TRAFFIC IMPACT ANALYSIS

FOR

1115 EAST HIGHWAY 120
GLOBAL CARRIER TRUCKING PROJECT
PA-1800300

San Joaquin County, CA

Prepared For:

SAN JOAQUIN COUNTY
DEPARTMENT OF PUBLIC WORKS
TRANSPORATION DIVISION
1810 East Hazelton Avenue
Stockton, CA 95205

Prepared By:

KD Anderson & Associates
3853 Taylor Road, Suite G
Loomis, California 95650
(916) 660-1555

March 16, 2020

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INTRODUCTION

This traffic impact study report summarizes an analysis of the traffic-related effects of the proposed Global Carrier project proposed at 1115 East SR 120 in the unincorporated area of San Joaquin County east of Manteca (i.e., Land Development Permit #PA-1800300 (APN 228-030-28). The proposed project is primarily a parking facility for long haul truckers. The project site is about a mile east of the SR 99 / Yosemite Avenue / SR 120 interchange, as noted in Figure 1.

The project site covers 10 acres on the south side of SR 120 generally opposite the Ideal Parkway intersection. As noted in Figure 2, the project will provide 142 parking spaces for truck / trailer combinations. Ancillary facilities will support this use, including a truck brake shop, tire shop and cross-dock facility to allow materials to be transferred from one truck to another. A total of 25 regular automobile parking spaces will be provided. Six to eight on-site employees are anticipated in addition to the truck drivers who contract with Global Carrier for the use of long-term parking spaces.

The current zoning is AG-40 (General Agricultural) and the General Plan Destination is A/G (General Agriculture). Surrounding property south of SR 120 is active agriculture, but industrial uses exist north of SR 120. The project replaces existing agricultural uses, and an existing residence on the site will be demolished.

Analysis Approach

This analysis considers the project's traffic impacts and evaluates the adequacy of site access under both near term and long term conditions. Analysis of traffic operating conditions under the following six scenarios is presented in this traffic impact study:

- Existing Conditions,
- Existing Proposed Project,
- Near-Term Existing Plus Approved Projects (EPAP),
- EPAP Plus Project,
- Cumulative (Year 2043), and
- Cumulative Plus Project.

Existing conditions are based on the current circulation system and traffic volume data contained in the SR 120 / SR 99 Interchange project Final Traffic Operations Analysis Report (2018), as well as local counts conducted in September 2019.

Existing Plus Approved Projects (EPAP) conditions are a background condition which includes existing traffic levels plus traffic associated with approved land use development projects in the area of the project.

Cumulative Conditions (Year 2043) are a long-term background condition which includes future year forecasts of traffic volumes based on regional development and completion of long term circulation system improvements. The *Final Traffic Operations Analysis Report (FTOAR) for* *the State Route 120 / State Route 99 Interchange Improvement Project* represents the best available information regarding future conditions in the study area. The traffic volume forecasts associated with Design Year 2043 conditions from that report are the No Project condition.

The analysis follows Caltrans traffic study guidelines and addresses a study area suggested by Caltrans District 10. The analysis study area includes the Yosemite Avenue / SR 99 ramp intersections, as well as the neighboring SR 120 / Austin Road intersection and the SR 120 / Ideal Parkway intersection opposite the project. SimTraffic micro simulation has been performed to evaluate the operation of the closely spaced intersections near the SR 99 interchange, and Synchro 10.0 has been employed for other locations.

Summary Conclusions:

- ***Existing Conditions.*** Current traffic conditions in the area of the project are acceptable based on satisfaction of minimum City of Manteca and San Joaquin County standards for intersection Levels of Service. Current peak hour queues can be contained within available left turn lanes, except in the eastbound left turn lane approaching the SR 120 / SR 99 NB ramps intersection where the queue will be accommodated in the #1 through lane at the SB ramps intersection.

- ***Project Characteristics.*** Based on information developed from review of similar businesses the Global Carrier Trucking Project is expected to generate roughly 80 trips in and out on a daily basis. That total includes 36 trips made by heavy trucks (i.e., greater than 3 axles). The project does not propose to accommodate STAA trucks. To account for the characteristics of heavy trucks in Level of Service analysis each truck trip was converted to a *Passenger Car Equivalent (PCE*), and site trip generation is 152 daily PCE's. The project will generate 9 trips in the a.m. peak hour and 9 trips in the p.m. peak hour, or 17 PCE's in each period.

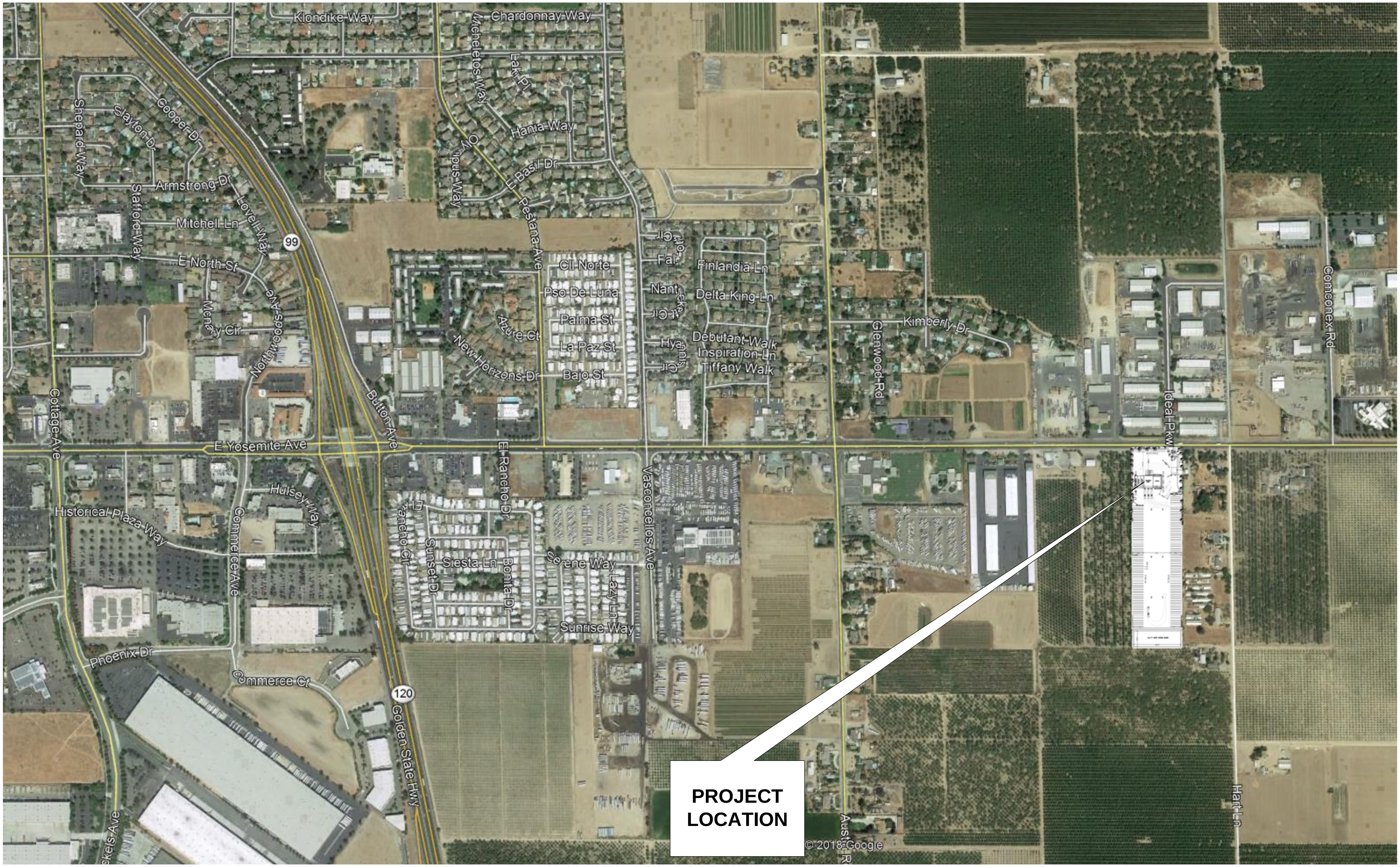
- ***Project Traffic Impacts.*** The addition of project trips does not have a significant impact on the adjoining circulation system as resulting Levels of Service at intersections remain within minimums standards.

- ***Site Access.*** Project site access and internal circulation has been assessed. While the volume of traffic turning left into the site from SR 120 is expected to be minimal, Caltrans has required that other commercial driveway on SR 120 provide left turn lanes. While a final decision will be made through the Caltrans encroachment permit process, it is reasonable to expect that Caltrans will require a separate westbound left turn lane. The possible dimensions of the turn lane, bay taper and approach transition have been suggested, and it is possible that Caltrans will require that the area between the site and the existing eastbound left turn lane at the Comconex Road intersection be made a continuous Two-Way Left-Turn Lane.

- ***Existing Plus Approved Projects (EPAP) Impacts.*** While no approved projects were reported by San Joaquin County staff, background traffic conditions were identified assuming completion of two projects identified by the City of Manteca. Minimum Level of Service standards will be satisfied under EPAP conditions with and without the proposed Global Carrier project, and the project's impact is not significant.

- ***Year 2043 Long Term Cumulative Impacts.*** Background traffic volumes in the study area could deteriorate to LOS E at the SR 99 / Yosemite Avenue interchange with and without the project, however, because the project does not appreciably increase the length of delays the project's impact is not significant are not significant. However, it is important to note that microsimulation-based LOS calculations for closely spaced intersections can vary based on traffic signal timing assumptions. In this case, the *Final Traffic Operations Analysis Report (FTOAR) for the State Route 120 / State Route 99 interchange Improvement Project*[1] indicated that for the same volumes delays at the SR 120 / SR 99 / Yosemite Avenue interchange will be lower than suggested herein and that LOS D or better conditions will occur at all intersections. While the project will contribute its fair share to the cost of regional improvements by paying adopted traffic impacts fees, no future mitigation is required for LOS impacts.

[1] Final Traffic Operations Analysis Report (FTOAR) for the State Route 120 / State Route 99 Improvement Project in San Joaquin County, CA, Fehr & Peers, January 2019.



