792
Mov Cap-2 Maneuver	-	-	-	-	627	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	816	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1220	-	-	-	633
HCM Lane V/C Ratio	0.001	-	-	-	0.179
HCM Control Delay (s)	8	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	233	210	178	113	11
Future Vol, veh/h	13	233	210	178	113	11
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	23	23	23	23	23
Mvmt Flow	14	259	233	198	126	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	436	0	-	0	630	342
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	293	-
Critical Hdwy	4.33	-	-	-	6.63	6.43
Critical Hdwy Stg 1	-	-	-	-	5.63	-
Critical Hdwy Stg 2	-	-	-	-	5.63	-
Follow-up Hdwy	2.407	-	-	-	3.707	3.507
Pot Cap-1 Maneuver	1021	-	-	-	414	655
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1016	-	-	-	404	649
Mov Cap-2 Maneuver	-	-	-	-	404	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	696	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1016	-	-	-	418
HCM Lane V/C Ratio	0.014	-	-	-	0.33
HCM Control Delay (s)	8.6	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.4

Intersection	
Int Delay, s/veh	72.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	312	51	143	227	44	61	0	286	9	147	92
Future Vol, veh/h	0	312	51	143	227	44	61	0	286	9	147	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	0	355	58	163	258	50	69	0	325	10	167	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	413	0	0	1103	-	384	967	996	258
Stage 1	-	-	-	-	-	-	384	-	-	583	583	-
Stage 2	-	-	-	-	-	-	719	-	-	384	413	-
Critical Hdwy	-	-	-	4.31	-	-	7.31	-	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Follow-up Hdwy	-	-	-	2.389	-	-	3.689	-	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	0	-	-	1051	-	0	173	0	624	216	227	737
Stage 1	0	-	-	-	-	0	602	0	-	467	469	-
Stage 2	0	-	-	-	-	0	391	0	-	602	562	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1051	-	-	~ 30	-	624	89	186	737
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 30	-	-	89	186	-
Stage 1	-	-	-	-	-	-	602	-	-	467	384	-
Stage 2	-	-	-	-	-	-	155	-	-	288	562	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.5	168.6	148.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	30	624	-	-	1051	-	244
HCM Lane V/C Ratio	2.311	0.521	-	-	0.155	-	1.155
HCM Control Delay (s)	$ 880	16.9	-	-	9.1	0	148.9
HCM Lane LOS	F	C	-	-	A	A	F
HCM 95th %tile Q(veh)	8.1	3	-	-	0.5	-	12.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	116.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	260	49	0	0	139	17	332	1	32	0	0	0
Future Vol, veh/h	260	49	0	0	139	17	332	1	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	289	54	0	0	154	19	369	1	36	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	173	0	-	-	-	0	796	805	54
Stage 1	-	-	-	-	-	-	632	632	-
Stage 2	-	-	-	-	-	-	164	173	-
Critical Hdwy	4.27	-	-	-	-	-	6.57	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.57	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.57	5.67	-
Follow-up Hdwy	2.353	-	-	-	-	-	3.653	4.153	3.453
Pot Cap-1 Maneuver	1318	-	0	0	-	-	~ 336	299	972
Stage 1	-	-	0	0	-	-	502	451	-
Stage 2	-	-	0	0	-	-	830	728	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1318	-	-	-	-	-	~ 260	0	972
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 260	0	-
Stage 1	-	-	-	-	-	-	389	0	-
Stage 2	-	-	-	-	-	-	830	0	-

Approach	EB	WB	NB
HCM Control Delay, s	7.1	0	259.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	278	1318	-	-	-
HCM Lane V/C Ratio	1.459	0.219	-	-	-
HCM Control Delay (s)	259.6	8.5	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	22.7	0.8	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	2	1	1	2	36	1	42	0	16	24	17
Future Vol, veh/h	12	2	1	1	2	36	1	42	0	16	24	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	14	14	14	14	14	14	14	14	14	14	14	14
Mvmt Flow	15	2	1	1	2	44	1	51	0	20	29	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	156	133	40	134	143	51	50	0	0	51	0	0
Stage 1	79	79	-	54	54	-	-	-	-	-	-	-
Stage 2	77	54	-	80	89	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.64	6.34	7.24	6.64	6.34	4.24	-	-	4.24	-	-
Critical Hdwy Stg 1	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.126	3.426	3.626	4.126	3.426	2.326	-	-	2.326	-	-
Pot Cap-1 Maneuver	784	736	998	811	727	984	1483	-	-	1482	-	-
Stage 1	901	806	-	929	827	-	-	-	-	-	-	-
Stage 2	903	827	-	900	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	739	725	998	799	716	984	1483	-	-	1482	-	-
Mov Cap-2 Maneuver	739	725	-	799	716	-	-	-	-	-	-	-
Stage 1	900	795	-	928	826	-	-	-	-	-	-	-
Stage 2	859	826	-	884	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	8.9	0.2	2.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1483	-	-	750	960	1482	-	-
HCM Lane V/C Ratio	0.001	-	-	0.024	0.05	0.013	-	-
HCM Control Delay (s)	7.4	0	-	9.9	8.9	7.5	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	153	85	75	132	3
Future Vol, veh/h	1	153	85	75	132	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	33	33	33	33	33	33
Mvmt Flow	1	184	102	90	159	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	102	0	-	0	289	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	187	-
Critical Hdwy	4.43	-	-	-	6.73	6.53
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	2.497	-	-	-	3.797	3.597
Pot Cap-1 Maneuver	1317	-	-	-	641	875
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	776	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1317	-	-	-	640	875
Mov Cap-2 Maneuver	-	-	-	-	640	-
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1317	-	-	-	644
HCM Lane V/C Ratio	0.001	-	-	-	0.253
HCM Control Delay (s)	7.7	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	356	160	197	137	5
Future Vol, veh/h	10	356	160	197	137	5
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	11	387	174	214	149	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	393	0	-	0	700	291
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	414	-
Critical Hdwy	4.27	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.353	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1088	-	-	-	384	714
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1083	-	-	-	375	707
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	625	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1083	-	-	-	381
HCM Lane V/C Ratio	0.01	-	-	-	0.405
HCM Control Delay (s)	8.4	0	-	-	20.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Intersection	
Int Delay, s/veh	133.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	418	91	137	191	50	64	0	278	15	153	116
Future Vol, veh/h	0	418	91	137	191	50	64	0	278	15	153	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	0	454	99	149	208	54	70	0	302	16	166	126

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	553	0	0	1156	-	504	1009	1058	208
Stage 1	-	-	-	-	-	-	504	-	-	505	505	-
Stage 2	-	-	-	-	-	-	652	-	-	504	553	-
Critical Hdwy	-	-	-	4.27	-	-	7.27	-	6.37	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Follow-up Hdwy	-	-	-	2.353	-	-	3.653	-	3.453	3.653	4.153	3.453
Pot Cap-1 Maneuver	0	-	-	946	-	0	162	0	539	205	211	796
Stage 1	0	-	-	-	-	0	523	0	-	523	516	-
Stage 2	0	-	-	-	-	0	433	0	-	523	491	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	946	-	-	~ 16	-	539	78	173	796
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 16	-	-	78	173	-
Stage 1	-	-	-	-	-	-	523	-	-	523	424	-
Stage 2	-	-	-	-	-	-	182	-	-	230	491	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4	$ 388	216.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	16	539	-	-	946	-	232
HCM Lane V/C Ratio	4.348	0.561	-	-	0.157	-	1.331
HCM Control Delay (s)	$ 1987.1	19.9	-	-	9.5	0	216.7
HCM Lane LOS	F	C	-	-	A	A	F
HCM 95th %tile Q(veh)	9.5	3.4	-	-	0.6	-	16.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	50.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	254	75	0	0	138	14	258	2	38	0	0	0
Future Vol, veh/h	254	75	0	0	138	14	258	2	38	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	16	16	16	16	16	16	16	16	16	16	16	16
Mvmt Flow	276	82	0	0	150	15	280	2	41	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	165	0	-	-	-	0	792	799	82
Stage 1	-	-	-	-	-	-	634	634	-
Stage 2	-	-	-	-	-	-	158	165	-
Critical Hdwy	4.26	-	-	-	-	-	6.56	6.66	6.36
Critical Hdwy Stg 1	-	-	-	-	-	-	5.56	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.56	5.66	-
Follow-up Hdwy	2.344	-	-	-	-	-	3.644	4.144	3.444
Pot Cap-1 Maneuver	1333	-	0	0	-	-	339	303	940
Stage 1	-	-	0	0	-	-	503	452	-
Stage 2	-	-	0	0	-	-	838	736	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1333	-	-	-	-	-	~ 265	0	940
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 265	0	-
Stage 1	-	-	-	-	-	-	394	0	-
Stage 2	-	-	-	-	-	-	838	0	-

Approach	EB	WB	NB
HCM Control Delay, s	6.5	0	124.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	292	1333	-	-	-
HCM Lane V/C Ratio	1.109	0.207	-	-	-
HCM Control Delay (s)	124.1	8.4	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	13.2	0.8	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	13	5	2	2	1	21	1	51	1	25	44	2
Future Vol, veh/h	13	5	2	2	1	21	1	51	1	25	44	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	15	6	2	2	1	24	1	59	1	29	51	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	183	171	52	174	171	59	53	0	0	60	0	0
Stage 1	109	109	-	61	61	-	-	-	-	-	-	-
Stage 2	74	62	-	113	110	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	750	699	980	761	699	971	1473	-	-	1464	-	-
Stage 1	866	781	-	919	819	-	-	-	-	-	-	-
Stage 2	904	818	-	861	780	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	719	684	980	742	684	971	1473	-	-	1464	-	-
Mov Cap-2 Maneuver	719	684	-	742	684	-	-	-	-	-	-	-
Stage 1	865	765	-	918	818	-	-	-	-	-	-	-
Stage 2	879	817	-	835	764	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9	0.1	2.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1473	-	-	729	931	1464	-	-
HCM Lane V/C Ratio	0.001	-	-	0.032	0.03	0.02	-	-
HCM Control Delay (s)	7.4	0	-	10.1	9	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	112	139	85	89	4
Future Vol, veh/h	1	112	139	85	89	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	38	38	38	38	38	38
Mvmt Flow	1	137	170	104	109	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	170	0	-	0	309	170
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.48	-	-	-	6.78	6.58
Critical Hdwy Stg 1	-	-	-	-	5.78	-
Critical Hdwy Stg 2	-	-	-	-	5.78	-
Follow-up Hdwy	2.542	-	-	-	3.842	3.642
Pot Cap-1 Maneuver	1216	-	-	-	615	789
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1216	-	-	-	614	789
Mov Cap-2 Maneuver	-	-	-	-	614	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	806	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1216	-	-	-	620
HCM Lane V/C Ratio	0.001	-	-	-	0.183
HCM Control Delay (s)	8	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	243	212	178	113	11
Future Vol, veh/h	13	243	212	178	113	11
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	23	23	23	23	23	23
Mvmt Flow	14	270	236	198	126	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	438	0	-	0	643	344
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	304	-
Critical Hdwy	4.33	-	-	-	6.63	6.43
Critical Hdwy Stg 1	-	-	-	-	5.63	-
Critical Hdwy Stg 2	-	-	-	-	5.63	-
Follow-up Hdwy	2.407	-	-	-	3.707	3.507
Pot Cap-1 Maneuver	1019	-	-	-	406	654
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	703	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1014	-	-	-	396	648
Mov Cap-2 Maneuver	-	-	-	-	396	-
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1014	-	-	-	410
HCM Lane V/C Ratio	0.014	-	-	-	0.336
HCM Control Delay (s)	8.6	0	-	-	18.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.5

