KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

June 29, 2018

Mr. Tal Shoshan, President
T-ROSE INVESTMENTS
3880 East Ebony Street
Ontario, CA 91761

Dear Mr. Shoshan:

INTRODUCTION

The firm of Kunzman Associates, Inc. is pleased to provide this trip generation comparison for the proposed 10234 4th Street project in the City of Rancho Cucamonga. Five Star Foods currently operates out of two buildings totaling approximately 75,000 square feet located at 3880 Ebony Street in the City of Ontario and 9481 Hyssop Drive in the City of Rancho Cucamonga. Five Star Foods plans to consolidate its operations into a new facility at 10234 4th Street in the City of Rancho Cucamonga. The 58,445 square foot building will consist of 7,400 square feet of office, 24,637 square feet of manufacturing, and 27,093 square feet of warehousing.

Although this is a technical letter-report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided within Appendix A.

PROPOSED PROJECT

Five Star Foods plans to consolidate its operations into a new facility at 10234 4th Street in the City of Rancho Cucamonga. The 58,445 square foot building will consist of 7,400 square feet of office, 24,637 square feet of manufacturing, and 27,093 square feet of warehousing. The project location map is shown on Figure 1 and the site plan is illustrated on Figure 2.

TRIP GENERATION

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and lifestyles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily trips, morning peak hour inbound and outbound trips, and evening peak hour inbound and outbound trips for the project land uses. By multiplying the trip generation rates by the land use quantities, the traffic volumes are determined. Tables 1 through 3 show the project trip generation based upon rates obtained from the Institute of Transportation Engineers, Trip

Generation Manual, 10th Edition, 2017, and the City of Fontana, Truck Trip Generation Study, August 2003.

The proposed project is projected to generate a total of approximately 223 daily vehicle trips in Passenger Car Equivalents, 30 Passenger Car Equivalents of which will occur during the morning peak hour and 36 Passenger Car Equivalents of which will occur during the evening peak hour (see Tables 1 through 3). Typically, no further traffic analysis is required when a project contributes less than 50 peak hour trips to the roadway system.

Based on the threshold of 250 peak hour trips identified in Appendix C of the County of San Bernardino Congestion Management Program, the proposed project is exempt from further traffic impact analysis requirements including any intersection analysis (see Appendix B).

TRIP DISTRIBUTION

Figures 3 through 6 show the projected directional distributions of the project generated trips at project completion. The forecast project trip distribution is based on review of existing traffic volume data, surrounding land uses, local and regional roadway facilities in the project vicinity, and consultation with City staff.

CONCLUSIONS

Construct 4th Street from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

On-site traffic signing and striping shall be submitted for City approval in conjunction with detailed construction plans for the project.

As is the case for any project design, the City of Rancho Cucamonga should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Mr. Tal Shoshan, President
T-ROSE INVESTMENTS
June 29, 2018

It has been a pleasure to service your needs on the proposed 10234 4th Street project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 973-8383.

Sincerely,

KUNZMAN ASSOCIATES , INC.

Chris Pylant
Associate

JN 7378c

Table 1

Project Trip Generation - Manufacturing[1]

Descriptor	Quantity	Units[2]	Type of Vehicle					Total
			Passenger Car	2 Axle Truck	3 Axle Truck	4+ Axle Truck	Total Trucks	
Land Use: Manufacturing	32.037	TSF	80.3%	5.2%	4.5%	10.0%	19.7%	100%
Trip Generation Rates in trips per TSF								
Daily			3.156	0.204	0.177	0.393	0.774	3.93
Morning Peak Hour			0.498	0.032	0.028	0.062	0.122	0.62
Evening Peak Hour			0.538	0.035	0.030	0.067	0.132	0.67
Trip Generation in Vehicles								
Daily			101	7	6	13	26	127
Morning Peak Hour								
Inbound			12	1	1	2	4	16
Outbound			4	-	-	-	-	4
Total			16	1	1	2	4	20
Evening Peak Hour								
Inbound			5	-	-	1	1	6
Outbound			12	1	1	1	3	15
Total			17	1	1	2	4	21
Passenger Car Equivalent's (PCE'S) Factor[3]			1.00	1.50	2.00	3.00		
Trip Generation in PCE's								
Daily			101	11	12	39	62	163
Morning Peak Hour								
Inbound			12	2	2	6	10	22
Outbound			4	-	-	-	-	4
Total			16	2	2	6	10	26
Evening Peak Hour								
Inbound			5	-	-	3	3	8
Outbound			12	2	2	3	7	19
Total			17	2	2	6	10	27