VICINITY MAP

KD Anderson & Associates, Inc.
Transportation Engineers

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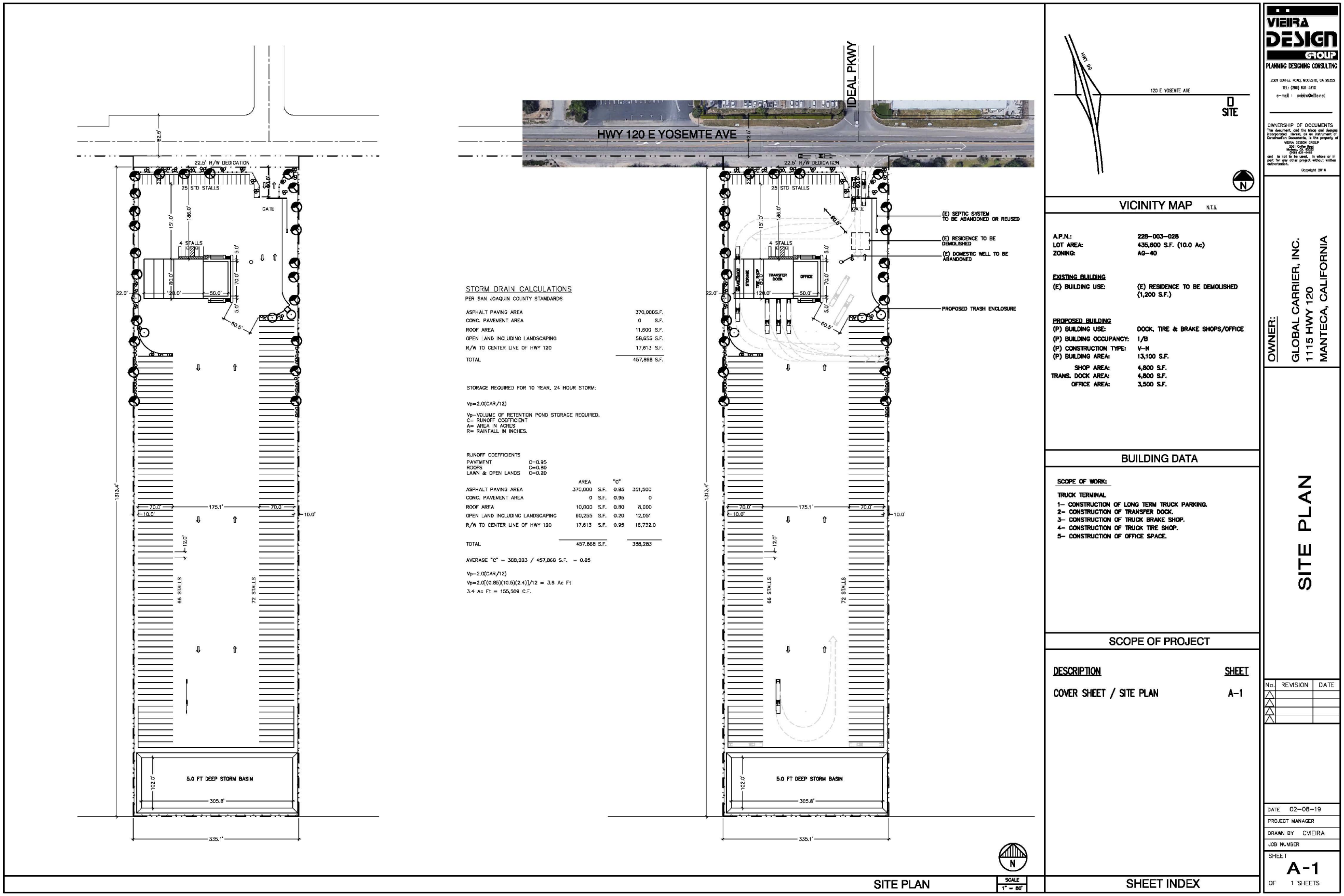
figure 1


HWY 120 E YOSEMTE AVE
IDEAL PKWY
22.5' R/W DEDICATION
25 STD STALLS
GATE
4 STALLS
TRANSFER DOCK
OFFICE
(E) SEPTIC SYSTEM TO BE ABANDONED OR REUSED
(E) RESIDENCE TO BE DEMOLISHED
(E) DOMESTIC WELL TO BE ABANDONED
PROPOSED TRASH ENCLOSURE
68 STALLS
72 STALLS
5.0 FT DEEP STORM BASIN
STORM DRAIN CALCULATIONS
PER SAN JOAQUIN COUNTY STANDARDS
ASPHALT PAVING AREA 370,000S.F.
CONC. PAVEMENT AREA 0 S.F.
ROOF AREA 11,600 S.F.
OPEN LAND INCLUDING LANDSCAPING 58,655 S.F.
R/W TO CENTER LINE OF HWY 120 17,613 S.F.
TOTAL 457,868 S.F.
STORAGE REQUIRED FOR 10 YEAR, 24 HOUR STORM:
Vp=2.0(CAR/12)
Vp–VOLUME OF RETENTION POND STORAGE REQUIRED.
C= RUNOFF COEFFICIENT
A= AREA IN ACRES
R= RAINFALL IN INCHES.
RUNOFF COEFFICIENTS
PAVEMENT C=0.95
ROOFS C=0.80
LAWN & OPEN LANDS C=0.20
AREA "C"
ASPHALT PAVING AREA 370,000 S.F. 0.95 351,500
CONC. PAVEMENT AREA 0 S.F. 0.95 0
ROOF AREA 10,000 S.F. 0.80 8,000
OPEN LAND INCLUDING LANDSCAPING 60,255 S.F. 0.20 12,051
R/W TO CENTER LINE OF HWY 120 17,613 S.F. 0.95 16,732.0
TOTAL 457,868 S.F. 388,283
AVERAGE "C" = 388,283 / 457,868 S.F. = 0.85
Vp–2.0(CAR/12)
Vp=2.0[(0.85)(10.5)(2.4)]/12 = 3.6 Ac Ft
3.4 Ac Ft = 155,509 C.F.
120 E YOSEMITE AVE
SITE
VICINITY MAP N.T.S.
A.P.N.: 228–003–028
LOT AREA: 435,600 S.F. (10.0 Ac)
ZONING: AG–40
EXISTING BUILDING
(E) BUILDING USE: (E) RESIDENCE TO BE DEMOLISHED (1,200 S.F.)
PROPOSED BUILDING
(P) BUILDING USE: DOCK, TIRE & BRAKE SHOPS/OFFICE
(P) BUILDING OCCUPANCY: 1/B
(P) CONSTRUCTION TYPE: V–N
(P) BUILDING AREA: 13,100 S.F.
SHOP AREA: 4,800 S.F.
TRANS. DOCK AREA: 4,800 S.F.
OFFICE AREA: 3,500 S.F.
BUILDING DATA
SCOPE OF WORK:
TRUCK TERMINAL
1– CONSTRUCTION OF LONG TERM TRUCK PARKING.
2– CONSTRUCTION OF TRANSFER DOCK.
3– CONSTRUCTION OF TRUCK BRAKE SHOP.
4– CONSTRUCTION OF TRUCK TIRE SHOP.
5– CONSTRUCTION OF OFFICE SPACE.
SCOPE OF PROJECT
DESCRIPTION SHEET
COVER SHEET / SITE PLAN A–1
SHEET INDEX
VIEIRA DESIGN GROUP
PLANNING DESIGNING CONSULTING
OWNER:
GLOBAL CARRIER, INC.
1115 HWY 120
MANTECA, CALIFORNIA
SITE PLAN
No. REVISION DATE
DATE 02–08–19
PROJECT MANAGER
DRAWN BY CVIEIRA
JOB NUMBER
SHEET
A–1
OF 1 SHEETS
SITE PLAN
SCALE 1" = 80'

SITE PLAN

EXISTING SETTING

This section of the study presents a description of existing conditions in the study area. Information presented in this section of the study is based on on-site field observations, current traffic count data and other data available from local and state agencies. This section of the traffic impact study also describes analysis methods applied for this study as well as the evaluation criteria used to determine the significance of project-related effects.

Circulation System

This traffic impact study presents analyses of traffic operating conditions at intersections near the project that may be affected by the proposed project. The limits of the study area were identified through discussions with Caltrans District 10 staff.

The following is a description of roadways that provide access to the proposed project site.

State Route 99 (SR 99) traverses the Central Valley, connecting Manteca with Stockton, Sacramento and points north, and with numerous Central Valley cities, including Modesto, Merced, Fresno and Bakersfield to the south. Mainline SR 99 has three travel lanes in each direction in the vicinity of the project site, with auxiliary lanes present north and south of the Yosemite Blvd – SR 120 East interchange. The most recent daily traffic volumes reported by the California Departments of Transportation (Caltrans) indicated that SR 99 carried an *Average Annual Daily Traffic (AADT)* volume of 83,000 vehicles per day south of the Yosemite Avenue – SR 120 east junction and 66,000 AADT north of the interchange. Trucks comprise 14% of the daily volume in this area.

State Route 120 (SR 120) – Yosemite Avenue is a major east-west route across San Joaquin County. SR 120 originates at Interstate 5 in western Manteca and extends from that point as a controlled access freeway to the SR 99 / SR 120 south junction. Beyond the south junction the route moves a mile to the north to Yosemite Avenue where it leaves SR 99 and follows Yosemite Avenue easterly into Tuolumne County. Today SR 120 / Yosemite Avenue is a four-lane facility in the area between SR 99 and Austin Road. From that point to the Ideal Parkway intersection the route is a conventional 2 lane highway with a continuous Two-Way Left-Turn (TWLT) lane. The TWLT lane is absent in the 1¼ mile long area east of Ideal Parkway, but an eastbound left turn lane is provided at the at Comconex Road intersection located roughly 1,100 feet east of Ideal Parkway. Caltrans traffic volume data indicates that SR 120 carried 14,100 AADT between SR 99 and Austin Road, with the volume dropping to 13,200 AADT east of Austin Road. Trucks comprise 14% of the daily traffic on SR 120 in this area, and SR 120 is a designated STAA Terminal Route. The speed limit on SR 120 is 45 mph in the area of Ideal Parkway.