Intersection	
Int Delay, s/veh	303.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	322	51	143	229	100	61	0	286	149	147	92
Future Vol, veh/h	0	322	51	143	229	100	61	0	286	149	147	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	0	366	58	163	260	114	69	0	325	169	167	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	424	0	0	1116	-	395	980	1009	260
Stage 1	-	-	-	-	-	-	395	-	-	585	585	-
Stage 2	-	-	-	-	-	-	721	-	-	395	424	-
Critical Hdwy	-	-	-	4.31	-	-	7.31	-	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Follow-up Hdwy	-	-	-	2.389	-	-	3.689	-	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	0	-	-	1041	-	0	170	0	615	211	223	735
Stage 1	0	-	-	-	-	0	594	0	-	465	468	-
Stage 2	0	-	-	-	-	0	390	0	-	594	556	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1041	-	-	~ 26	-	615	~ 86	182	735
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 26	-	-	~ 86	182	-
Stage 1	-	-	-	-	-	-	594	-	-	465	382	-
Stage 2	-	-	-	-	-	-	154	-	-	280	556	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.5	202.6	$ 974.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	26	615	-	-	1041	-	146
HCM Lane V/C Ratio	2.666	0.528	-	-	0.156	-	3.02
HCM Control Delay (s)	$ 1072.1	17.2	-	-	9.1	0	$ 974.1
HCM Lane LOS	F	C	-	-	A	A	F
HCM 95th %tile Q(veh)	8.5	3.1	-	-	0.6	-	40.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	357.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	260	199	0	0	197	46	332	1	306	0	0	0
Future Vol, veh/h	260	199	0	0	197	46	332	1	306	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	289	221	0	0	219	51	369	1	340	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	270	0	-	-	-	0	1043	1069	221
Stage 1	-	-	-	-	-	-	799	799	-
Stage 2	-	-	-	-	-	-	244	270	-
Critical Hdwy	4.27	-	-	-	-	-	6.57	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.57	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.57	5.67	-
Follow-up Hdwy	2.353	-	-	-	-	-	3.653	4.153	3.453
Pot Cap-1 Maneuver	1212	-	0	0	-	-	~ 238	208	783
Stage 1	-	-	0	0	-	-	418	377	-
Stage 2	-	-	0	0	-	-	763	659	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1212	-	-	-	-	-	~ 173	0	783
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 173	0	-
Stage 1	-	-	-	-	-	-	~ 304	0	-
Stage 2	-	-	-	-	-	-	763	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5	0	$ 746.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	276	1212	-	-	-
HCM Lane V/C Ratio	2.572	0.238	-	-	-
HCM Control Delay (s)	$ 746.4	8.9	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	58.8	0.9	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	2	1	1	2	36	1	67	1	16	29	17
Future Vol, veh/h	12	2	1	1	2	36	1	67	1	16	29	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	14	14	14	14	14	14	14	14	14	14	14	14
Mvmt Flow	15	2	1	1	2	44	1	82	1	20	35	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	193	170	46	172	180	82	56	0	0	83	0	0
Stage 1	85	85	-	85	85	-	-	-	-	-	-	-
Stage 2	108	85	-	87	95	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.64	6.34	7.24	6.64	6.34	4.24	-	-	4.24	-	-
Critical Hdwy Stg 1	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.126	3.426	3.626	4.126	3.426	2.326	-	-	2.326	-	-
Pot Cap-1 Maneuver	741	702	990	765	693	945	1475	-	-	1442	-	-
Stage 1	894	802	-	894	802	-	-	-	-	-	-	-
Stage 2	869	802	-	892	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	697	691	990	753	683	945	1475	-	-	1442	-	-
Mov Cap-2 Maneuver	697	691	-	753	683	-	-	-	-	-	-	-
Stage 1	893	791	-	893	801	-	-	-	-	-	-	-
Stage 2	825	801	-	876	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	9.1	0.1	1.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1475	-	-	710	921	1442	-	-
HCM Lane V/C Ratio	0.001	-	-	0.026	0.052	0.014	-	-
HCM Control Delay (s)	7.4	0	-	10.2	9.1	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	155	94	75	132	3
Future Vol, veh/h	1	155	94	75	132	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	33	33	33	33	33	33
Mvmt Flow	1	187	113	90	159	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	113	0	-	0	302	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	189	-
Critical Hdwy	4.43	-	-	-	6.73	6.53
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	2.497	-	-	-	3.797	3.597
Pot Cap-1 Maneuver	1304	-	-	-	630	862
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	774	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1304	-	-	-	629	862
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	773	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1304	-	-	-	633
HCM Lane V/C Ratio	0.001	-	-	-	0.257
HCM Control Delay (s)	7.8	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	358	169	197	137	5
Future Vol, veh/h	10	358	169	197	137	5
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	11	389	184	214	149	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	403	0	-	0	712	301
Stage 1	-	-	-	-	296	-
Stage 2	-	-	-	-	416	-
Critical Hdwy	4.27	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.353	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1079	-	-	-	377	705
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1074	-	-	-	369	698
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	624	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1074	-	-	-	375
HCM Lane V/C Ratio	0.01	-	-	-	0.412
HCM Control Delay (s)	8.4	0	-	-	21.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	2

Intersection	
Int Delay, s/veh	207.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	420	91	137	200	299	64	0	278	51	153	116
Future Vol, veh/h	0	420	91	137	200	299	64	0	278	51	153	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	0	457	99	149	217	325	70	0	302	55	166	126

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	555	0	0	1167	-	506	1021	1070	217
Stage 1	-	-	-	-	-	-	506	-	-	515	515	-
Stage 2	-	-	-	-	-	-	661	-	-	506	555	-
Critical Hdwy	-	-	-	4.27	-	-	7.27	-	6.37	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Follow-up Hdwy	-	-	-	2.353	-	-	3.653	-	3.453	3.653	4.153	3.453
Pot Cap-1 Maneuver	0	-	-	944	-	0	159	0	538	201	208	787
Stage 1	0	-	-	-	-	0	522	0	-	516	511	-
Stage 2	0	-	-	-	-	0	428	0	-	522	490	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	944	-	-	~ 13	-	538	76	171	787
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 13	-	-	76	171	-
Stage 1	-	-	-	-	-	-	522	-	-	516	419	-
Stage 2	-	-	-	-	-	-	178	-	-	229	490	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.9	$ 490.7	$ 449.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	13	538	-	-	944	-	187
HCM Lane V/C Ratio	5.351	0.562	-	-	0.158	-	1.86
HCM Control Delay (s)	$ 2535.8	19.9	-	-	9.5	0	$ 449.2
HCM Lane LOS	F	C	-	-	A	A	F
HCM 95th %tile Q(veh)	9.7	3.4	-	-	0.6	-	25.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	180

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	254	113	0	0	396	141	258	2	108	0	0	0
Future Vol, veh/h	254	113	0	0	396	141	258	2	108	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	16	16	16	16	16	16	16	16	16	16	16	16
Mvmt Flow	276	123	0	0	430	153	280	2	117	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	584	0	-	-	-	0	1182	1259	123
Stage 1	-	-	-	-	-	-	675	675	-
Stage 2	-	-	-	-	-	-	507	584	-
Critical Hdwy	4.26	-	-	-	-	-	6.56	6.66	6.36
Critical Hdwy Stg 1	-	-	-	-	-	-	5.56	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.56	5.66	-
Follow-up Hdwy	2.344	-	-	-	-	-	3.644	4.144	3.444
Pot Cap-1 Maneuver	925	-	0	0	-	-	~ 197	160	892
Stage 1	-	-	0	0	-	-	481	432	-
Stage 2	-	-	0	0	-	-	577	476	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	925	-	-	-	-	-	~ 134	0	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 134	0	-
Stage 1	-	-	-	-	-	-	327	0	-
Stage 2	-	-	-	-	-	-	577	0	-

Approach	EB	WB	NB
HCM Control Delay, s	7.3	0	$ 615
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	179	925	-	-	-
HCM Lane V/C Ratio	2.235	0.298	-	-	-
HCM Control Delay (s)	$ 615	10.5	0	-	-
HCM Lane LOS	F	B	A	-	-
HCM 95th %tile Q(veh)	32.3	1.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	5	2	2	1	21	1	57	1	25	66	2
Future Vol, veh/h	13	5	2	2	1	21	1	57	1	25	66	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	15	6	2	2	1	24	1	66	1	29	76	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	215	203	77	207	204	66	78	0	0	67	0	0
Stage 1	134	134	-	68	68	-	-	-	-	-	-	-
Stage 2	81	69	-	139	136	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	715	671	949	723	670	963	1442	-	-	1456	-	-
Stage 1	839	761	-	911	813	-	-	-	-	-	-	-
Stage 2	896	813	-	834	760	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	684	656	949	704	655	963	1442	-	-	1456	-	-
Mov Cap-2 Maneuver	684	656	-	704	655	-	-	-	-	-	-	-
Stage 1	838	745	-	910	812	-	-	-	-	-	-	-
Stage 2	871	812	-	808	744	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9	0.1	2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1442	-	-	696	917	1456	-	-
HCM Lane V/C Ratio	0.001	-	-	0.033	0.03	0.02	-	-
HCM Control Delay (s)	7.5	0	-	10.3	9	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	184	104	110	5
Future Vol, veh/h	1	130	184	104	110	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	38	38	38	38	38	38
Mvmt Flow	1	141	200	113	120	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	200	0	-	0	343	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	143	-
Critical Hdwy	4.48	-	-	-	6.78	6.58
Critical Hdwy Stg 1	-	-	-	-	5.78	-
Critical Hdwy Stg 2	-	-	-	-	5.78	-
Follow-up Hdwy	2.542	-	-	-	3.842	3.642
Pot Cap-1 Maneuver	1184	-	-	-	586	758
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	803	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1184	-	-	-	585	758
Mov Cap-2 Maneuver	-	-	-	-	585	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	802	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1184	-	-	-	591
HCM Lane V/C Ratio	0.001	-	-	-	0.212
HCM Control Delay (s)	8	0	-	-	12.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	322	289	217	138	13
Future Vol, veh/h	16	322	289	217	138	13
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	23	23	23	23	23	23
Mvmt Flow	17	350	314	236	150	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	555	0	-	0	827	442
Stage 1	-	-	-	-	437	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	4.33	-	-	-	6.63	6.43
Critical Hdwy Stg 1	-	-	-	-	5.63	-
Critical Hdwy Stg 2	-	-	-	-	5.63	-
Follow-up Hdwy	2.407	-	-	-	3.707	3.507
Pot Cap-1 Maneuver	918	-	-	-	315	574
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	914	-	-	-	305	569
Mov Cap-2 Maneuver	-	-	-	-	305	-
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	623	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	27.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	914	-	-	-	318
HCM Lane V/C Ratio	0.019	-	-	-	0.516
HCM Control Delay (s)	9	0	-	-	27.8
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	2.8

Intersection	
Int Delay, s/veh	358.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	413	66	143	306	121	65	0	286	153	147	120
Future Vol, veh/h	0	413	66	143	306	121	65	0	286	153	147	120
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	0	449	72	155	333	132	71	0	311	166	160	130

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	521	0	0	1274	-	485	1128	1164	333
Stage 1	-	-	-	-	-	-	485	-	-	643	643	-
Stage 2	-	-	-	-	-	-	789	-	-	485	521	-
Critical Hdwy	-	-	-	4.31	-	-	7.31	-	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	-	-	6.31	5.71	-
Follow-up Hdwy	-	-	-	2.389	-	-	3.689	-	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	0	-	-	955	-	0	132	0	545	167	179	667
Stage 1	0	-	-	-	-	0	529	0	-	432	440	-
Stage 2	0	-	-	-	-	0	357	0	-	529	502	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	955	-	-	-	-	545	~ 61	~ 143	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~ 61	~ 143	-
Stage 1	-	-	-	-	-	-	529	-	-	432	352	-
Stage 2	-	-	-	-	-	-	126	-	-	227	502	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3		$ 1446
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	545	-	-	955	-	113
HCM Lane V/C Ratio	-	0.57	-	-	0.163	-	4.04
HCM Control Delay (s)	-	20	-	-	9.5	0	$ 1446
HCM Lane LOS	-	C	-	-	A	A	F
HCM 95th %tile Q(veh)	-	3.6	-	-	0.6	-	46.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	348.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	260	211	0	0	198	54	332	2	329	0	0	0
Future Vol, veh/h	260	211	0	0	198	54	332	2	329	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	283	229	0	0	215	59	361	2	358	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	274	0	-	-	-	0	1040	1069	229
Stage 1	-	-	-	-	-	-	795	795	-
Stage 2	-	-	-	-	-	-	245	274	-
Critical Hdwy	4.27	-	-	-	-	-	6.57	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	5.57	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.57	5.67	-
Follow-up Hdwy	2.353	-	-	-	-	-	3.653	4.153	3.453
Pot Cap-1 Maneuver	1207	-	0	0	-	-	~ 239	208	774
Stage 1	-	-	0	0	-	-	420	379	-
Stage 2	-	-	0	0	-	-	762	657	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1207	-	-	-	-	-	~ 175	0	774
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 175	0	-
Stage 1	-	-	-	-	-	-	~ 307	0	-
Stage 2	-	-	-	-	-	-	762	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4.9	0	$ 725.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	285	1207	-	-	-
HCM Lane V/C Ratio	2.529	0.234	-	-	-
HCM Control Delay (s)	$ 725.8	8.9	0	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	59	0.9	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	4	1	1	4	65	1	67	1	29	29	31
Future Vol, veh/h	22	4	1	1	4	65	1	67	1	29	29	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	14	14	14	14	14	14	14	14	14	14	14	14
Mvmt Flow	24	4	1	1	4	71	1	73	1	32	32	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	224	187	48	190	204	73	65	0	0	74	0	0
Stage 1	111	111	-	76	76	-	-	-	-	-	-	-
Stage 2	113	76	-	114	128	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.64	6.34	7.24	6.64	6.34	4.24	-	-	4.24	-	-
Critical Hdwy Stg 1	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.64	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.126	3.426	3.626	4.126	3.426	2.326	-	-	2.326	-	-
Pot Cap-1 Maneuver	707	687	988	744	672	956	1464	-	-	1453	-	-
Stage 1	866	781	-	904	809	-	-	-	-	-	-	-
Stage 2	864	809	-	862	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	640	671	988	726	656	956	1464	-	-	1453	-	-
Mov Cap-2 Maneuver	640	671	-	726	656	-	-	-	-	-	-	-
Stage 1	865	763	-	903	808	-	-	-	-	-	-	-
Stage 2	795	808	-	836	750	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	9.2	0.1	2.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1464	-	-	653	928	1453	-	-
HCM Lane V/C Ratio	0.001	-	-	0.045	0.082	0.022	-	-
HCM Control Delay (s)	7.5	0	-	10.8	9.2	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	196	101	92	163	4
Future Vol, veh/h	1	196	101	92	163	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	33	33	33	33	33	33
Mvmt Flow	1	213	110	100	177	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	110	0	-	0	325	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	215	-
Critical Hdwy	4.43	-	-	-	6.73	6.53
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	2.497	-	-	-	3.797	3.597
Pot Cap-1 Maneuver	1308	-	-	-	610	866
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	753	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1308	-	-	-	609	866
Mov Cap-2 Maneuver	-	-	-	-	609	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	752	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1308	-	-	-	613
HCM Lane V/C Ratio	0.001	-	-	-	0.296
HCM Control Delay (s)	7.8	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.2