[1] Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code 140 and City of Fontana, Truck Trip Generation Study, August 2003.

[2] TSF = Thousand Square Feet

[3] Passenger Car Equivalent factors are recommended by San Bernardino Associated Governments.

Table 2

Project Trip Generation - Warehousing[1]

Descriptor	Quantity	Units[2]	Type of Vehicle: Passenger Car	2 Axle Truck	3 Axle Truck	4+ Axle Truck	Total Trucks	Total
Land Use: Warehousing	27.093	TSF	80.3%	5.2%	4.5%	10.0%	19.7%	100%
Trip Generation Rates in trips per TSF								
Daily			1.397	0.091	0.078	0.174	0.343	1.74
Morning Peak Hour			0.241	0.016	0.014	0.030	0.059	0.30
Evening Peak Hour			0.257	0.017	0.014	0.032	0.063	0.32
Trip Generation in Vehicles								
Daily			38	2	2	5	9	47
Morning Peak Hour								
Inbound			3	-	-	-	-	3
Outbound			1	-	-	-	-	1
Total			4	-	-	-	-	4
Evening Peak Hour								
Inbound			1	-	-	-	-	1
Outbound			3	-	-	-	-	3
Total			4	-	-	-	-	4
Passenger Car Equivalent's (PCE'S) Factor[3]			1.00	1.50	2.00	3.00		
Trip Generation in PCE's								
Daily			38	3	4	15	22	60
Morning Peak Hour								
Inbound			3	-	-	-	-	3
Outbound			1	-	-	-	-	1
Total			4	-	-	-	-	4
Evening Peak Hour								
Inbound			1	-	-	-	-	1
Outbound			3	-	-	-	-	3
Total			4	-	-	-	-	4

[1] Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code 150 and City of Fontana, Truck Trip Generation Study, August 2003.

[2] TSF = Thousand Square Feet

[3] Passenger Car Equivalent factors are recommended by San Bernardino Associated Governments.

Table 3

Project Net Trip Generation (in PCEs[1])

Description	Peak Hour						Daily
	Morning			Evening			
	Inbound	Outbound	Total	Inbound	Outbound	Total	
Manufacturing[2]	22	4	26	8	19	27	163
Warehousing[3]	3	1	4	1	4	5	60
Total	25	5	30	9	27	36	223

[1] Passenger Car Equivalents.

[2] See Table 1.

[3] See Table 2.

Figure 1
Project Location Map

KUNZMAN ASSOCIATES, INC.