Austin Road is a 2 lane north-south road that runs parallel to and east of SR 99 from an intersection on Mariposa Road east of Stockton southerly across SR 120 and SR 99 to the Stanislaus River. Austin Road is connected to SR 99 at an interchange south of the project. The posted speed limit on Austin Road is 45 mph but a 25 mph school zone exists south SR 120 adjoining Calla High School.

Ideal Parkway is a local street that extends north from SR 120 to provide access to an existing 20-acre industrial area. This two-lane street is relatively wide (i.e., 50 feet to accommodate truck turns). Based on interpolation of the peak hour traffic counts conducted for this analysis the daily traffic volume on Ideal Parkway is estimated to be about 1,000 vehicles per day.

Study Area Intersections

This analysis focusses on the operation of four intersections in the area of the project.

The **Yosemite Avenue / SB SR 99 ramps intersection** is controlled by an actuated traffic signal. The four-lane eastbound Yosemite Avenue approach has two through lanes, a combined through + right turn lane and a separate right turn lane. The westbound Yosemite Avenue has two through lanes and dual left turn lanes. The three-lane SR 99 off-ramp is configured with a left turn lane, a combined left turn + through lane and a separate right turn lane. Crosswalks are striped across the north, south and east legs of the intersection.

The **Yosemite Avenue (SR 120) / Button Avenue Drive / NB SR 99 ramps intersection** is controlled by a single actuated traffic signal. The four-lane westbound Yosemite Avenue approach has two through lanes, a combined through + right turn lane and a separate right turn lane. The eastbound Yosemite Avenue approach has two through lanes and dual left turn lanes. Southbound Button Avenue has separate left turn and right turn lanes. The four-lane SR 99 off ramp is configured with a dual left turn lanes, a combined through+right turn lane and a separate right turn lane. Crosswalks are striped across all but the eastern leg of the intersection.

The **Yosemite Avenue (SR 120) / Austin Road intersection** is controlled by a traffic signal. Each leg has a separate left turn lane. The eastbound SR 120 approach also has a separate right turn lane, while the westbound approach has two through lanes. Crosswalks are striped across all four legs of the intersection.

The **Yosemite Avenue / Ideal Parkway intersection** is controlled by a stop sign on the southbound Ideal Parkway approach. A separate eastbound left turn lane that is 200 feet long is provided. There are no crosswalks.

Public Transportation

The San Joaquin Regional Transit District (SJRTD) is the primary provider of public transportation service in Stockton. SJRTD provides fixed-route, flexible fixed-route, and dial-a-ride services in Stockton. Each service is described in more detail below.

- **Stockton Metropolitan Area Fixed Route Service** operates 16 fixed routes within the Stockton area on weekdays between 5:30 a.m. and 9:30 p.m., and on weekends and holidays between 8:00 a.m. and 6:00 p.m. The frequency of services is between 30 minutes and one hour during weekdays and 45 minutes to two hours on weekends. No SJRTD Route serves the project area.

- **Intercity Fixed Route Service** is provided between 5:30 a.m. to 9:30 p.m. with the frequency of service ranging from one to three hours. Four intercity routes connect Stockton with the cities of Lathrop, Lodi, Manteca, Ripon, and Tracy.

- **Interregional Commuter Service** is a subscription commuter bus service designed to help commuters who travel more than 50 miles each way to work. A total of 21 subscription buses connect San Joaquin County to Sacramento, the San Francisco Bay Area, and the Bay Area Rapid Transit (BART) system.

- **Stockton Metropolitan Area ADA Dial-a-Ride** provides curb-to-curb transportation to persons who, due to their disability, are unable to get to or from the fixed-route bus stops. This service is available 365 days a year by appointment only. People interested in utilizing this service must first obtain certification under the Americans with Disabilities Act (ADA) through an application process.

- **SJRTD Hopper Service** is a flexible fixed-route service connecting Escalon, Lathrop, Manteca, and Woodbridge to Lodi, Stockton, and Tracy. This service replaces the SJRTD Countywide General Public Dial-A-Ride (DAR), Rural Elderly & Disabled DAR, and County Area Transit (CAT) Fixed-Route during Hopper service hours, in the areas covered by the Hopper. These buses will deviate up to ¾-mile for those passengers that are ADA-certified and are unable to reach the fixed-route stops. Advance reservations are required for all route deviations.

- **Manteca Transit** offers fixed route service within the City of Manteca along three routes originating at Manteca Transit Center with connections to San Joaquin Regional Transit District (RTD). Route 1 extends to the Yosemite Avenue / Vasconcellos Avenue intersection roughly 2/3 mile west of the project with hourly service from 6:00 a.m. to 6:00 p.m. on Weekdays and Saturdays.

Bicycle and Pedestrian Circulation Systems

Bicycles. San Joaquin County is developing a Bicycle Master Plan Update to identify gaps in the existing bicycle network, propose ways to create a more connected network and develop supporting facilities. The San Joaquin Council of Governments (SJCOG) *Regional Bicycle, Pedestrian and Safe Routes to School Master Plan (2012)* notes the current status and planned improvements to facilities countywide. Caltrans guidelines, bicycle facilities are generally divided into three categories:

- **Class I Bikeway (Bike Path).** A completely separate facility designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized.

- **Class II Bikeway (Bike Lane).** A striped lane designated for the use of bicycles on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow are permitted at designated locations.

- **Class III Bikeway (Bike Route).** A route designated by signs or pavement markings for bicyclists within the vehicular travel lane (i.e., shared use) of a roadway.

- **Class IV Bikeway (Separated Bikeway):** Separated bikeways, also referred to as cycle tracks or protected bikeways, are bikeways for the exclusive use of bicycles which are physically separated from vehicle traffic.

The SJCOG plan notes that there are no dedicated bicycle facilities in the area of the project. The plan suggests that SR 120 might be developed as a Class III Bike Route in the future.

Sidewalks. Today sidewalks generally exist along Yosemite Avenue west of Austin Road, but there are no sidewalks east of the Calla HS frontage.

METHODOLOGY

The following is a description of the methods used in the analysis presented in this traffic impact study.

Intersection Level of Service Analysis Procedures

Level of Service (LOS) analysis provides a basis for describing existing traffic conditions and for evaluating the significance of project-related traffic impacts. Level of Service measures the quality of traffic flow and is represented by letter designations from A to F, with a grade of A referring to the best conditions, and F representing the worst conditions. The characteristics associated with the various LOS for intersections are presented in Table 1.

Because SR 120 is a state facility, this analysis makes use of the methods prescribed by Caltrans District 10. The methods contained in the 6th Edition of the HCM were used, and S*ynchro/SimTraffic* software was employed to assess the closely spaced signals at the SR 99 / Yosemite Avenue interchange. Micro-simulation was performed to identify intersection delay and to estimate left turn lane queue lengths. Current traffic signal timing was obtained from Caltrans District 10 and was included in the analysis assumptions.

TABLE 1
INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection
A	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/vehicle
B	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/vehicle and ≤ 15 sec/vehicle
C	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/vehicle and ≤ 25 sec/vehicle
D	Significant congestion of critical approaches, but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/vehicle and ≤ 35 sec/vehicle
E	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/vehicle and ≤ 50 sec/vehicle
F	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/vehicle

Source: HCM, 6th Edition.

Travel Forecasting

For this analysis alternative sources for information regarding future traffic volumes in this area of San Joaquin County were reviewed and considered. Traffic volumes were developed for two scenarios:

- Existing Plus Approved Projects (EPAP), and
- Year 2043 cumulative.

The EPAP scenario assumes completion of approved development projects in San Joaquin County. San Joaquin County and City of Manteca planning staff were contacted and a list of approved but unbuilt projects was obtained.

Long Term cumulative traffic volumes were taken from the recent *Final Traffic Operations Analysis Report for the State Route 120 / SR 99 Interchange Project (Caltrans 2018).* That document included Year 2043 forecasts for intersections on Yosemite Avenue that reflect regional development as well as completion of regional circulation system improvements. The *Design Year 2043 with Ultimate Project* traffic volumes were employed as the cumulative "No project" condition.

Passenger Car Equivalents and Heavy-Duty Vehicles

Heavy-duty vehicles (e.g., trucks with three or more axles) have a greater effect on traffic operations than light-duty vehicles (e.g., automobiles). This is due to heavy-duty vehicles being larger and accelerating more slowly. As a result, the analysis conducted for this traffic impact study specifically addresses the relatively greater effect of heavy vehicles on LOS. For all LOS analysis presented in this traffic impact study, a method using passenger car equivalents (PCE) was used.

Passenger car equivalents represent the number of passenger cars displaced by a single heavy vehicle under certain roadway, traffic, and control conditions. The use of PCEs compensates for the operational characteristics of heavy vehicles as well as the roadway space displaced. A PCE value of 3.0 was used in the traffic operations analysis conducted for this traffic impact study. That is, each project-related heavy vehicle is assumed to have the effect of three light-duty vehicles. All of the "plus Project" volumes shown for intersections in this traffic impact study are expressed in PCE, rather than the number of vehicles.

Level of Service Significance Thresholds

The significance of the proposed project's impact on traffic operating conditions is based on a determination of whether resulting LOS is considered acceptable under applicable standards. These standards are adopted by the agencies with jurisdiction for each facility. In this case SR 120 is under Caltrans jurisdiction. However, the intersections on SR 120 west of and including the Austin Road intersection are within the City of Manteca. The SR 120 / Ideal Parkway intersection is in San Joaquin County.

San Joaquin County. The significance of the project's impact on traffic operating conditions is based on a determination of whether resulting intersection LOS is considered acceptable. A project's impact on traffic conditions is considered significant if implementation of the project would result in LOS changing from levels considered acceptable to levels considered unacceptable, or if the project would worsen already unacceptable LOS.

Policy TM-31, Roadway Provision, of the *San Joaquin County General Plan Policy Document* (County of San Joaquin 2016) states, in part:

> "The County shall maintain Level of Service (LOS) standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersections shall operate at an LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. The County LOS standard for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other non-CMP designated County roadways and intersections."