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	510	227	240	167	6
Future Vol, veh/h	12	510	227	240	167	6
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	13	554	247	261	182	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	513	0	-	0	967	387
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	4.27	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.353	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	980	-	-	-	265	629
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	975	-	-	-	257	623
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	516	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	47.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	975	-	-	-	262
HCM Lane V/C Ratio	0.013	-	-	-	0.718
HCM Control Delay (s)	8.7	0	-	-	47.3
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	5

Intersection	
Int Delay, s/veh	270.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	531	91	137	259	323	72	0	278	67	153	216
Future Vol, veh/h	0	531	91	137	259	323	72	0	278	67	153	216
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	75	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17	17	17	17	17	17	17
Mvmt Flow	0	577	99	149	282	351	78	0	302	73	166	235

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	676	0	0	1407	-	627	1206	1255	282
Stage 1	-	-	-	-	-	-	627	-	-	579	579	-
Stage 2	-	-	-	-	-	-	780	-	-	627	676	-
Critical Hdwy	-	-	-	4.27	-	-	7.27	-	6.37	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.27	-	-	6.27	5.67	-
Follow-up Hdwy	-	-	-	2.353	-	-	3.653	-	3.453	3.653	4.153	3.453
Pot Cap-1 Maneuver	0	-	-	849	-	0	108	0	457	150	~ 160	722
Stage 1	0	-	-	-	-	0	447	0	-	475	477	-
Stage 2	0	-	-	-	-	0	367	0	-	447	430	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	849	-	-	-	-	457	~ 43	~ 127	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~ 43	~ 127	-
Stage 1	-	-	-	-	-	-	447	-	-	475	378	-
Stage 2	-	-	-	-	-	-	110	-	-	151	430	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.5		$ 1117.2
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	457	-	-	849	-	142
HCM Lane V/C Ratio	-	0.661	-	-	0.175	-	3.337
HCM Control Delay (s)	-	27	-	-	10.1	$	1117.2
HCM Lane LOS	-	D	-	-	B	A	F
HCM 95th %tile Q(veh)	-	4.7	-	-	0.6	-	45.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	201.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	254	134	0	0	396	148	258	4	124	0	0	0
Future Vol, veh/h	254	134	0	0	396	148	258	4	124	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	16	16	16	16	16	16	16	16	16	16	16	16
Mvmt Flow	276	146	0	0	430	161	280	4	135	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	591	0	-	-	-	0	1209	1289	146
Stage 1	-	-	-	-	-	-	698	698	-
Stage 2	-	-	-	-	-	-	511	591	-
Critical Hdwy	4.26	-	-	-	-	-	6.56	6.66	6.36
Critical Hdwy Stg 1	-	-	-	-	-	-	5.56	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.56	5.66	-
Follow-up Hdwy	2.344	-	-	-	-	-	3.644	4.144	3.444
Pot Cap-1 Maneuver	919	-	0	0	-	-	~ 189	154	865
Stage 1	-	-	0	0	-	-	469	422	-
Stage 2	-	-	0	0	-	-	575	473	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	919	-	-	-	-	-	~ 127	0	865
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 127	0	-
Stage 1	-	-	-	-	-	-	316	0	-
Stage 2	-	-	-	-	-	-	575	0	-

Approach	EB	WB	NB
HCM Control Delay, s	6.9	0	$ 681.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR
Capacity (veh/h)	176	919	-	-	-
HCM Lane V/C Ratio	2.384	0.3	-	-	-
HCM Control Delay (s)	$ 681.6	10.6	0	-	-
HCM Lane LOS	F	B	A	-	-
HCM 95th %tile Q(veh)	34.9	1.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.5

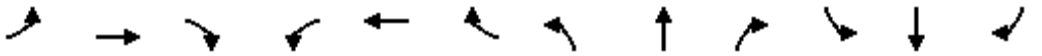
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	9	4	4	1	38	2	57	1	45	66	4
Future Vol, veh/h	23	9	4	4	1	38	2	57	1	45	66	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	25	10	4	4	1	41	2	62	1	49	72	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	260	239	74	246	241	63	76	0	0	63	0	0
Stage 1	172	172	-	67	67	-	-	-	-	-	-	-
Stage 2	88	67	-	179	174	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.65	6.35	7.25	6.65	6.35	4.25	-	-	4.25	-	-
Critical Hdwy Stg 1	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.65	-	6.25	5.65	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435	3.635	4.135	3.435	2.335	-	-	2.335	-	-
Pot Cap-1 Maneuver	667	640	953	681	639	966	1444	-	-	1461	-	-
Stage 1	800	732	-	912	814	-	-	-	-	-	-	-
Stage 2	888	814	-	793	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	620	617	953	651	616	966	1444	-	-	1461	-	-
Mov Cap-2 Maneuver	620	617	-	651	616	-	-	-	-	-	-	-
Stage 1	799	706	-	911	813	-	-	-	-	-	-	-
Stage 2	848	813	-	751	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	9.2	0.2	3
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	644	913	1461	-	-
HCM Lane V/C Ratio	0.002	-	-	0.061	0.051	0.033	-	-
HCM Control Delay (s)	7.5	0	-	11	9.2	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-	-

APPENDIX D
MITIGATED INTERSECTION ANALYSIS SHEETS

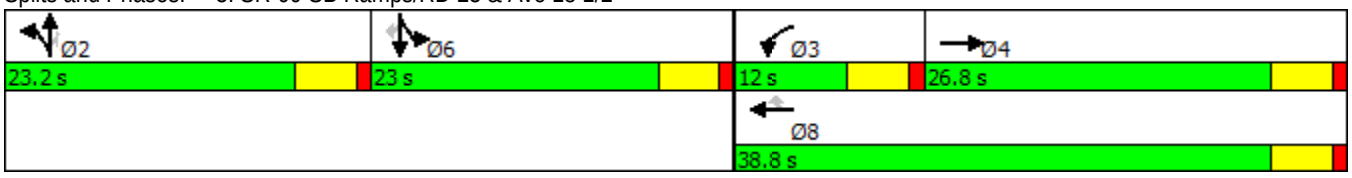


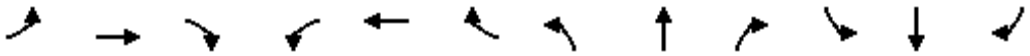
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	322	28	13	229	100	44	0	68	149	24	92
Future Volume (vph)	0	322	28	13	229	100	44	0	68	149	24	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989				0.850			0.850			0.850
Flt Protected				0.950				0.950			0.959	
Satd. Flow (prot)	0	1553	0	1492	1570	1335	0	1492	1335	0	1506	1335
Flt Permitted				0.950				0.950			0.959	
Satd. Flow (perm)	0	1553	0	1492	1570	1335	0	1492	1335	0	1506	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				114			150			150
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		280			923			1456			470	
Travel Time (s)		4.2			14.0			33.1			10.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Adj. Flow (vph)	0	366	32	15	260	114	50	0	77	169	27	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	398	0	15	260	114	0	50	77	0	196	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases						8			2			6
Detector Phase		4		3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		22.9		12.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
Total Split (s)		26.8		12.0	38.8	38.8	23.2	23.2	23.2	23.0	23.0	23.0
Total Split (%)		31.5%		14.1%	45.6%	45.6%	27.3%	27.3%	27.3%	27.1%	27.1%	27.1%
Maximum Green (s)		21.9		7.1	33.9	33.9	18.3	18.3	18.3	18.1	18.1	18.1
Yellow Time (s)		3.9		3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)		1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		4.9		4.9	4.9	4.9		4.9	4.9		4.9	4.9
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode		None		None	None	None	Min	Min	Min	Min	Min	Min

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)		22.1		6.2	23.9	23.9		7.6	7.6		12.5	12.5
Actuated g/C Ratio		0.37		0.10	0.40	0.40		0.13	0.13		0.21	0.21
v/c Ratio		0.68		0.10	0.41	0.19		0.26	0.25		0.61	0.26
Control Delay		26.5		29.8	15.9	3.9		29.5	2.3		31.3	3.6
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay		26.5		29.8	15.9	3.9		29.5	2.3		31.3	3.6
LOS		C		C	B	A		C	A		C	A
Approach Delay		26.5			12.9			13.0			21.7	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		105		5	62	0		16	0		59	0
Queue Length 95th (ft)		#334		24	135	26		52	2		146	17
Internal Link Dist (ft)		200			843			1376			390	
Turn Bay Length (ft)						75						
Base Capacity (vph)		592		183	922	831		473	526		472	521
Starvation Cap Reductn		0		0	0	0		0	0		0	0
Spillback Cap Reductn		0		0	0	0		0	0		0	0
Storage Cap Reductn		0		0	0	0		0	0		0	0
Reduced v/c Ratio		0.67		0.08	0.28	0.14		0.11	0.15		0.42	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 59.1			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: SR-99 SB Ramps/RD 23 & Ave 18 1/2





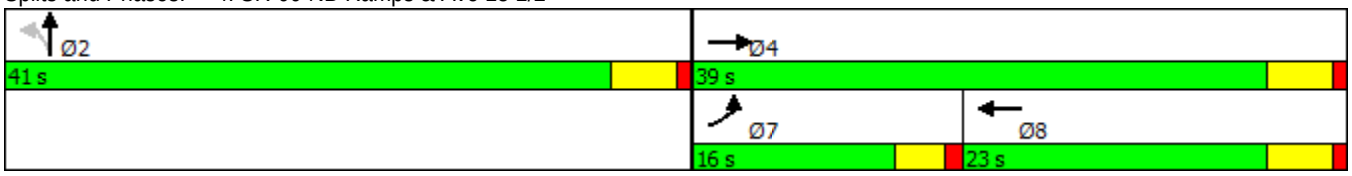
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	184	0	0	170	46	229	1	306	0	0	0
Future Volume (vph)	155	184	0	0	170	46	229	1	306	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.971			0.923				
Flt Protected	0.950							0.979				
Satd. Flow (prot)	1543	1624	0	0	1577	0	0	1467	0	0	0	0
Flt Permitted	0.950							0.979				
Satd. Flow (perm)	1543	1624	0	0	1577	0	0	1467	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					16			109				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		923			2442			363			374	
Travel Time (s)		14.0			37.0			8.3			8.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Adj. Flow (vph)	172	204	0	0	189	51	254	1	340	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	204	0	0	240	0	0	595	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA		Perm	NA				
Protected Phases	7	4			8			2				
Permitted Phases							2					
Detector Phase	7	4			8		2	2				
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0		5.0	5.0				
Minimum Split (s)	12.0	22.9			22.9		22.9	22.9				
Total Split (s)	16.0	39.0			23.0		41.0	41.0				
Total Split (%)	20.0%	48.8%			28.8%		51.3%	51.3%				
Maximum Green (s)	12.0	34.1			18.1		36.1	36.1				
Yellow Time (s)	3.0	3.9			3.9		3.9	3.9				
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0				
Lost Time Adjust (s)	0.0	0.0			0.0			0.0				
Total Lost Time (s)	4.0	4.9			4.9			4.9				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	None			None		Min	Min				
Walk Time (s)		7.0			7.0		7.0	7.0				
Flash Dont Walk (s)		11.0			11.0		11.0	11.0				
Pedestrian Calls (#/hr)		0			0		0	0				

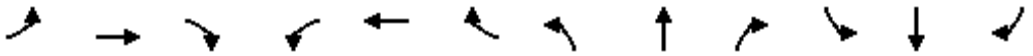
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	11.2	29.7			14.3			28.9				
Actuated g/C Ratio	0.16	0.43			0.21			0.42				
v/c Ratio	0.69	0.29			0.71			0.88				
Control Delay	46.9	15.6			37.6			31.4				
Queue Delay	0.0	0.0			0.0			0.0				
Total Delay	46.9	15.6			37.6			31.4				
LOS	D	B			D			C				
Approach Delay		29.9			37.6			31.4				
Approach LOS		C			D			C				
Queue Length 50th (ft)	77	60			96			196				
Queue Length 95th (ft)	#179	113			#179			#409				
Internal Link Dist (ft)		843			2362			283			294	
Turn Bay Length (ft)												
Base Capacity (vph)	281	841			445			854				
Starvation Cap Reductn	0	0			0			0				
Spillback Cap Reductn	0	0			0			0				
Storage Cap Reductn	0	0			0			0				
Reduced v/c Ratio	0.61	0.24			0.54			0.70				

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 68.8			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: SR-99 NB Ramps & Ave 18 1/2



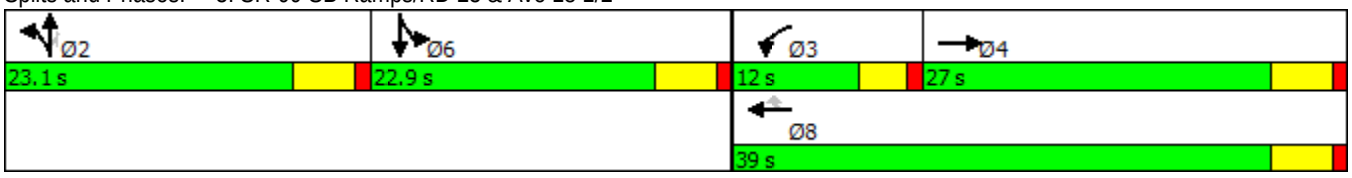


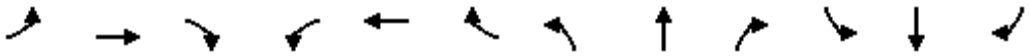
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	420	66	16	200	299	40	0	63	51	39	116
Future Volume (vph)	0	420	66	16	200	299	40	0	63	51	39	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850			0.850		0.924	
Flt Protected				0.950				0.950			0.988	
Satd. Flow (prot)	0	1595	0	1543	1624	1380	0	1543	1380	0	1483	0
Flt Permitted				0.950				0.950			0.988	
Satd. Flow (perm)	0	1595	0	1543	1624	1380	0	1543	1380	0	1483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				325			139		70	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		280			923			1456			470	
Travel Time (s)		4.2			14.0			33.1			10.7	
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
Heavy Vehicles (%)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Adj. Flow (vph)	0	457	72	17	217	325	43	0	68	55	42	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	529	0	17	217	325	0	43	68	0	223	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases						8			2			
Detector Phase		4		3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)		22.9		12.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	
Total Split (s)		27.0		12.0	39.0	39.0	23.1	23.1	23.1	22.9	22.9	
Total Split (%)		31.8%		14.1%	45.9%	45.9%	27.2%	27.2%	27.2%	26.9%	26.9%	
Maximum Green (s)		22.1		8.0	34.1	34.1	18.2	18.2	18.2	18.0	18.0	
Yellow Time (s)		3.9		3.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	
All-Red Time (s)		1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)		4.9		4.0	4.9	4.9		4.9	4.9		4.9	
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode		None		None	None	None	Min	Min	Min	Min	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)		22.7		6.3	24.5	24.5		7.3	7.3		11.3	
Actuated g/C Ratio		0.39		0.11	0.42	0.42		0.13	0.13		0.19	
v/c Ratio		0.84		0.10	0.32	0.42		0.22	0.23		0.65	
Control Delay		34.3		28.7	13.9	3.7		28.7	1.9		24.8	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		34.3		28.7	13.9	3.7		28.7	1.9		24.8	
LOS		C		C	B	A		C	A		C	
Approach Delay		34.3			8.4			12.3			24.8	
Approach LOS		C			A			B			C	
Queue Length 50th (ft)		145		5	47	0		13	0		45	
Queue Length 95th (ft)		#485		26	112	43		48	3		132	
Internal Link Dist (ft)		200			843			1376			390	
Turn Bay Length (ft)						75						
Base Capacity (vph)		627		217	977	959		495	537		519	
Starvation Cap Reductn		0		0	0	0		0	0		0	
Spillback Cap Reductn		0		0	0	0		0	0		0	
Storage Cap Reductn		0		0	0	0		0	0		0	
Reduced v/c Ratio		0.84		0.08	0.22	0.34		0.09	0.13		0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 58.1			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: SR-99 SB Ramps/RD 23 & Ave 18 1/2





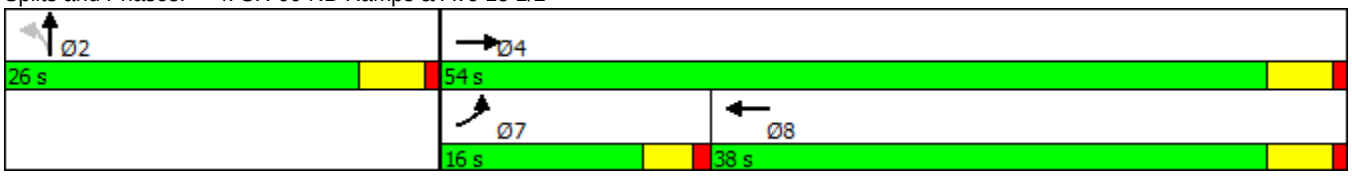
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	93	0	0	365	141	168	2	108	0	0	0
Future Volume (vph)	146	93	0	0	365	141	168	2	108	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.962			0.948				
Flt Protected	0.950							0.971				
Satd. Flow (prot)	1556	1638	0	0	1576	0	0	1508	0	0	0	0
Flt Permitted	0.950							0.971				
Satd. Flow (perm)	1556	1638	0	0	1576	0	0	1508	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					30			39				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		923			2442			363			374	
Travel Time (s)		14.0			37.0			8.3			8.5	
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
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Adj. Flow (vph)	159	101	0	0	397	153	183	2	117	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	101	0	0	550	0	0	302	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA		Perm	NA				
Protected Phases	7	4			8			2				
Permitted Phases							2					
Detector Phase	7	4			8		2	2				
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0		5.0	5.0				
Minimum Split (s)	12.0	22.9			22.9		22.9	22.9				
Total Split (s)	16.0	54.0			38.0		26.0	26.0				
Total Split (%)	20.0%	67.5%			47.5%		32.5%	32.5%				
Maximum Green (s)	12.0	49.1			33.1		21.1	21.1				
Yellow Time (s)	3.0	3.9			3.9		3.9	3.9				
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0				
Lost Time Adjust (s)	0.0	0.0			0.0			0.0				
Total Lost Time (s)	4.0	4.9			4.9			4.9				
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	None			None		Min	Min				
Walk Time (s)		7.0			7.0		7.0	7.0				
Flash Dont Walk (s)		11.0			11.0		11.0	11.0				
Pedestrian Calls (#/hr)		0			0		0	0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	10.9	42.1			27.1			16.7				
Actuated g/C Ratio	0.16	0.61			0.39			0.24				
v/c Ratio	0.65	0.10			0.86			0.77				
Control Delay	44.9	6.4			34.8			36.6				
Queue Delay	0.0	0.0			0.0			0.0				
Total Delay	44.9	6.4			34.8			36.6				
LOS	D	A			C			D				
Approach Delay		29.9			34.8			36.6				
Approach LOS		C			C			D				
Queue Length 50th (ft)	71	17			214			115				
Queue Length 95th (ft)	#160	37			#407			#229				
Internal Link Dist (ft)		843			2362			283			294	
Turn Bay Length (ft)												
Base Capacity (vph)	281	1197			801			506				
Starvation Cap Reductn	0	0			0			0				
Spillback Cap Reductn	0	0			0			0				
Storage Cap Reductn	0	0			0			0				
Reduced v/c Ratio	0.57	0.08			0.69			0.60				

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 69.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 34.2 Intersection LOS: C
Intersection Capacity Utilization 63.4% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: SR-99 NB Ramps & Ave 18 1/2



Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	398	389	127	301
Demand Flow Rate, veh/h	482	471	153	364
Vehicles Circulating, veh/h	255	60	647	393
Vehicles Exiting, veh/h	502	647	90	0
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.7	5.3	3.4	9.1
Approach LOS	B	A	A	A

Lane	Left	Left	Bypass	Left	Bypass	Left	Right
Designated Moves	TR	LT	R	LT	R	LT	R
Assumed Moves	TR	LT	R	LT	R	LT	R
RT Channelized			Free		Free		
Lane Util	1.000	1.000		1.000		0.651	0.349
Critical Headway, s	5.193	5.193		5.193		5.193	5.193
Entry Flow, veh/h	482	333	138	60	93	237	127
Cap Entry Lane, veh/h	876	1064	2299	592	2299	763	763
Entry HV Adj Factor	0.826	0.827	0.826	0.833	0.826	0.828	0.827
Flow Entry, veh/h	398	275	114	50	77	196	105
Cap Entry, veh/h	723	880	1900	493	1900	632	631
V/C Ratio	0.550	0.313	0.060	0.101	0.041	0.311	0.167
Control Delay, s/veh	13.7	7.5	0.0	8.6	0.0	9.8	7.7
LOS	B	A	A	A	A	A	A
95th %tile Queue, veh	3	1	0	0	0	1	1

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	376	240	595	0
Demand Flow Rate, veh/h	440	281	696	0
Vehicles Circulating, veh/h	0	499	440	518
Vehicles Exiting, veh/h	518	637	0	262
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.0	12.4	13.8	0.0
Approach LOS	A	B	B	-

Lane	Left	Left	Left	Right	Left
Designated Moves	LT	TR	LT	R	LR
Assumed Moves	LT	TR	LT	R	LR
RT Channelized					
Lane Util	1.000	1.000	0.428	0.572	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	440	281	298	398	0
Cap Entry Lane, veh/h	1130	686	728	728	673
Entry HV Adj Factor	0.855	0.854	0.855	0.854	1.000
Flow Entry, veh/h	376	240	255	340	0
Cap Entry, veh/h	966	586	622	622	673
V/C Ratio	0.389	0.410	0.409	0.547	0.000
Control Delay, s/veh	8.0	12.4	11.8	15.3	5.3
LOS	A	B	B	C	A
95th %tile Queue, veh	2	2	2	3	0

Intersection	
Intersection Delay, s/veh	8.0
Intersection LOS	A

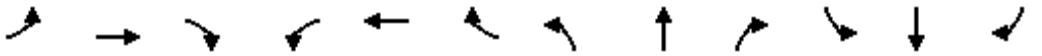
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	529	559	111	223
Demand Flow Rate, veh/h	619	654	130	260
Vehicles Circulating, veh/h	133	50	599	324
Vehicles Exiting, veh/h	451	599	153	0
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.2	2.7	3.0	9.1
Approach LOS	B	A	A	A

Lane	Left	Left	Bypass	Left	Bypass	Left
Designated Moves	TR	LT	R	LT	R	LTR
Assumed Moves	TR	LT	R	LT	R	LTR
RT Channelized			Free		Free	
Lane Util	1.000	1.000		1.000		1.000
Critical Headway, s	5.193	5.193		5.193		5.193
Entry Flow, veh/h	619	274	380	50	80	260
Cap Entry Lane, veh/h	989	1075	2223	621	2223	817
Entry HV Adj Factor	0.855	0.854	0.855	0.860	0.855	0.857
Flow Entry, veh/h	529	234	325	43	68	223
Cap Entry, veh/h	846	918	1900	534	1900	701
V/C Ratio	0.626	0.255	0.171	0.081	0.036	0.318
Control Delay, s/veh	14.2	6.5	0.0	7.7	0.0	9.1
LOS	B	A	A	A	A	A
95th %tile Queue, veh	5	1	1	0	0	1