The *San Joaquin County 2035 General Plan Environmental Impact Report* (County of San Joaquin 2014) states,

> "For any RCMP designated roadway or intersection currently operating or expected to operate at LOS D or better under No Project conditions, the project would result in a significant impact if the project-added traffic would result in LOS E or F operating conditions. For RCMP intersections or roadways currently operating or expected to operate at LOS E or F under No Project conditions, the project would result in a significant impact if it would increase:
>
> - "Average delay by 4 seconds or more (intersections); or
> - "The volume-to-capacity (v/c) ratio by 1.0 or more."

State Route 120 is a designated RCMP roadway. Therefore, based on the *San Joaquin County General Plan Policy Document* and the *San Joaquin County 2035 General Plan Environmental Impact Report*, LOS D is considered acceptable for study facilities.

If the Global Carrier Project would result in LOS at a study facility changing from acceptable LOS or better to unacceptable LOS or worse, the impact will be considered significant. Mitigation measures which would result in acceptable LOS at the study facility will be considered to reduce the impact to a less-than-significant level.

Consistent with the *San Joaquin County 2035 General Plan Environmental Impact Report*, if an RCMP study facility is already operating at an unacceptable LOS E or F under Existing conditions, or under Cumulative No Project conditions, increasing delay at an intersection by four seconds or more will be considered a significant impact.

City of Manteca. The policies and guidelines adopted by the City of Manteca relative to Level of Service are noted in the text which follows.

The City strives to provide a citywide average of LOS C or better and a minimum LOS D at any individual location. For the purposes of environmental analysis the City considers LOS D as the acceptable standard for intersections. The City accepts LOS D under the following conditions:

> To the extent feasible, the City shall strive for a vehicular LOS D or better at all streets and intersections, except in the Downtown area where right-of-way is limited, pedestrian, bicycle, and transit mobility are most important and vehicular LOS is not a consideration.
>
> At the discretion of City staff, certain locations may be allowed to fall below the City's LOS standard under the following circumstances:
>
> a. Where constructing facilities with enough capacity to provide LOS D is found to be unreasonably expensive. This applies to facilities, for example, on which it would cost significantly more per dwelling unit equivalent (DUE) to provide LOS D than is deemed reasonable by City staff.

b. Where it is difficult or impossible to maintain LOS D because surrounding facilities in other jurisdictions operate at LOS E or worse.
c. Where maintaining LOS D will be a disincentive to use existing alternative modes or to the implementation of new transportation modes that would reduce vehicle travel. Examples include roadway or intersection widening in areas with substantial pedestrian activity or near major transit centers.
d. In the Downtown area the City cannot maintain the vehicular LOS D standard because of the historic nature of development and limited street right-of-way.

A project would cause a significant impact if:

Signalized Intersections

a) Worsen operations from LOS D or better to LOS E or worse.
b) Increase the average delay by three (3) seconds or more at a signalized intersection in Manteca currently operating (or projected to operate) at LOS E or worse.
c) Add traffic to a signalized intersection on a Caltrans facility that is currently operating (or projected to operate) at LOS E or worse.

All-Way Stop Intersections

a) Worsen operations from LOS D or better to LOS E or F.
b) Increase the average delay by three (3) seconds or more at an unsignalized intersection in Manteca currently operating (or projected to operate) at LOS E or worse and cause the peak hour volume signal warrant to be met.
c) Add traffic to an unsignalized intersection on a Caltrans facility that is currently operating (or projected to operate) at LOS E or worse and cause the peak hour volume signal warrant to be met.

Side-Street Stop Intersections

a) Worsen operations (for the highest delayed side-street movement) from LOS D or better to LOS E or F.
b) Increase the average delay for the highest delayed side-street movement at an intersection in Manteca currently operating (or projected to operate) unacceptably by three seconds or more and cause one of the peak hour signal warrants to be met.
c) Add traffic to a side-street stop intersection on a Caltrans facility that is currently operating (or projected to operate) at LOS E or worse and cause the peak hour volume signal warrant to be met.

EXISTING CONDITIONS

Existing Traffic Volumes and Levels of Service

Intersection Traffic Volumes. Figure 3 presents current a.m. and p.m. peak hour traffic volumes at study intersections. Data at the study intersections is based on counts collected on August 19, 2019. These counts were compared to available Caltrans PeMS data for the SR 99 ramps and found to be consistent with the values reported on average for 2019. A summary of the traffic count data is presented in the technical appendix. This figure also identifies current intersection geometry.

Intersection Levels of Service. Table 2 presents existing a.m. peak hour and p.m. peak hour Level of Service at the study locations. The worksheets presenting the calculation of LOS are included in the technical appendix.

As indicated, all study intersections operate with Levels of Service that satisfy the minimum LOS D standard.

TABLE 2
EXISTING INTERSECTION LEVEL OF SERVICE

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Average Delay (sec/veh)	Level of Service	Average Delay (sec/veh)	Level of Service
Yosemite Ave (SR 120) / SB SR 99 ramps	Signal	18	B	30	C
Yosemite Ave (SR 120) / NB SR 99 ramps	Signal	38	D	48	D
Yosemite Ave (SR 120) / Austin Road	Signal	14	B	33	C
Yosemite Avenue / Ideal Parkway SB approach	SB stop	7	A	12	B

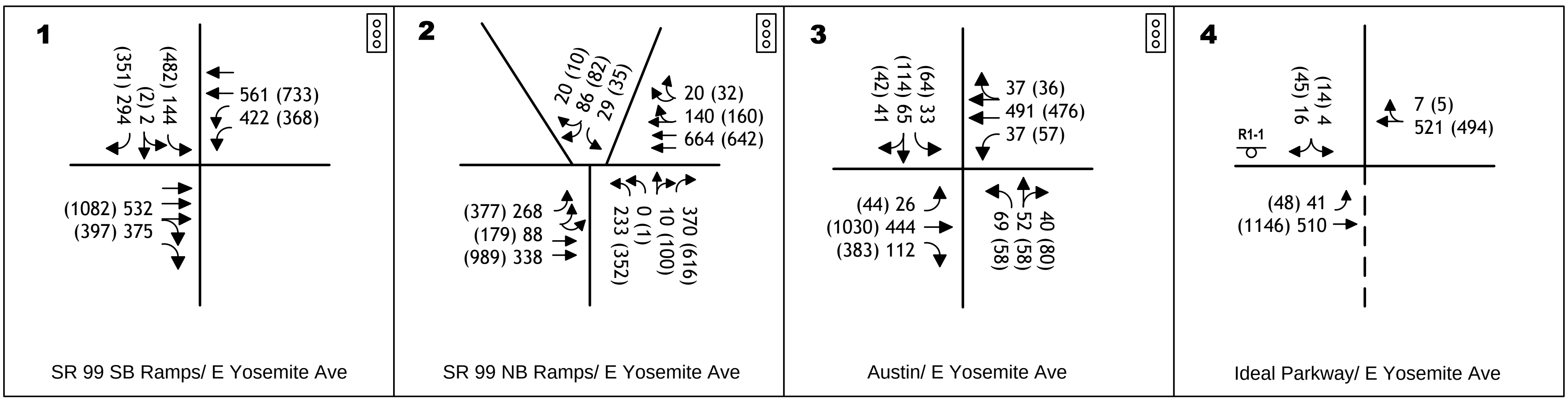
95th Percentile Queues. The length of left turn lane queues was determined from the SimTraffic simulation. As indicated in Table 3, with one exception all existing 95th percentile queue can be accommodated within the available storage. During the p.m. peak hour the queue in the EB left turn lane onto northbound SR 99 may exceed the storage between the two ramp intersections. However, the queue can be accommodated in the #1 eastbound lane at the SB ramps intersection.

TABLE 3 EXISTING PEAK HOUR QUEUES							
			AM Peak Hour		PM Peak Hour	
Intersection	**Lane**	**Storage (feet)**	**Volume (vph)**	**95th % Queue (feet)**	**Volume (vph)**	**95th % Queue (feet)**
Yosemite Ave (SR 120) / SB SR 99 ramps	WB left	335	422	270	368	265
	SB left[1]	350	144	120	482	370
Yosemite Ave (SR 120) / NB SR 99	EB left	335	356	250	556	**445**
	NB left	350	233	190	352	210
Yosemite Ave (SR 120) / Austin Road	EB left	120[2]	26	60	44	155
	WB left	475	37	65	57	100
	NB left	225	69	80	58	90
	SB left	225	33	65	64	110
Yosemite Ave (SR 120) / Ideal Parkway	EB left	200[1]	41	40	48	40

[1] distance from end of turn lane to ramp gore is 635 feet

[2] lane continues as TWLT lane

HIGHLIGHTED values exceed available storage



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EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 3

PROJECT CHARACTERISTICS

The development of the project would result in vehicle traffic to and from the project site. The amount of additional traffic on a particular section of the street network is dependent upon three factors:

- Trip Generation, the number of new trips generated by the project,
- Trip Distribution, the direction of travel for the new traffic, and
- Trip Assignment, the specific routes used by the new traffic.

Trip Generation

Typically, the Institute of Transportation Engineers (ITE) publication *Trip Generation Manual, 10th Edition* is the most recognized source for trip generation rates. However, because the Manual lacks information specific to long-haul truck parking facilities, alternative sources of trip generation were employed involving use of data collected at another location.

Data from Existing Facility - Tracy. In 2018 this consultant prepared a Traffic Technical Memorandum under San Joaquin County guidelines for the ATL Truck Parking Facility proposed on Kasson Road near Turlock. The amount of automobile and truck traffic associated with that facility was estimated based on truck travel patterns monitored at an existing facility on Schulte Road in Tracy. As required by law, the travel for each truck is monitored by GPS primarily to enforce drive hours behind the wheel. That data can also record each time a vehicle enters or leaves the facility. The existing facility was monitored on a Tuesday-Wednesday-Thursday for four weeks in 2018, and that information was used to identify the characteristics of truck travel.