Intersection	
Intersection Delay, s/veh	19.3
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	260	550	302	0
Demand Flow Rate, veh/h	301	638	350	0
Vehicles Circulating, veh/h	0	398	301	673
Vehicles Exiting, veh/h	673	253	0	363
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.4	31.9	7.5	0.0
Approach LOS	A	D	A	-

Lane	Left	Left	Left	Right	Left
Designated Moves	LT	TR	LT	R	LR
Assumed Moves	LT	TR	LT	R	LR
RT Channelized					
Lane Util	1.000	1.000	0.611	0.389	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	301	638	214	136	0
Cap Entry Lane, veh/h	1130	759	836	836	576
Entry HV Adj Factor	0.863	0.863	0.863	0.860	1.000
Flow Entry, veh/h	260	550	185	117	0
Cap Entry, veh/h	976	655	722	719	576
V/C Ratio	0.266	0.841	0.256	0.163	0.000
Control Delay, s/veh	6.4	31.9	8.0	6.8	6.2
LOS	A	D	A	A	A
95th %tile Queue, veh	1	9	1	1	0



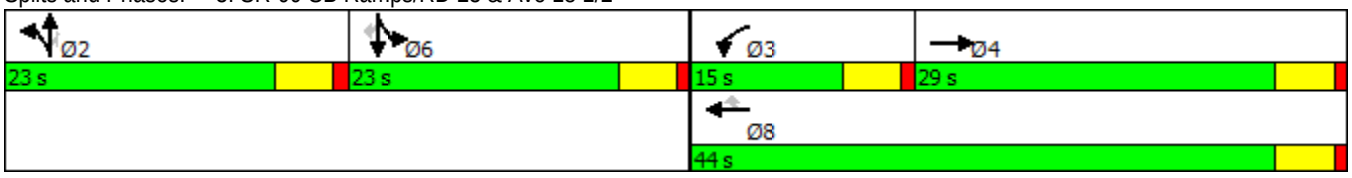
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	322	51	143	229	100	61	0	286	149	147	92
Future Volume (vph)	0	322	51	143	229	100	61	0	286	149	147	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850			0.850			0.850
Flt Protected				0.950				0.950		0.950		
Satd. Flow (prot)	0	1542	0	1492	1570	1335	0	1492	1335	1492	1570	1335
Flt Permitted				0.950				0.950		0.950		
Satd. Flow (perm)	0	1542	0	1492	1570	1335	0	1492	1335	1492	1570	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				114			325			142
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		280			923			1456			470	
Travel Time (s)		4.2			14.0			33.1			10.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Adj. Flow (vph)	0	366	58	163	260	114	69	0	325	169	167	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	424	0	163	260	114	0	69	325	169	167	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases						8			2			6
Detector Phase		4		3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		22.9		12.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
Total Split (s)		29.0		15.0	44.0	44.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (%)		32.2%		16.7%	48.9%	48.9%	25.6%	25.6%	25.6%	25.6%	25.6%	25.6%
Maximum Green (s)		24.1		10.1	39.1	39.1	18.1	18.1	18.1	18.1	18.1	18.1
Yellow Time (s)		3.9		3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)		1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.9		4.9	4.9	4.9		4.9	4.9	4.9	4.9	4.9
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode		None		None	None	None	Min	Min	Min	Min	Min	Min

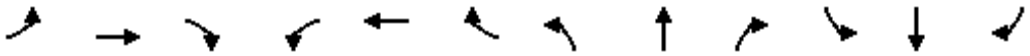
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)		24.3		10.2	39.5	39.5		10.0	10.0	13.6	13.6	13.6
Actuated g/C Ratio		0.31		0.13	0.51	0.51		0.13	0.13	0.17	0.17	0.17
v/c Ratio		0.87		0.84	0.33	0.16		0.36	0.72	0.65	0.61	0.30
Control Delay		47.6		71.1	14.7	3.7		37.0	13.7	43.0	40.6	4.9
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		47.6		71.1	14.7	3.7		37.0	13.7	43.0	40.6	4.9
LOS		D		E	B	A		D	B	D	D	A
Approach Delay		47.6			29.5			17.7			33.0	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		184		77	68	0		31	0	75	74	0
Queue Length 95th (ft)		#420		#211	155	28		69	67	150	146	21
Internal Link Dist (ft)		200			843			1376			390	
Turn Bay Length (ft)						75						
Base Capacity (vph)		487		195	795	733		350	561	350	368	421
Starvation Cap Reductn		0		0	0	0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0		0	0	0	0	0
Reduced v/c Ratio		0.87		0.84	0.33	0.16		0.20	0.58	0.48	0.45	0.25

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 77.9
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 32.0 Intersection LOS: C
Intersection Capacity Utilization 58.3% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SR-99 SB Ramps/RD 23 & Ave 18 1/2





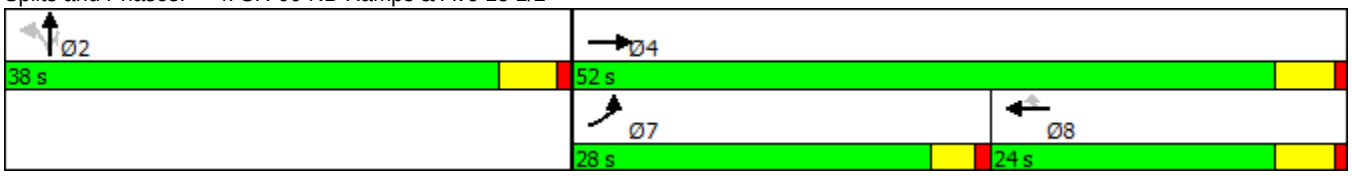
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	199	0	0	197	46	332	1	306	0	0	0
Future Volume (vph)	260	199	0	0	197	46	332	1	306	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1543	1624	0	0	1624	1380	0	1548	1380	0	0	0
Flt Permitted	0.950							0.953				
Satd. Flow (perm)	1543	1624	0	0	1624	1380	0	1548	1380	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						72			340			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		923			2442			363			374	
Travel Time (s)		14.0			37.0			8.3			8.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Adj. Flow (vph)	289	221	0	0	219	51	369	1	340	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	221	0	0	219	51	0	370	340	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Detector Phase	7	4			8	8	2	2	2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Minimum Split (s)	12.0	22.9			22.9	22.9	22.9	22.9	22.9			
Total Split (s)	28.0	52.0			24.0	24.0	38.0	38.0	38.0			
Total Split (%)	31.1%	57.8%			26.7%	26.7%	42.2%	42.2%	42.2%			
Maximum Green (s)	24.0	47.1			19.1	19.1	33.1	33.1	33.1			
Yellow Time (s)	3.0	3.9			3.9	3.9	3.9	3.9	3.9			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	4.0	4.9			4.9	4.9		4.9	4.9			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None			None	None	Min	Min	Min			
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0			
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			

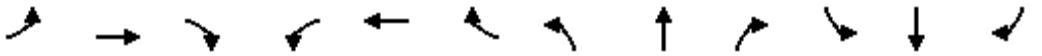
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	18.3	37.1			14.6	14.6		23.2	23.2			
Actuated g/C Ratio	0.26	0.52			0.21	0.21		0.33	0.33			
v/c Ratio	0.73	0.26			0.66	0.15		0.73	0.50			
Control Delay	38.5	11.4			39.2	5.4		31.6	5.3			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	38.5	11.4			39.2	5.4		31.6	5.3			
LOS	D	B			D	A		C	A			
Approach Delay		26.7			32.8			19.0				
Approach LOS		C			C			B				
Queue Length 50th (ft)	118	51			91	0		144	0			
Queue Length 95th (ft)	#246	109			191	19		272	55			
Internal Link Dist (ft)		843			2362			283			294	
Turn Bay Length (ft)												
Base Capacity (vph)	560	1136			469	450		775	861			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.52	0.19			0.47	0.11		0.48	0.39			

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 70.9
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 54.7% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: SR-99 NB Ramps & Ave 18 1/2





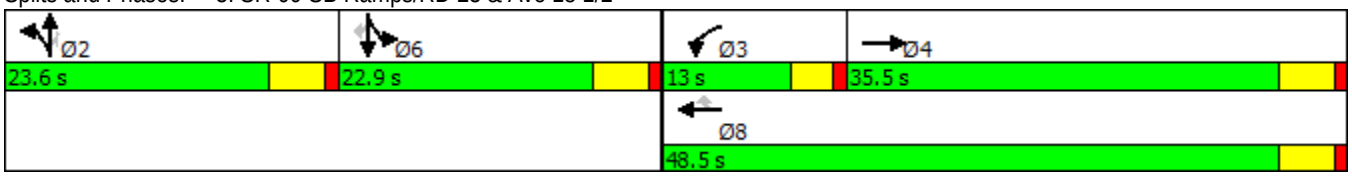
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	420	91	137	200	299	64	0	278	51	153	116
Future Volume (vph)	0	420	91	137	200	299	64	0	278	51	153	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976				0.850			0.850			0.850
Flt Protected				0.950				0.950		0.950		
Satd. Flow (prot)	0	1585	0	1543	1624	1380	0	1543	1380	1543	1624	1380
Flt Permitted				0.950				0.950		0.950		
Satd. Flow (perm)	0	1585	0	1543	1624	1380	0	1543	1380	1543	1624	1380
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				325			302			126
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		280			923			1456			470	
Travel Time (s)		4.2			14.0			33.1			10.7	
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
Heavy Vehicles (%)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Adj. Flow (vph)	0	457	99	149	217	325	70	0	302	55	166	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	556	0	149	217	325	0	70	302	55	166	126
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases						8			2			6
Detector Phase		4		3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		22.9		12.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
Total Split (s)		35.5		13.0	48.5	48.5	23.6	23.6	23.6	22.9	22.9	22.9
Total Split (%)		37.4%		13.7%	51.1%	51.1%	24.8%	24.8%	24.8%	24.1%	24.1%	24.1%
Maximum Green (s)		30.6		9.0	43.6	43.6	18.7	18.7	18.7	18.0	18.0	18.0
Yellow Time (s)		3.9		3.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)		1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.9		4.0	4.9	4.9		4.9	4.9	4.9	4.9	4.9
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode		None		None	None	None	Min	Min	Min	Min	Min	Min

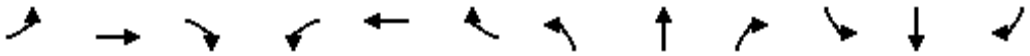
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)		30.9		9.1	44.0	44.0		9.9	9.9	13.1	13.1	13.1
Actuated g/C Ratio		0.38		0.11	0.54	0.54		0.12	0.12	0.16	0.16	0.16
v/c Ratio		0.92		0.87	0.25	0.36		0.38	0.70	0.22	0.64	0.39
Control Delay		48.7		82.5	12.8	3.0		39.5	13.8	32.9	44.4	10.0
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		48.7		82.5	12.8	3.0		39.5	13.8	32.9	44.4	10.0
LOS		D		F	B	A		D	B	C	D	A
Approach Delay		48.7			23.2			18.6			30.1	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		256		75	54	0		34	0	24	79	0
Queue Length 95th (ft)		#570		#216	129	45		75	73	62	156	47
Internal Link Dist (ft)		200			843			1376			390	
Turn Bay Length (ft)						75						
Base Capacity (vph)		605		171	873	892		355	550	342	360	404
Starvation Cap Reductn		0		0	0	0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0		0	0	0	0	0
Reduced v/c Ratio		0.92		0.87	0.25	0.36		0.20	0.55	0.16	0.46	0.31

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 81.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 30.8 Intersection LOS: C
Intersection Capacity Utilization 65.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SR-99 SB Ramps/RD 23 & Ave 18 1/2





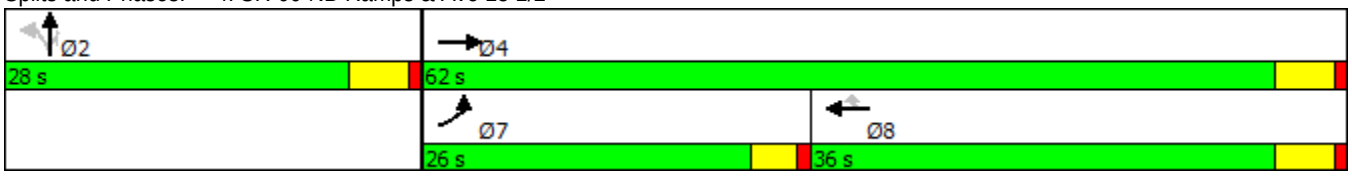
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	254	113	0	0	396	141	258	2	108	0	0	0
Future Volume (vph)	254	113	0	0	396	141	258	2	108	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1556	1638	0	0	1638	1392	0	1561	1392	0	0	0
Flt Permitted	0.950							0.953				
Satd. Flow (perm)	1556	1638	0	0	1638	1392	0	1561	1392	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						153			117			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		923			2442			363			374	
Travel Time (s)		14.0			37.0			8.3			8.5	
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
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Adj. Flow (vph)	276	123	0	0	430	153	280	2	117	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	123	0	0	430	153	0	282	117	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Detector Phase	7	4			8	8	2	2	2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Minimum Split (s)	12.0	22.9			22.9	22.9	22.9	22.9	22.9			
Total Split (s)	26.0	62.0			36.0	36.0	28.0	28.0	28.0			
Total Split (%)	28.9%	68.9%			40.0%	40.0%	31.1%	31.1%	31.1%			
Maximum Green (s)	22.0	57.1			31.1	31.1	23.1	23.1	23.1			
Yellow Time (s)	3.0	3.9			3.9	3.9	3.9	3.9	3.9			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	4.0	4.9			4.9	4.9		4.9	4.9			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None			None	None	Min	Min	Min			
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0			
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	17.9	46.7			24.5	24.5		18.3	18.3			
Actuated g/C Ratio	0.24	0.62			0.33	0.33		0.24	0.24			
v/c Ratio	0.75	0.12			0.81	0.27		0.74	0.27			
Control Delay	42.9	6.6			37.6	5.3		41.7	7.5			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	42.9	6.6			37.6	5.3		41.7	7.5			
LOS	D	A			D	A		D	A			
Approach Delay		31.7			29.1			31.7				
Approach LOS		C			C			C				
Queue Length 50th (ft)	131	22			196	0		134	0			
Queue Length 95th (ft)	#256	46			#356	40		#252	41			
Internal Link Dist (ft)		843			2362			283			294	
Turn Bay Length (ft)												
Base Capacity (vph)	480	1257			714	693		505	530			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.57	0.10			0.60	0.22		0.56	0.22			

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 30.6 Intersection LOS: C
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: SR-99 NB Ramps & Ave 18 1/2



Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	424	537	394	441
Demand Flow Rate, veh/h	513	650	476	533
Vehicles Circulating, veh/h	603	83	647	595
Vehicles Exiting, veh/h	525	647	469	0
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	36.9	8.4	1.6	19.4
Approach LOS	E	A	A	C

Lane	Left	Left	Bypass	Left	Bypass	Left	Right
Designated Moves	TR	LT	R	LT	R	LT	R
Assumed Moves	TR	LT	R	LT	R	LT	R
RT Channelized			Free		Free		
Lane Util	1.000	1.000		1.000		0.762	0.238
Critical Headway, s	5.193	5.193		5.193		5.193	5.193
Entry Flow, veh/h	513	512	138	83	393	406	127
Cap Entry Lane, veh/h	618	1040	2299	592	2299	623	623
Entry HV Adj Factor	0.827	0.827	0.826	0.831	0.826	0.827	0.827
Flow Entry, veh/h	424	423	114	69	325	336	105
Cap Entry, veh/h	511	860	1900	492	1900	516	515
V/C Ratio	0.830	0.492	0.060	0.140	0.171	0.651	0.204
Control Delay, s/veh	36.9	10.6	0.0	9.2	0.0	22.3	9.8
LOS	E	B	A	A	A	C	A
95th %tile Queue, veh	8	3	0	0	1	5	1

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	2	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	510	270	710	0
Demand Flow Rate, veh/h	597	316	831	0
Vehicles Circulating, veh/h	0	771	597	688
Vehicles Exiting, veh/h	688	657	0	399
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.5	16.4	22.8	0.0
Approach LOS	B	C	C	-

Lane	Left	Left	Right	Left	Right	Left
Designated Moves	LT	LT	R	LT	R	LR
Assumed Moves	LT	LT	R	LT	R	LR
RT Channelized						
Lane Util	1.000	0.810	0.190	0.521	0.479	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	597	256	60	433	398	0
Cap Entry Lane, veh/h	1130	523	523	622	622	568
Entry HV Adj Factor	0.855	0.855	0.850	0.854	0.854	1.000
Flow Entry, veh/h	510	219	51	370	340	0
Cap Entry, veh/h	966	447	444	531	531	568
V/C Ratio	0.528	0.490	0.115	0.696	0.640	0.000
Control Delay, s/veh	10.5	18.0	9.7	24.3	21.2	6.3
LOS	B	C	A	C	C	A
95th %tile Queue, veh	3	3	0	5	4	0

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	556	691	372	347
Demand Flow Rate, veh/h	651	808	435	405
Vehicles Circulating, veh/h	432	82	599	510
Vehicles Exiting, veh/h	483	599	484	0
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	39.0	4.7	1.6	17.9
Approach LOS	E	A	A	C

Lane	Left	Left	Bypass	Left	Bypass	Left
Designated Moves	TR	LT	R	LT	R	LTR
Assumed Moves	TR	LT	R	LT	R	LTR
RT Channelized			Free		Free	
Lane Util	1.000	1.000		1.000		1.000
Critical Headway, s	5.193	5.193		5.193		5.193
Entry Flow, veh/h	651	428	380	82	353	405
Cap Entry Lane, veh/h	734	1041	2223	621	2223	679
Entry HV Adj Factor	0.854	0.855	0.855	0.854	0.855	0.856
Flow Entry, veh/h	556	366	325	70	302	347
Cap Entry, veh/h	627	890	1900	530	1900	581
V/C Ratio	0.887	0.411	0.171	0.132	0.159	0.597
Control Delay, s/veh	39.0	8.9	0.0	8.5	0.0	17.9
LOS	E	A	A	A	A	C
95th %tile Queue, veh	11	2	1	0	1	4

Intersection	
Intersection Delay, s/veh	19.1
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	2	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	399	583	399	0
Demand Flow Rate, veh/h	463	676	463	0
Vehicles Circulating, veh/h	0	647	463	824
Vehicles Exiting, veh/h	824	279	0	499
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.3	31.5	11.7	0.0
Approach LOS	A	D	B	-

Lane	Left	Left	Right	Left	Right	Left
Designated Moves	LT	LT	R	LT	R	LR
Assumed Moves	LT	LT	R	LT	R	LR
RT Channelized						
Lane Util	1.000	0.738	0.262	0.706	0.294	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	463	499	177	327	136	0
Cap Entry Lane, veh/h	1130	592	592	711	711	496
Entry HV Adj Factor	0.862	0.862	0.864	0.862	0.860	1.000
Flow Entry, veh/h	399	430	153	282	117	0
Cap Entry, veh/h	974	510	511	613	612	496
V/C Ratio	0.410	0.843	0.299	0.460	0.191	0.000
Control Delay, s/veh	8.3	38.7	11.5	13.1	8.2	7.3
LOS	A	E	B	B	A	A
95th %tile Queue, veh	2	9	1	2	1	0

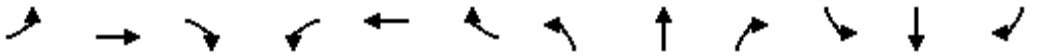
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	322	289	217	138	13
Future Vol, veh/h	16	322	289	217	138	13
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	23	23	23	23	23	23
Mvmt Flow	17	350	314	236	150	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	319	0	-	0	709	324
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	4.33	-	-	-	6.63	6.43
Critical Hdwy Stg 1	-	-	-	-	5.63	-
Critical Hdwy Stg 2	-	-	-	-	5.63	-
Follow-up Hdwy	2.407	-	-	-	3.707	3.507
Pot Cap-1 Maneuver	1132	-	-	-	371	671
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1127	-	-	-	360	665
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1127	-	-	-	375
HCM Lane V/C Ratio	0.015	-	-	-	0.438
HCM Control Delay (s)	8.2	0	-	-	21.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	2.2

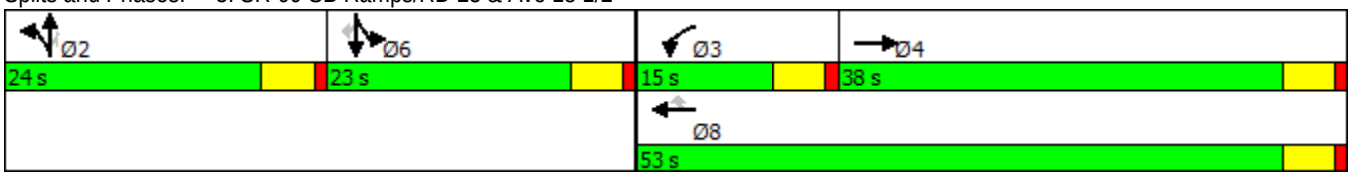


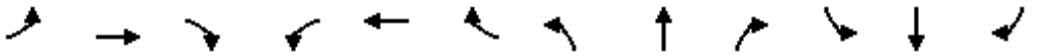
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	413	66	143	306	121	65	0	286	153	147	120
Future Volume (vph)	0	413	66	143	306	121	65	0	286	153	147	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981				0.850			0.850			0.850
Flt Protected				0.950				0.950		0.950		
Satd. Flow (prot)	0	1540	0	1492	1570	1335	0	1492	1335	1492	1570	1335
Flt Permitted				0.950				0.950		0.950		
Satd. Flow (perm)	0	1540	0	1492	1570	1335	0	1492	1335	1492	1570	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				110			311			130
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		280			923			1456			470	
Travel Time (s)		4.2			14.0			33.1			10.7	
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
Heavy Vehicles (%)	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Adj. Flow (vph)	0	449	72	155	333	132	71	0	311	166	160	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	521	0	155	333	132	0	71	311	166	160	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases						8			2			6
Detector Phase		4		3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		22.9		12.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
Total Split (s)		38.0		15.0	53.0	53.0	24.0	24.0	24.0	23.0	23.0	23.0
Total Split (%)		38.0%		15.0%	53.0%	53.0%	24.0%	24.0%	24.0%	23.0%	23.0%	23.0%
Maximum Green (s)		33.1		10.1	48.1	48.1	19.1	19.1	19.1	18.1	18.1	18.1
Yellow Time (s)		3.9		3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)		1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.9		4.9	4.9	4.9		4.9	4.9	4.9	4.9	4.9
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode		None		None	None	None	Min	Min	Min	Min	Min	Min

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)		33.4		10.2	48.5	48.5		10.4	10.4	14.2	14.2	14.2
Actuated g/C Ratio		0.38		0.12	0.55	0.55		0.12	0.12	0.16	0.16	0.16
v/c Ratio		0.88		0.90	0.38	0.17		0.40	0.72	0.69	0.63	0.40
Control Delay		45.8		89.3	14.5	4.3		43.3	14.7	51.0	46.9	10.4
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		45.8		89.3	14.5	4.3		43.3	14.7	51.0	46.9	10.4
LOS		D		F	B	A		D	B	D	D	B
Approach Delay		45.8			31.0			20.0			38.0	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)		258		85	97	5		37	0	86	82	0
Queue Length 95th (ft)		#551		#233	209	39		80	78	169	162	50
Internal Link Dist (ft)		200			843			1376			390	
Turn Bay Length (ft)						75						
Base Capacity (vph)		589		172	866	785		326	535	309	326	380
Starvation Cap Reductn		0		0	0	0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0		0	0	0	0	0
Reduced v/c Ratio		0.88		0.90	0.38	0.17		0.22	0.58	0.54	0.49	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87.9			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 34.4		Intersection LOS: C	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: SR-99 SB Ramps/RD 23 & Ave 18 1/2