During February from 17 to 22 trucks were operating. Because long haul trucks spend a great deal of time on the road or were inactive on-site, the total entering truck volume each week ranged from only 12 to 16 trips. Assuming each inbound trip has a corresponding outbound trip at some point and that each truck trip is accompanied by a driver's trip to and from the facility, then the equivalent daily trip generation rate was 0.40 trips per truck parking space.

Trip Generation Forecast. The trip rates derived from observed use have been applied, but the project site includes ancillary uses that will generate a small amount of traffic. On-site brake and tires service facilities will be available, and a transfer dock will allow materials to be transferred from one truck to another if needed. There will also be office space, the restrooms and a limited trucker lounge. Estimates for the trip generation associated with these uses have been made based on employment estimates and on anticipated use.

As indicated in Table 4, the project could generate a total of 80 daily trips (trucks and passenger cars) at full occupancy.

The share of daily traffic that could occur in peak commute traffic hours has been estimated. The data collected in Tracy revealed that the time when trucks traveled to and from the site varied from day to day, and there was no identifiable “peak period” for truck activity. Typically long haul truckers tend to avoid peak commute traffic periods for obvious reasons. For this analysis it has conservatively been assumed that 10% of the activity will occur in the a.m. and p.m. peak hour. As indicated the project could generate 9 trips in both the a.m. and p.m. peak hour under this assumption.

Passenger Car Equivalents (PCE’s). Traffic engineers account of the effects of large trucks by identifying a Passenger Car Equivalent (PCE) for each truck that accounts for the reduced acceleration and deceleration characteristics of trucks. Under typical practice one truck is assumed to have the same effect on capacity and Level of Service as 2 to 4 passenger vehicles. Assuming 3 PCE’s per truck, the project’s total trip generation can be expressed as 152 PCE’s per day, with 17 PCE’s in the a.m. and p.m. peak hours.

Trip Distribution. The distribution of project trips has been estimated from two standpoints. For long haul trucking, the trips associated with the site are likely to be oriented to major transportation routes or to major shipping centers. As noted in Table 5, these routes are generally on SR 99 north or to the south on SR 99 or SR 120 west to Intestate 5. Some truck travel to the BN&SF facility on Austin Road was also assumed. Travel by employees or drivers will likely reflect travel to/and individual residences which could also be to the east and west in Manteca.

Trip Assignment. The assignment of project trips to study area road will reflect the least time path between origin and destination along alternative routes, and the quickest path may vary over the course of the day. For example, it is possible to reach SB SR 99 using the Yosemite Avenue interchange, by turning onto Austin Road or by turning right from the site and turning right onto Jack Tone Road and heading south to SR 99 in Ripon. At various times each route may be quicker. This analysis assumes Jack Tone Road is the quickest route to SB SR 99.

The resulting assignment of project trips (PCE’s) is shown in Figure 4.

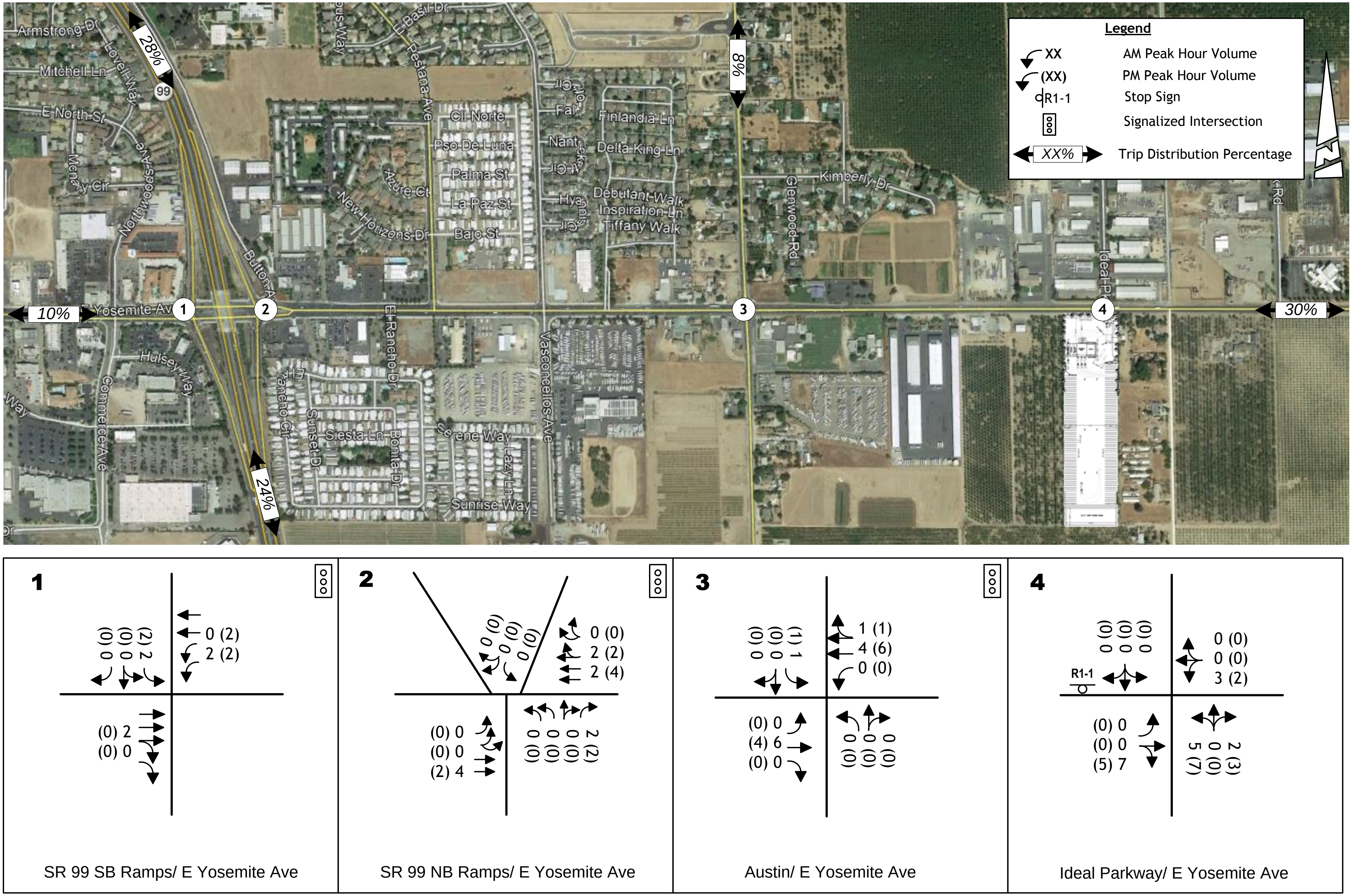
TABLE 4
GLOBAL CARRIER TRIP GENERATION RATES AND FORECASTS

Activity	Unity / Quantity	Trip Generation						
		Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Long Haul Trucking	Truck space	0.40	33%	67%	0.04	67%	33%	0.04
Project Trucking - Trucks	**140 spaces**	**28**	**1**	**2**	**3**	**2**	**1**	**3**
Project Trucking - Drivers		**28**	**2**	**1**	**3**	**1**	**2**	**3**
Tire Shop	employee	2	100%	0%	0.5	0%	100%	0.5
	2 employees	**4**	**1**	**0**	**1**	**0**	**1**	**1**
Brake Shop	employee	2	100%	0%	0.5	0%	100%	0.5
	2 employees	**4**	**1**	**0**	**1**	**0**	**1**	**1**
Transfer Dock	employee	2	100%	0%	0.5	0%	100%	0.5
	1 employee	**2**	**<1**	**0**	**<1**	**0**	**<1**	**<1**
Brake Shop & Tire Outside Customers	customers	2	50%	50%	0.2	50%	50%	0.2
	4 customers	**8**	**1**	**0**	**1**	**0**	**1**	**1**
Office / Miscellaneous / Deliveries		**6**	**0**	**0**	**0**	**0**	**0**	**0**
Total Trips		**80**	**6**	**3**	**9**	**4**	**5**	**9**
TOTAL PCE'S @ 3.0 PCE's PER TRUCK		**152**	**10**	**7**	**17**	**7**	**10**	**17**

PPCE factor applied to the HIGHLIGHTED truck trips

TABLE 5
GLOBAL CARRIER TRIP DISTRIBUTION ASSUMPTIONS

Activity	North on Austin Road	North on SR 99	South on SR 99	West on Yosemite Ave	West on SR 120	East on Yosemite Ave
Long Haul Trucking	10%	30%	30%	0%	30%	0%
Employees / Drivers	5%	25%	20%	20%	20%	10%
Customers / Deliveries	5%	30%	25%	20%	15%	5%
PERCENT OF TOTAL DAILY PCE'S	8%	28%	26%	10%	24%	4%



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PROJECT ONLY TRAFFIC VOLUMES (PCE'S) AND LANE CONFIGURATIONS

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figure 4

EXISTING PLUS PROJECT IMPACTS

Traffic Volumes, Level of Service and Queuing

Figure 5 displays the resulting a.m. peak hour and p.m. peak hour Existing Plus Project traffic volumes and intersection lane geometrics for each study intersection.

Intersection Levels of Service. Table 6 compares current and Plus Project Levels of Service. As indicated all Level of Service will continue to satisfy the City's minimum LOS D standard, and the project's impact is not significant.

95th Percentile Queues. The length of left turn lane 95th percentile queues was determined from the SimTraffic simulation. As indicated in Table 7, with one exception all queues can be accommodated within the available storage. As in the Existing condition, the queue in the eastbound left turn lane at the NB SR 99 ramps intersection exceeds the available storage. As noted previously eastbound traffic turning at this intersection can be accommodated in the #1 eastbound lane at the adjoining intersection. In the p.m. peak hour the left turn lane queue on the southbound SR 99 off ramp would exceed the limits of the turn lanes, but as the distance from that point to the ramp gore on mainline SR 99 is another 635 feet, queuing is not significant.

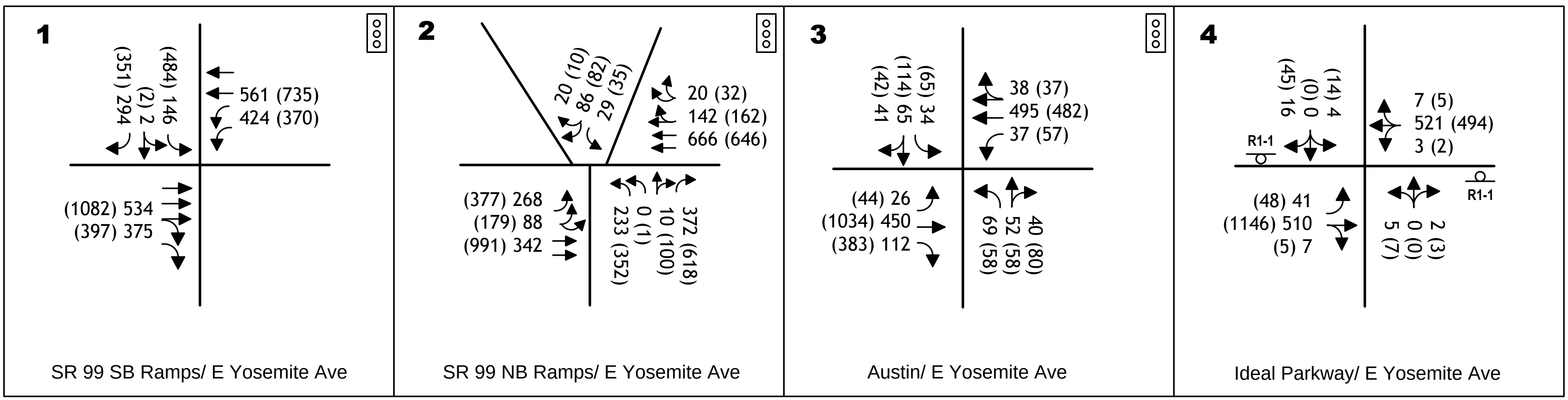
Other Transportation Modes

Pedestrians. As is the case with the existing commercial uses along SR 120 in San Joaquin County, the project is unlikely to generate appreciable pedestrian activity, and sidewalks are not required along the highway in this area.

Bicycles. The project is unlikely to generate bicycle traffic to the point that new facilities are needed in an area where no improvements are suggested by the San Joaquin County Bikeway Master Plan. Paved shoulder remains available on SR 120.

Transit. The project's employees are unlikely to generate an appreciable demand for transit service that would justify changes to current transit routes in the area east of Manteca.

The project's impact to alternative transportation modes is not significant.



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EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

6560-31 RA 11/26/2019

figure 5

TABLE 6 EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE									
		AM Peak Hour				PM Peak Hour			
		Existing		Existing Plus Project		Existing		Existing Plus Project	
Intersection	**Control**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**
Yosemite Ave (SR120) / SB SR 99	Signal	18	B	18	B	30	C	32	C
Yosemite Ave (SR 120) / NB SR 99	Signal	38	D	40	D	48	D	49	D
Yosemite Ave (SR 120) / Austin Road	Signal	13	B	14	B	32	C	30	C
Yosemite Ave (SR 120) / Ideal Parkway SB approach NB approach	NB/SB Stop	6 -	A -	7 12	A B	12 -	B -	14 21	B C

BOLD values exceed LOS D.

HIGHLIGHTED values are a significant impact

TABLE 7
EXISTING PLUS PROJECT PEAK HOUR QUEUES

			AM Peak Hour					PM Peak Hour				
			Existing		Ex Plus Project			Existing		Ex Plus Project		
				95^{th} %	Volume (vph)		95^{th} %		95^{th} %	Volume (vph)		95^{th} %
Intersection	**Lane**	**Storage (feet)**	**Volume (vph)**	**Queue (feet)**	**Project**	**Total**	**Queue (feet)**	**Volume (vph)**	**Queue (feet)**	**Project**	**Total**	**Queue (feet)**
Yosemite Ave (SR 120) / SB SR 99	WB left	335	422	270	2	424	275	368	265	2	235	245
	SB left	350	144	120	2	146	120	482	370	2	484	380
Yosemite Ave (SR 120) / NB SR 99	EB left	335[1]	356	250	0	356	270	556	**445**	0	556	**455**
	NB left	359	233	190	0	233	195	352	210	0	352	210
Yosemite Ave (SR 120) / Austin Road	EB left	120[2]	26	60	0	26	60	44	155	0	44	185
	WB left	475	37	65	0	37	65	57	100	0	57	90
	NB left	225	69	80	0	69	85	58	90	0	58	75
	SB left	225	33	65	0	33	65	64	105	0	64	100
Yosemite Ave (SR 120) / Ideal Parkway	EB left	200[1]	41	40	0	41	40	48	40	0	48	40
	WB left	-	-	-	3	3	<25	-	-	2	2	<25

[2] lane continues as TWLT lane

HIGHLIGHTED values exceed available storage

Site Access and Internal Circulation

The project site plan has been reviewed with regards to key issues such as proximity to other driveways, driveway throat depth, truck access and drive-thru queue storage.

Driveway Dimensions. The project driveway on Yosemite Avenue aligns with the existing Ideal Parkway intersection. The driveway will be 40 feet wide at a gated location about 90 feet from the edge of the existing travel way and 60 feet from a proposed right of way dedication. The driveway opening is about 70 feet wide at the proposed dedication in order to accommodate truck turns.

Driveway Throat Depth. The project's driveway provides 90 feet to the gate from the edge of the state highway, and one truck can be accommodated in that area. The distance from Yosemite Avenue to the first truck parking stall is roughly 315 feet. This is the driveway throat depth, which is the area available for exiting traffic to wait without blocking the path of entering vehicles. There is room for four trucks waiting in throat area without blocking the path of arriving traffic.

The adequacy of the driveway throat is determined based on the length of exiting queue at the driveway. The long-term cumulative analysis indicates that the 95th percentile queue in the driveway would be 2 vehicles or less, and as noted above the plan could accommodate two waiting trucks without issue. Because waiting vehicles will not interfere with arriving traffic, the driveway throat is adequate.

Acceleration / Deceleration on SR 120. The site plan does not indicate that improvements would be made to SR 120 to accommodate turning vehicles, and the need for improvements to safely accommodate traffic turning into or out of the site has been evaluated.

As noted earlier the acceleration and deceleration requirements of heavy trucks are greater than those associated with passenger vehicles, and the extent to which SR 120 has been widened to accommodate trucks at the existing driveways across SR 120 was reviewed. At the PG&E yard and at the Ideal Parkway intersection full deceleration and acceleration lanes have not been required by Caltrans, but the shoulders have been widened somewhat to provide space for trucks to partially slow and accelerate outside of the through travel lane. While the extent of the shoulder's structural section along the project site is unknown and improvement may be required by Caltrans, a similar widening would be appropriate at the project access.

Left Turn Lane Channelization. The need to widen SR 120 to provide separate westbound left turn lane at the site access was evaluated. Left turn lanes are typically justified in order to limit the effects of waiting vehicles on through traffic, both from the standpoint of traffic flow and access safety. In this area of SR 120, a few agricultural uses have inbound left turn access without a turn lane, but the highway has been widened to provide a left turn lane or TWLT lane where access to industrial uses have been developed.

In the case of Global Carrier, the amount of traffic turning left into the Global Carrier site will be very slight, but the volume of eastbound traffic is appreciable, particularly in the p.m. peak hour. If westbound left turns by trucks were certain to be prohibited, then the site access could function adequately without a left turn lane. However, there is no way to physically eliminate left tuns in the site without interfering with other turning movements and access to Ideal Parkway. While the final decision regarding the extent of left turn improvements rests with Caltrans, it is reasonable to expect that Caltrans will require a separate left turn lane.

The dimensions of the left turn lane have been considered with regards to the guidelines contained in the Caltrans Highway Design Manual (HDM). Section 405.2 indicates that the lane and its accompanying bay taper should combine to provide space for both waiting vehicle storage and for deceleration outside of the through travel lane. HDM Table 405.2B indicates that 375 feet of deceleration is required. The HDM allows for a reduction deceleration of up to 20 mph in locations where some slowing in the through travel lanes is acceptable, and the deceleration requirement at 25 mph is roughly 195 feet. From the standpoint of storage, the HDM suggests a minimum for two waiting vehicles. If one vehicle was assumed to be a truck, that storage would be 90 feet. Together the left turn lane its bay taper would be 285 to 465 feet long, depending on acceptable of partial deceleration.

The length of other existing turn lanes has been reviewed for comparison. The sum of existing eastbound left turn lane and its bay taper on SR 120 at Comconex Road located roughly 1,100 feet east of Ideal Parkway is 175 feet long. This lane is appreciably shorter than the current design standard noted above. As noted earlier, the final decision regarding the need for and length of the left turn lane will rest with Caltrans.

Further SR 120 widening is needed east of the site beyond the turn lane itself for a transition area to move the two travel lanes away from centerline in advance of the turn lane. HDM Figure 405.2A indicates that if the roadway is widened on both sides of the centerline then the transition area would be 270 feet long for 45 mph design.

Taken all together, the sum of 1/2 the intersection width, turn lane, bay taper and transition would take the limits of improvements from 585 feet to 765 feet from the centerline of Ideal Parkway, depending on the decision regarding deceleration speed. These lengths would encroach into the transition area for the eastbound turn lane at Comconex Road. As a result, Caltrans could require that a continuous TWLT be constructed in the area between Ideal Parkway and Comconex Road. That decision would be made thru the encroachment permit process.

Sight Distance. The driveway sight distance was compared to the requirements of HDM Chapter 2. Because SR 120 is generally level and straight in this area, the sight distance looking left or right from the proposed driveway is not restricted and HDM standards can be satisfied.

Conclusions Regarding Project Site Access. Because San Joaquin County does not have jurisdiction over SR 120, the final decisions as the extent of access improvements required for this project will come from Caltrans District 10 and an applicable San Joaquin County condition of approval would require satisfaction of Caltrans requirements. Improvements to the state highway would be performed by the applicant under an Encroachment Permit issued by Caltrans, and the design of access improvements would be determined at that time.