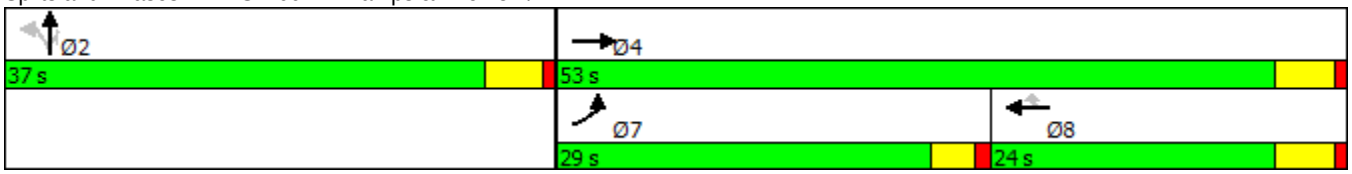


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	211	0	0	198	54	332	2	329	0	0	0
Future Volume (vph)	260	211	0	0	198	54	332	2	329	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1543	1624	0	0	1624	1380	0	1548	1380	0	0	0
Flt Permitted	0.950							0.953				
Satd. Flow (perm)	1543	1624	0	0	1624	1380	0	1548	1380	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						72			358			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		923			2442			363			374	
Travel Time (s)		14.0			37.0			8.3			8.5	
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
Heavy Vehicles (%)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Adj. Flow (vph)	283	229	0	0	215	59	361	2	358	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	283	229	0	0	215	59	0	363	358	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Detector Phase	7	4			8	8	2	2	2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Minimum Split (s)	12.0	22.9			22.9	22.9	22.9	22.9	22.9			
Total Split (s)	29.0	53.0			24.0	24.0	37.0	37.0	37.0			
Total Split (%)	32.2%	58.9%			26.7%	26.7%	41.1%	41.1%	41.1%			
Maximum Green (s)	25.0	48.1			19.1	19.1	32.1	32.1	32.1			
Yellow Time (s)	3.0	3.9			3.9	3.9	3.9	3.9	3.9			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	4.0	4.9			4.9	4.9		4.9	4.9			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None			None	None	Min	Min	Min			
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0			
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	18.1	36.8			14.4	14.4		22.7	22.7			
Actuated g/C Ratio	0.26	0.52			0.21	0.21		0.32	0.32			
v/c Ratio	0.71	0.27			0.64	0.17		0.72	0.52			
Control Delay	36.9	11.2			38.5	7.2		31.6	5.5			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	36.9	11.2			38.5	7.2		31.6	5.5			
LOS	D	B			D	A		C	A			
Approach Delay		25.4			31.7			18.6				
Approach LOS		C			C			B				
Queue Length 50th (ft)	113	51			87	0		137	0			
Queue Length 95th (ft)	230	110			187	25		270	57			
Internal Link Dist (ft)		843			2362			283			294	
Turn Bay Length (ft)												
Base Capacity (vph)	593	1165			477	456		764	862			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.48	0.20			0.45	0.13		0.48	0.42			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.1			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: SR-99 NB Ramps & Ave 18 1/2



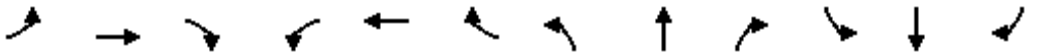
Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	510	227	240	167	6
Future Vol, veh/h	12	510	227	240	167	6
Conflicting Peds, #/hr	5	0	0	5	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	17	17	17	17	17
Mvmt Flow	13	554	247	261	182	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	252	0	-	0	837	257
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	4.27	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.353	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1231	-	-	-	317	747
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1225	-	-	-	309	740
Mov Cap-2 Maneuver	-	-	-	-	309	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	519	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	32
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1225	-	-	-	315
HCM Lane V/C Ratio	0.011	-	-	-	0.597
HCM Control Delay (s)	8	0	-	-	32
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	3.6



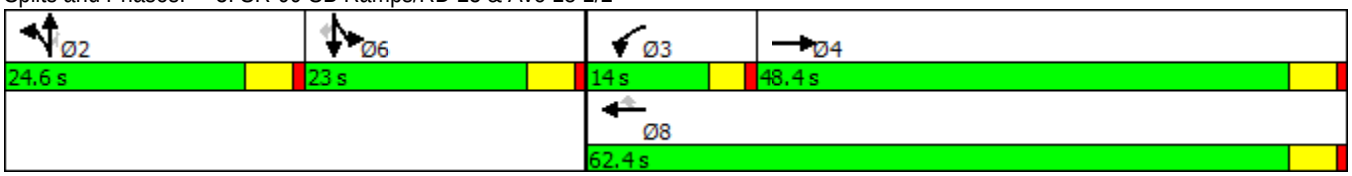
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	531	91	137	259	323	72	0	278	67	153	216
Future Volume (vph)	0	531	91	137	259	323	72	0	278	67	153	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980				0.850			0.850			0.850
Flt Protected				0.950				0.950		0.950		
Satd. Flow (prot)	0	1591	0	1543	1624	1380	0	1543	1380	1543	1624	1380
Flt Permitted				0.950				0.950		0.950		
Satd. Flow (perm)	0	1591	0	1543	1624	1380	0	1543	1380	1543	1624	1380
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				341			302			235
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		280			923			1456			470	
Travel Time (s)		4.2			14.0			33.1			10.7	
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
Heavy Vehicles (%)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Adj. Flow (vph)	0	577	99	149	282	351	78	0	302	73	166	235
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	676	0	149	282	351	0	78	302	73	166	235
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases						8			2			6
Detector Phase		4		3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)		22.9		12.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
Total Split (s)		48.4		14.0	62.4	62.4	24.6	24.6	24.6	23.0	23.0	23.0
Total Split (%)		44.0%		12.7%	56.7%	56.7%	22.4%	22.4%	22.4%	20.9%	20.9%	20.9%
Maximum Green (s)		43.5		10.0	57.5	57.5	19.7	19.7	19.7	18.1	18.1	18.1
Yellow Time (s)		3.9		3.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
All-Red Time (s)		1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.9		4.0	4.9	4.9		4.9	4.9	4.9	4.9	4.9
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode		None		None	None	None	Min	Min	Min	Min	Min	Min

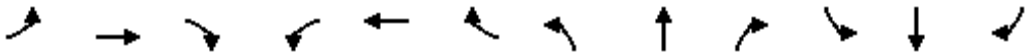
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)		43.8		10.1	57.8	57.8		11.0	11.0	14.6	14.6	14.6
Actuated g/C Ratio		0.45		0.10	0.59	0.59		0.11	0.11	0.15	0.15	0.15
v/c Ratio		0.95		0.94	0.29	0.37		0.45	0.72	0.32	0.69	0.58
Control Delay		51.6		105.8	12.5	2.8		49.9	15.1	42.1	55.5	11.6
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		51.6		105.8	12.5	2.8		49.9	15.1	42.1	55.5	11.6
LOS		D		F	B	A		D	B	D	E	B
Approach Delay		51.6			25.9			22.3			31.7	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)		395		95	83	2		47	0	41	98	0
Queue Length 95th (ft)		#746		#244	166	47		94	80	90	182	71
Internal Link Dist (ft)		200			843			1376			390	
Turn Bay Length (ft)						75						
Base Capacity (vph)		713		158	956	952		311	519	285	301	447
Starvation Cap Reductn		0		0	0	0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0		0	0	0	0	0
Reduced v/c Ratio		0.95		0.94	0.29	0.37		0.25	0.58	0.26	0.55	0.53

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 98.2
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 34.0 Intersection LOS: C
Intersection Capacity Utilization 71.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SR-99 SB Ramps/RD 23 & Ave 18 1/2





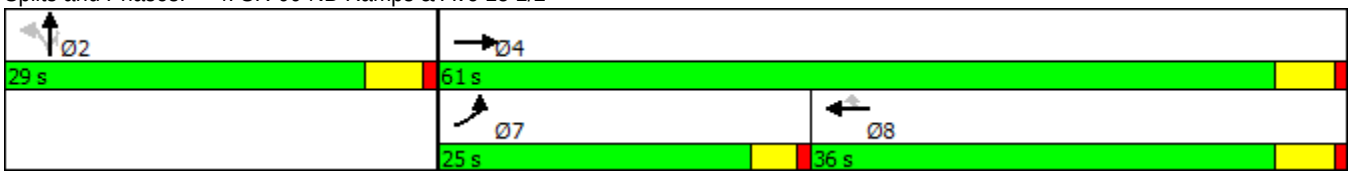
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	254	134	0	0	396	148	258	4	124	0	0	0
Future Volume (vph)	254	134	0	0	396	148	258	4	124	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.953				
Satd. Flow (prot)	1556	1638	0	0	1638	1392	0	1561	1392	0	0	0
Flt Permitted	0.950							0.953				
Satd. Flow (perm)	1556	1638	0	0	1638	1392	0	1561	1392	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						161			135			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		923			2442			363			374	
Travel Time (s)		14.0			37.0			8.3			8.5	
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
Heavy Vehicles (%)	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Adj. Flow (vph)	276	146	0	0	430	161	280	4	135	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	146	0	0	430	161	0	284	135	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Detector Phase	7	4			8	8	2	2	2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Minimum Split (s)	12.0	22.9			22.9	22.9	22.9	22.9	22.9			
Total Split (s)	25.0	61.0			36.0	36.0	29.0	29.0	29.0			
Total Split (%)	27.8%	67.8%			40.0%	40.0%	32.2%	32.2%	32.2%			
Maximum Green (s)	21.0	56.1			31.1	31.1	24.1	24.1	24.1			
Yellow Time (s)	3.0	3.9			3.9	3.9	3.9	3.9	3.9			
All-Red Time (s)	1.0	1.0			1.0	1.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	4.0	4.9			4.9	4.9		4.9	4.9			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None			None	None	Min	Min	Min			
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0			
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	17.8	46.5			24.5	24.5		18.5	18.5			
Actuated g/C Ratio	0.24	0.62			0.32	0.32		0.25	0.25			
v/c Ratio	0.75	0.14			0.81	0.29		0.74	0.30			
Control Delay	43.9	7.0			37.7	5.2		40.8	7.2			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	43.9	7.0			37.7	5.2		40.8	7.2			
LOS	D	A			D	A		D	A			
Approach Delay		31.2			28.8			30.0				
Approach LOS		C			C			C				
Queue Length 50th (ft)	130	27			196	0		135	0			
Queue Length 95th (ft)	#266	56			#356	41		234	42			
Internal Link Dist (ft)		843			2362			283			294	
Turn Bay Length (ft)												
Base Capacity (vph)	457	1240			713	697		527	559			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.60	0.12			0.60	0.23		0.54	0.24			

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 29.8 Intersection LOS: C
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: SR-99 NB Ramps & Ave 18 1/2



Intersection	
Intersection Delay, s/veh	26.3
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	521	620	382	456
Demand Flow Rate, veh/h	630	751	462	552
Vehicles Circulating, veh/h	583	86	744	677
Vehicles Exiting, veh/h	646	744	469	0
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	67.3	9.8	1.9	22.0
Approach LOS	F	A	A	C

Lane	Left	Left	Bypass	Left	Bypass	Left	Right
Designated Moves	TR	LT	R	LT	R	LT	R
Assumed Moves	TR	LT	R	LT	R	LT	R
RT Channelized			Free		Free		
Lane Util	1.000	1.000		1.000		0.716	0.284
Critical Headway, s	5.193	5.193		5.193		5.193	5.193
Entry Flow, veh/h	630	591	160	86	376	395	157
Cap Entry Lane, veh/h	631	1037	2299	537	2299	574	574
Entry HV Adj Factor	0.827	0.826	0.826	0.826	0.826	0.826	0.828
Flow Entry, veh/h	521	488	132	71	311	326	130
Cap Entry, veh/h	521	856	1900	443	1900	474	475
V/C Ratio	0.999	0.570	0.069	0.160	0.164	0.688	0.273
Control Delay, s/veh	67.3	12.5	0.0	10.5	0.0	26.1	11.8
LOS	F	B	A	B	A	D	B
95th %tile Queue, veh	14	4	0	1	1	5	1

Intersection	
Intersection Delay, s/veh	17.6
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	2	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	512	274	721	0
Demand Flow Rate, veh/h	599	321	843	0
Vehicles Circulating, veh/h	0	755	599	674
Vehicles Exiting, veh/h	674	687	0	402
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.5	15.6	23.3	0.0
Approach LOS	B	C	C	-

Lane	Left	Left	Right	Left	Right	Left
Designated Moves	LT	LT	R	LT	R	LR
Assumed Moves	LT	LT	R	LT	R	LR
RT Channelized						
Lane Util	1.000	0.785	0.215	0.503	0.497	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	599	252	69	424	419	0
Cap Entry Lane, veh/h	1130	531	531	621	621	576
Entry HV Adj Factor	0.855	0.855	0.855	0.855	0.854	1.000
Flow Entry, veh/h	512	215	59	363	358	0
Cap Entry, veh/h	966	454	454	531	530	576
V/C Ratio	0.530	0.474	0.130	0.683	0.675	0.000
Control Delay, s/veh	10.5	17.3	9.8	23.6	23.1	6.3
LOS	B	C	A	C	C	A
95th %tile Queue, veh	3	2	0	5	5	0