EXISTING PLUS APPROVED PROJECTS (EPAP) CONDITIONS

Existing Plus Approved Project (EPAP) conditions represent San Joaquin County's estimate of future background conditions with development of land uses that can proceed without additional entitlement. Development of land uses associated with projects in the southeastern portion of the City of Manteca are also assumed in this condition.

Traffic Volume Forecasts

Background Growth. San Joaquin County and City of Manteca staff were contacted to identify approved projects in the study area. County staff reported that no approved projects exist along the SR 120 corridor. City of Manteca indicated that two projects are approved:

- Hilton Hotel on Northwoods Drive north of SR 120 (78 rooms)
- Chick-Fil-A restaurant on SR 120 west of SR 99

Traffic Volumes. The trips associated with these projects were identified, either from their traffic study or based on ITE rates, and peak hour trips were assigned to the study area intersections. Resulting a.m. peak hour and p.m. peak hour intersection traffic volumes are presented in Figure 6 (No Project). Project trips were superimposed onto the background volumes to create Figure 7 (Plus Project) volumes.

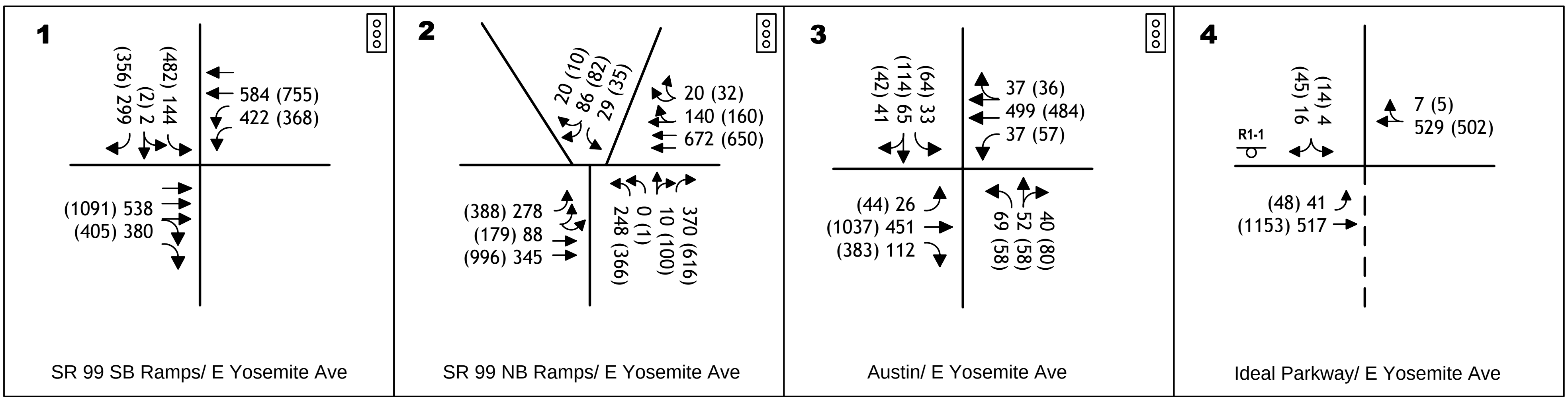
Intersection Levels of Service

EPAP No Project Conditions. Table 8 presents the a.m. peak hour and p.m. peak hour LOS at each study intersection under EPAP conditions with and without the proposed project. As indicated, without the project study intersection will continue to meet the minimum LOS D standard.

Plus Project conditions. The addition of project trips will increase the length of delays at study intersections slightly, however, resulting Level of Service will continue to meet the minimum LOS D standard.

Intersection Queue Lengths

Table 9 presents a summary of the peak hour volumes resulting 95th percentile queues in study intersection left turn lanes under EPAP conditions with and without the project. As indicated, without the project the 95th percentile queues will remain within the available storage, except at the SR 99 NB Ramps intersection. While the addition of project trips would not change these conclusions, it is likely that Caltrans will continue to monitor traffic conditions in this area and adjust traffic signal timing as needed to address queueing.



EXISTING PLUS APPROVED PROJECTS
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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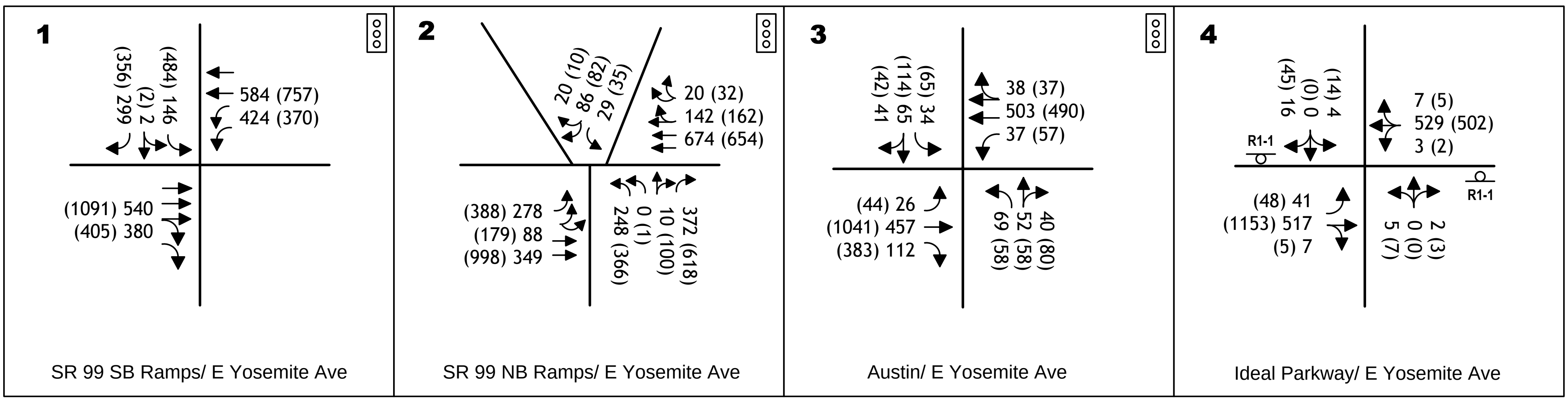
figure 6



EPAP PLUS PROJECT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 7

TABLE 8 EPAP PLUS PROJECT INTERSECTION LEVEL OF SERVICE										
		AM Peak Hour				PM Peak Hour			
		Existing		Existing Plus Project		Existing		Existing Plus Project	
Intersection	**Control**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**
Yosemite Ave (SR120) / SB SR 99	Signal	18	B	18	B	35	D	35	D
Yosemite Ave (SR 120) / NB SR 99	Signal	38	D	39	D	50	D	50	D
Yosemite Ave (SR 120) / Austin Road	Signal	13	B	14	B	31	C	33	C
Yosemite Ave (SR 120) / Ideal Parkway									
SB approach	NB/SB Stop	6	A	6	A	12	B	11	B
NB approach		-	-	11	B	-	-	23	C

BOLD values exceed LOS D.

HIGHLIGHTED values are a significant impact

TABLE 9
EPAP PLUS PROJECT PEAK HOUR QUEUES

Intersection	Lane	Storage (feet)	AM Peak Hour					PM Peak Hour				
			Existing Plus Approved Project		EPAP Plus Project			Existing Plus Approved Project		EPAP Plus Project		
					Volume (vph)					Volume (vph)		
			Volume (vph)	95th % Queue (feet)	Project	Total	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Project	Total	95th % Queue (feet)
Yosemite Ave (SR 120) / SB SR 99	WB left	335	422	270	2	424	275	368	220	2	370	240
	SB left	350[1]	144	120	2	146	110	482	410	2	484	385
Yosemite Ave (SR 120) / NB SR 99	EB left	335	366	250	0	366	255	567	**445**	0	567	**450**
	NB left	350	248	190	0	248	185	366	220	0	366	205
Yosemite Ave (SR 120) / Austin Road	EB left	120[2]	26	65	0	26	75	44	170	0	44	170
	WB left	475	37	65	0	37	65	57	85	0	57	95
	NB left	225	69	70	0	69	80	58	85	0	58	85
	SB left	225	33	65	0	33	65	64	100	0	64	85
Yosemite Ave (SR 120) / Ideal Parkway	EB left	200[1]	41	40	0	41	40	48	40	0	40	40
	WB left	-	-	-	3	3	<25	-	-	2	2	<25

[1] distance from end of turn lanes to ramp gore is 635 feet
[2] lane continues as TWLT lane
HIGHLIGHTED values exceed available storage

CUMULATIVE YEAR 2043 CONDITIONS

The Year 2043 traffic volume forecasts contained in the *Final Traffic Operations Analysis Report (FTOAR) for the State Route 120 / State Route 99 interchange Improvement Project*[2] represents the best available information regarding future conditions in the study area.

Future Roadway Improvements

The analysis of cumulative conditions assumes the SR 120 / SR 99 project is completed, but no other improvements in the immediate study area are assumed.

Traffic Volume Forecasts

Figure 8 presents the *Design Year 2043 with Ultimate Project* traffic volumes from the FTOAR that have been employed as the cumulative no project condition for this analysis. Figure 9 presents the sum of background cumulative volumes and project trips.

Intersection Levels of Service

Table 10 presents the a.m. peak hour and p.m. peak hour LOS at each study intersection under 2043 conditions with and without the proposed project. As indicated, the **SR 120 / NB SR 99 ramps intersection** operates with Levels of Service that exceed the City's minimum LOS D standard with and without the proposed project. However, because the length of delays is the same these conditions are not exacerbated by the project, and the project's cumulative impact is not significant, and mitigation is not required. The project will, however contribute to the cost of regional circulation system improvements by paying adopted traffic impact fees.

It is important to note that the Level of Service at closely spaced intersections is linked to assumptions regarding traffic signal timing, and that alternative timing plans can yield different results, particularly under microsimulation. In this case, Table 10 also presented the Level of Service identified in the SR 120/SR 99 FTOAR for comparison. The FTOAR results are generally similar to but in most cases better than those suggested from this analysis. FTOAR results under different assumptions indicated that satisfactory traffic operations satisfying the LOS D minimum will be achieved.

Conditions at the **SR 120 / Ideal Parkway intersection** exceed the minimum LOS D standard with and without the project. With development of the project the delays for traffic entering the intersection lengthen. However, because the projected traffic volumes remain far below the level that would satisfy peak hour traffic volume warrants, the project's impact is not significant and mitigation is not required.

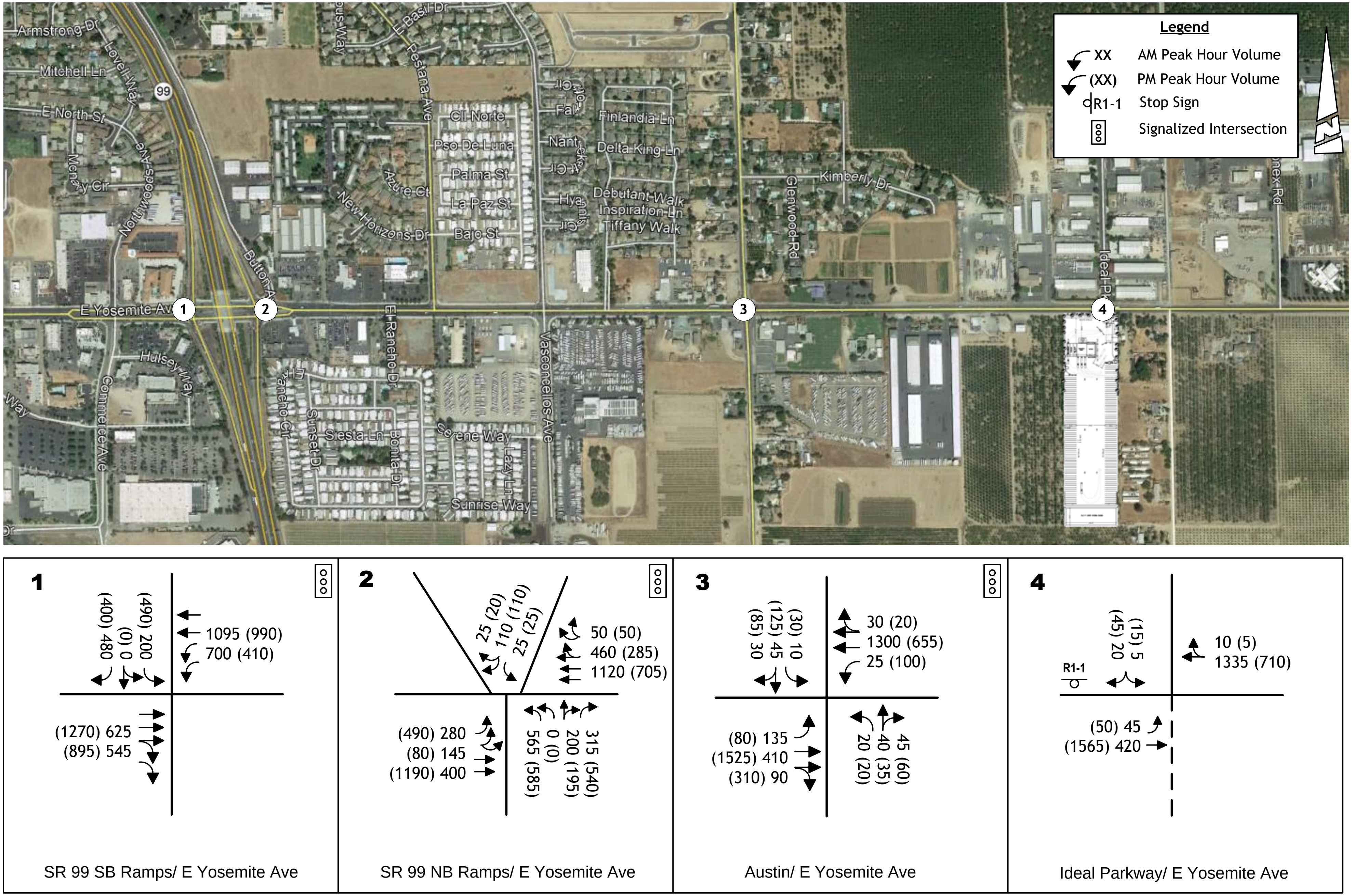
[2] Final Traffic Operations Analysis Report (FTOAR) for the State Route 120 / State Route 99 Improvement Project in San Joaquin County, CA, Fehr & Peers, January 2019.

As suggested in the discussion of trip assignment, because alternative paths are available to SR 99, it is likely in the future that truckers would elect to turn right and access SR 99 via Jack Tone Road rather than endure long delays waiting to turn left.

Queue Lengths

Table 11 presents 95th percentile queues at study area intersections under Year 2040 conditions. As indicated, while forecasts queue lengths remain within available storage areas, westbound left turn queues at the Northbound I-5 ramp intersection may exceed available storage. However, because the project does not add traffic to this movement its affect on queue length is not appreciable, and mitigation is not required.

At the SR 120 / Austin Road intersection the length of queue in the eastbound left turn lane will exceed the striped left turn lane and encroach into the adjoining TWLT lane. Because the project does not appreciably affect this queue the project's impact is not significant, and mitigation is not required. However, it is likely that the approach will need to be restriped in the future to lengthen this lane.



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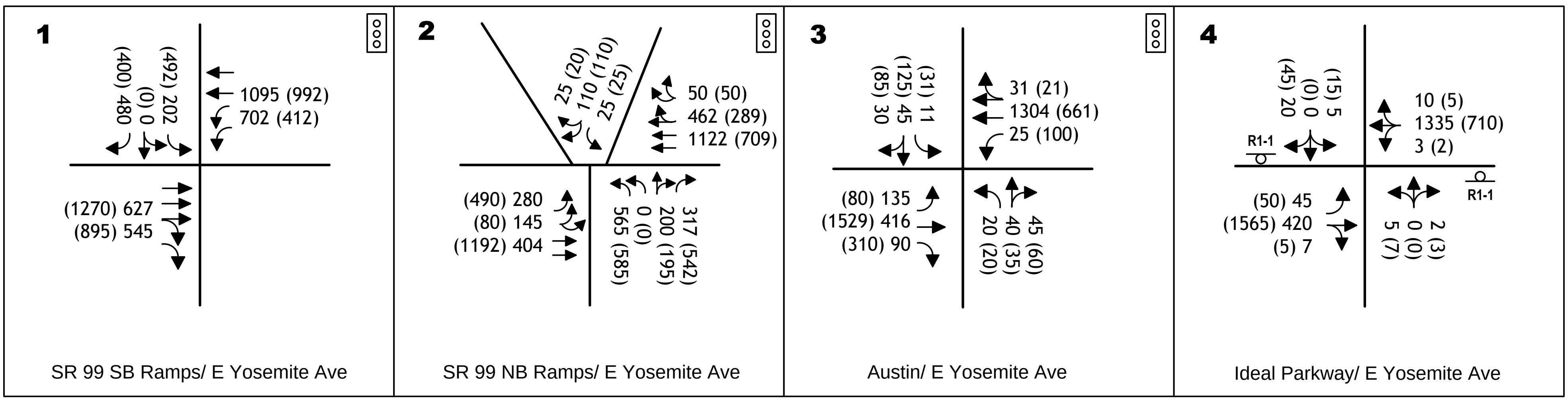
CUMULATIVE (2043) NO PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 8



CUMULATIVE 2043 PLUS PROJECT (PCE'S)
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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6560-31 RA 11/26/2019

figure 9

TABLE 10 CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE									
		AM Peak Hour				**PM Peak Hour**			
		Cumulative		**Cumulative Plus Project**		**Cumulative**		**Cumulative Plus Project**	
Intersection	**Control**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**	**Average Delay (sec/veh)**	**Level of Service**
Yosemite Ave (SR120) /	Signal	23	C	24	C	39	D	40	D
SB SR 99	FTOAR[1]	23.4	C	-		25.2	C	-	
Yosemite Ave (SR 120) /	Signal	**63**	**E**	**63**	**E**	**56**	**E**	**56**	**E**
NB SR 99	FTOAR	42.1	D	-		47.2	D	-	
Yosemite Ave (SR 120) /	Signal	21	C	20	C	41	D	42	D
Austin Road	FTOAR	28.4	C	-		28.3	C	-	
Yosemite Ave (SR 120) / Ideal Parkway	NB/SB Stop								
SB approach		**52**	**E**	**104**	**F**	8	A	14	B
NB approach		-	-	**126**	**F**	-	-	21	C

BOLD values exceed LOS D.
HIGHLIGHTED values are a significant impact
[1] Results reported in the SR 120 / SR 99 Final Traffic Operations Analysis Report

TABLE 11
CUMULATIVE PLUS PROJECT PEAK HOUR QUEUES

Intersection	Lane	Storage (feet)	AM Peak Hour					PM Peak Hour				
			Cumulative		Cumulative Plus Project			Cumulative		Cumulative Plus Project		
			Volume (vph)	95th % Queue (feet)	Volume (vph) Project	Volume (vph) Total	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph) Project	Volume (vph) Total	95th % Queue (feet)
Yosemite Ave (SR 120) / SB SR 99	WB left	335	700	285	2	702	310	410	280	2	412	280
	SB left	350[1]	200	420	2	202	450	490	440	2	492	425
Yosemite Ave (SR 120) / NB SR 99	EB left	335	425	260	0	425	290	570	**435**	0	570	**450**
	NB left	350	565	330	0	565	325	585	280	0	585	285
Yosemite Ave (SR 120) / Austin Road	EB left	120[1]	135	**160**	0	135	**160**	80	**210**	0	80	**225**
	WB left	475	25	60	0	25	50	100	160	0	100	210
	NB left	225	20	45	0	20	50	20	35	0	20	35
	SB left	225	10	40	0	10	30	30	75	0	30	190
Yosemite Ave (SR 120) / Ideal Parkway	EB left	200[1]	45	100	0	45	75	50	35	0	50	45
	WB left	-	0		3	3	<25	0	-	2	2	<25

[1] distance from end of turn lanes to ramp gore is 635 feet

[2] lane continues as TWLT lane

HIGHLIGHTED values exceed available storage

APPENDICES

(under separate cover)

Traffic Volume Counts
Simulation LOS and Queueing reports