Intersection	
Intersection Delay, s/veh	38.2
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	676	782	380	474
Demand Flow Rate, veh/h	791	915	444	554
Vehicles Circulating, veh/h	453	91	760	595
Vehicles Exiting, veh/h	696	760	484	0
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	92.1	5.7	2.1	43.9
Approach LOS	F	A	A	E

Lane	Left	Left	Bypass	Left	Bypass	Left
Designated Moves	TR	LT	R	LT	R	LTR
Assumed Moves	TR	LT	R	LT	R	LTR
RT Channelized			Free		Free	
Lane Util	1.000	1.000		1.000		1.000
Critical Headway, s	5.193	5.193		5.193		5.193
Entry Flow, veh/h	791	504	411	91	353	554
Cap Entry Lane, veh/h	718	1032	2223	528	2223	623
Entry HV Adj Factor	0.855	0.855	0.855	0.857	0.855	0.855
Flow Entry, veh/h	676	431	351	78	302	474
Cap Entry, veh/h	614	882	1900	453	1900	533
V/C Ratio	1.101	0.489	0.185	0.172	0.159	0.889
Control Delay, s/veh	92.1	10.4	0.0	10.5	0.0	43.9
LOS	F	B	A	B	A	E
95th %tile Queue, veh	20	3	1	1	1	10

Intersection	
Intersection Delay, s/veh	19.2
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	2	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	422	591	419	0
Demand Flow Rate, veh/h	489	686	487	0
Vehicles Circulating, veh/h	0	650	489	824
Vehicles Exiting, veh/h	824	326	0	512
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.6	31.7	12.2	0.0
Approach LOS	A	D	B	-

Lane	Left	Left	Right	Left	Right	Left
Designated Moves	LT	LT	R	LT	R	LR
Assumed Moves	LT	LT	R	LT	R	LR
RT Channelized						
Lane Util	1.000	0.727	0.273	0.678	0.322	1.000
Critical Headway, s	5.193	5.193	5.193	5.193	5.193	5.193
Entry Flow, veh/h	489	499	187	330	157	0
Cap Entry Lane, veh/h	1130	590	590	693	693	496
Entry HV Adj Factor	0.862	0.862	0.861	0.862	0.860	1.000
Flow Entry, veh/h	422	430	161	284	135	0
Cap Entry, veh/h	974	509	508	597	596	496
V/C Ratio	0.433	0.846	0.317	0.476	0.227	0.000
Control Delay, s/veh	8.6	39.1	11.9	13.8	8.9	7.3
LOS	A	E	B	B	A	A
95th %tile Queue, veh	2	9	1	3	1	0

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
600 WEST SHAW, SUITE 250
FRESNO, CALIFORNIA 93704
TELEPHONE (559) 224-4412

March 5, 2018

Ms. Melissa L. White, Esq.
General Counsel
Trinity Fruit Co.
7571 N. Remington Avenue
Suite 104
Fresno, CA 93711

Re: Madera County TPM 4230

Dear Melissa:

Submitted herewith is my letter report on groundwater conditions for TPM 4230. The project would be on a 80-acre parcel northwest of the intersection of Avenue 18-1/2 and Road 24. 50 parcels would be developed for light industrial use. Dry Creek passes through the southeast part of the property. The site is in the north half of Section 33, T10S/R17E. Lands around the project site are in the Madera Irrigation District, where canal water is available.

EXISTING GROUNDWATER CONDITIONS

Mitten, Le Blanc, and Bertoldi (1970) described groundwater conditions in the Madera area, which includes the project site. The project site is located in the innerfan area between the Chowchilla River and the Fresno River. Alluvial deposits comprise the aquifer.

A gas exploration hole was drilled about half a mile north of the property in 1948 to a depth of 3,742 feet. The electric log for this hole indicates that water producing strata extend to a depth of about 1,350 feet in the vicinity of the project site. Substantial water producing deposits were indicated between 470 and 1,200 feet in depth. We obtained drillers logs and completion reports for water supply wells at and within about a mile of the property. These logs indicate that most irrigation wells in the vicinity range from about 500 to 840 feet in depth. Interbeded sand and gravel layers comprise the water-producing deposits. There is a lot of interbedded clay, which is common in innerfan areas. There is an irrigation well that provides water for the 78

acres of pistachios. A completion report was not found in the DWR data base for this well. However, it was reportedly constructed to a depth of about 600 feet about six years ago. The pump is reportedly set at a depth of 440 feet and the well reportedly produces about 600 gpm when pumping into the irrigation system.

Water Levels

Water-level elevation contour maps prepared by the California Department of Water Resources in recent years have indicated a northwesterly to northerly direction of groundwater flow, from near the Fresno River toward a large depression cone present north of the project site. This cone is in a large "white area", where surface water supplies are limited and groundwater provides most of the water supply. That area is east of Highway 99 and northeast and west of the Santa Fe Railroad Tracks. Depth to water in wells in the vicinity in recent years had ranged from about 220 to 260 feet. The Madera County Integrated Regional Water Management Plan (2008) indicated an average water-level decline near the project site of three feet per year between 1970 and 2006.

Well Production

Yields of most irrigation wells in the area range from about 300 to more than 1,500 gpm. The larger yields are generally for deeper wells (about 700 feet deep or deeper).

Groundwater Quality

Water samples were collected for a test well northeast of the intersection of Avenue 17 and Highway 99, about a mile and a half south of the project site. The test well was drilled to a depth of 700 feet and the deposits above a depth of 520 feet were primarily brown or red in color, where deposits below this depth were primarily green or gray-green. The best quality of water was found in five intervals between 275 and 500 feet in depth. Total dissolved solids (TDS) concentrations ranged from about 170 to 250 mg/l in samples from above a depth of 500 feet. Concentrations of nitrate, iron, arsenic, DBCP, EDB, and alpha activity were below the respective MCLs. In contrast, water in two intervals between 575 and 700 feet in depth had TDS concentrations ranging from 400 to 460 mg/l. Concentrations of iron, manganese, and arsenic in those intervals exceeded the respective maximum contaminant levels (MCLs).

On January 2, 2018, KDSA collected a water sample from the on-site irrigation well, which had been pumping for about a day prior to the sample collection. The samples were preserved and hand delivered to APPL, Inc. in Clovis for trace organic analyses

and shipped by overnight delivery to FGL Environmental in Santa Paula for analyses of inorganic chemical constituents. Attachment A contains the results of analyses. The TDS concentration was 219 mg/l and the nitrate concentration was 14 mg/l, well below the MCL of 45 mg/l. Concentrations of iron, manganese, and arsenic were well below the respective MCLs. The alpha activity was 0.9 picocuries per liter, well below the MCL of 15 picocuries per liter.

A DBCP concentration of 0.5 ppb, exceeding the MCL of 0.2 ppb, was found. Concentrations of EDB and 1,2,3-TCP were not detectable. Thus the only know groundwater quality problem for potable use appears to be DBCP. Presently the depth to the top of the perforations in the well is unknown. A TV survey of the well could provide that information, but the pump would need to be pulled from the well. The DBCP is normally present only in the shallow groundwater. The existing irrigation well could likely be modified to produce water with an acceptable DBCP concentration. Otherwise a new smaller diameter well could be constructed to produce potable water for the project.

Water Use

The consumptive use of pistachios is indicated to be about 2.5 acre-feet per acre per year, based on DWR Bulletin 113-3 values for similar crops. The annual consumptive use of applied water would be 200 acre-feet per year. Assuming an irrigation efficiency of 85 percent, the pumpage for the 80 acres of pistachios would be about 235 acre-feet per year.

Estimated Groundwater Overdraft

Using an estimated specific yield of 12 percent, an average water-level decline of three feet per year, and an area of 80 acres, the average annual overdraft beneath the project site is about 30 acre-feet per year.

Project Water Budget

Storm runoff for the project would be discharged to a six-acre pond at the project site. If necessary, one or more dry wells could be used to enhance the recharge of storm water. Using an annual average rainfall of about 12 inches and 73 acres of area, the storm runoff from the project is estimated to be about 10 acre-feet per year. Most of this would be recharged in the basin, if hardpan layers are removed.

The water supply for the project would be provided by a well and a septic tank would be used for wastewater treatment. It is assumed all of the inside water use would eventually be recharged from the septic tank disposal field. Based on information from a previous evaluation at the project site, the annual water demand

would be 81 acre-feet per year. The wastewater flow would be 76 acre-feet per year. The outside water use (consumptive use) is estimated to be 5 acre-feet per year. This would be more than balanced by the recharge of storm runoff. The consumptive use for the project would be only about two percent of the existing consumptive use. Please call me if you have any questions

Sincerely Yours,

Kenneth D. Schmidt

KDS/cl

ATTACHMENT A
CHEMICAL ANALYSES OF WATER FROM
ON-SITE IRRIGATION WELL

ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

January 18, 2018

Kenneth D. Schmidt & Associates
600 W. Shaw Ave., Suite #250
Fresno, CA 93704

Lab ID : SP 1800064-001
Customer ID : 2-6051

Sampled On : January 2, 2018
Sampled By : Michael Scott
Received On : January 3, 2018
Matrix : Ground Water

Description : Trinity Fruit Ave. 18 1/2 Irri
Project : Trinity Fruit Ave. 18 1/2 Irrigation Well

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	19	0.95	34	52	**				
Magnesium	8	0.66	24	22	**				
Potassium	2	0.051	2	5	**				
Sodium	26	1.1	41	71					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	120	2	71	330	**				
Sulfate	5.8	0.12	4	16	**				
Chloride	24	0.68	24	65					
Nitrate	14.0	0.23	8	38					
Nitrate Nitrogen	3.2			9					
Fluoride	0.1	0.0053	0	0.3					
Minor Elements									
Boron	< 0.1			0.00					
Copper	< 0.01			0.00					
Iron	< 0.03			0.00					
Manganese	< 0.01			0.00					
Zinc	< 0.02			0.00					
TDS by Summation	219			600					
Other									
pH	8.0			units					
E. C.	0.319			dS/m					
SAR	1.3								
Crop Suitability									
No Amendments	Fairly		Poor						
With Amendments	Good								
Amendments									
Gypsum Requirement	0.2			Tons/AF					
Sulfuric Acid (98%)	7			oz/1000Gal	Or 17 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	2.3			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

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CA ELAP Certification No. 2810

January 18, 2018

Kenneth D. Schmidt & Associates

Lab ID : SP 1800064-001
Customer ID : 2-6051
Description : Trinity Fruit Ave. 18 1/2 Irri

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation		
			Slight	Moderate	Severe
Chemical					
Manganese	< 0.01	mg/L			
Iron	< 0.03	mg/L			
TDS by Summation	219	mg/L			
No Amendments					
pH	8.0	units			
Alkalinity (As CaCO3)	100	mg/L			
Total Hardness	80.3	mg/L			
With Amendments					
Alkalinity (As CaCO3)	20	mg/L			
Total Hardness	20	mg/L			
pH	5.4 - 6.7	units			

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

DBCP and EDB

Kenneth D. Schmidt & Assoc.
600 West Shaw Avenue Suite 250
Fresno, CA 93704

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Cheryl Lassotovitch
Project: Trinity Farms Ave 18 1/2 Irrig Well
Sample ID: Trinity Farms Ave 18 1/2 Irrig Well
Sample Collection Date: 01/02/18

ARF: 84614
APPL ID: AZ66485
QCG: #DOHSC-180104A-225625

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
DOHS	DBCP	0.53	0.01	0.001	ug/L	01/04/18	01/05/18
DOHS	EDB	Not detected	0.01	0.001	ug/L	01/04/18	01/05/18
DOHS	SURROGATE: 1,3-DIBROMOPROPAN	125	54-135		%	01/04/18	01/05/18

Quant Method:	DOHS0105.M
Run #:	1219070
Instrument:	Herbie
Sequence:	171219
Dilution Factor:	1
Initials:	AAB

Printed: 01/15/18 11:55:48 AM
APPL-F1-SC-NoMC-REG MDLs

EPA 8260 SIM 1,2,3-TCP

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Sample ID: Trinity Farms Ave 18 1/2 Irrig Well
Sample Collection Date: 01/02/18

ARF: 84614
APPL ID: AZ66485
QCG: #86TCP-180115AL-225663

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260LL	1,2,3-TRICHLOROPROPANE	Not detected	0.005	0.0030	ug/L	01/15/18	01/15/18

Quant Method:	86TCP.M
Run #:	0115L10
Instrument:	Loki
Sequence:	180112
Dilution Factor:	1
Initials:	DG

Printed: 01/16/18 10:56:21 AM
APPL-F1-SC-NoMC-REG MDLs