OVER 40 YEARS OF EXCELLENT SERVICE

JN 7378c

Figure 2
Site Plan

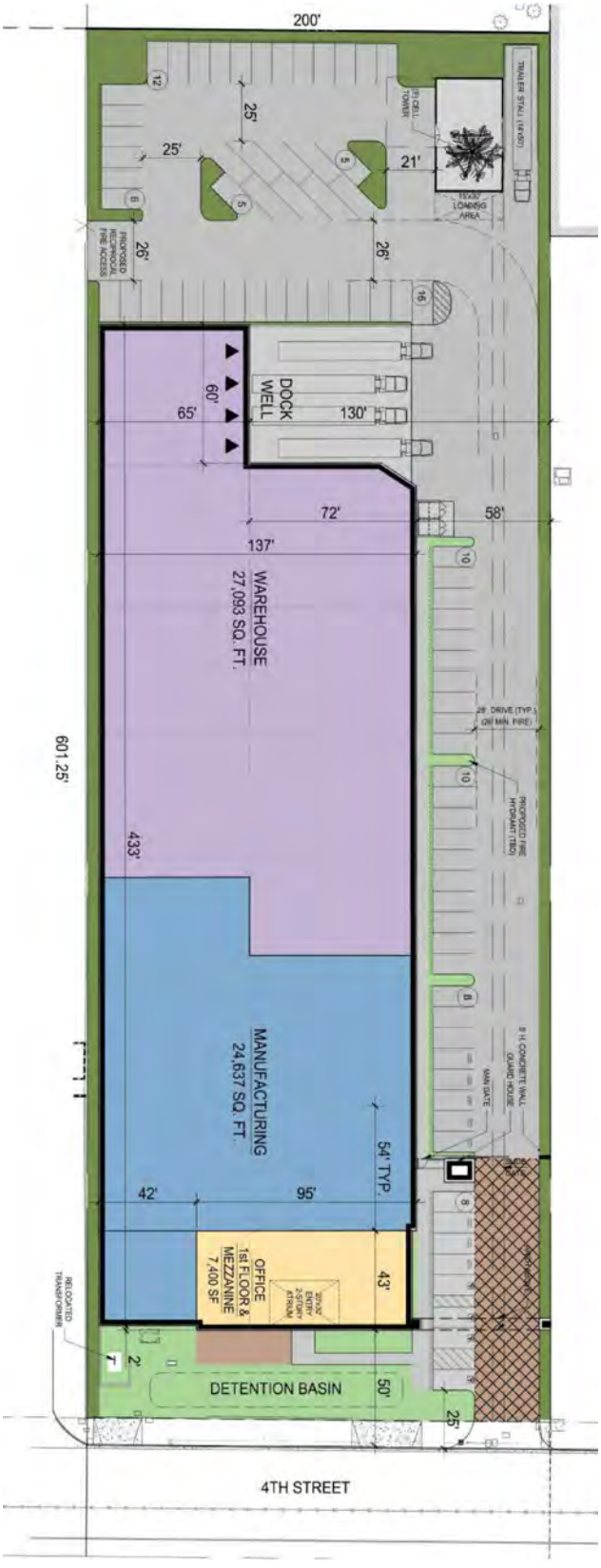

Figure 3
Outbound Trip Distribution - Cars

KUNZMAN ASSOCIATES, INC.

OVER 40 YEARS OF EXCELLENT SERVICE

JN 7378c

Figure 4
Inbound Trip Distribution - Cars

Figure 5
Outbound Trip Distribution - Trucks

KUNZMAN ASSOCIATES, INC.

OVER 40 YEARS OF EXCELLENT SERVICE

JN 7378c

Figure 6
Inbound Trip Distribution - Trucks

APPENDIX A

GLOSSARY OF TRANSPORTATION TERMS

GLOSSARY OF TRANSPORTATION TERMS

COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CYCLE LENGTH: The time period in seconds required for one complete signal cycle.

CUL-DE-SAC STREET: A local street open at one end only, and with special provisions for turning around.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

ORIGIN-DESTINATION SURVEY: A survey to determine the point of origin and the point of destination for a given vehicle trip.

PASSENGER CAR EQUIVALENTS (PCE): One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another

(destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

APPENDIX C

GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

APPENDIX C
GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

These guidelines describe the key elements required for preparing Traffic Impact Analysis Reports (TIA Reports) for the Congestion Management Program (CMP) in San Bernardino County. The purpose of these guidelines is to achieve a common approach to preparation of TIA Reports by all jurisdictions, thereby reducing inconsistencies and disagreements on how such studies should be performed.

TIA Reports shall be prepared by local jurisdictions when local criteria and thresholds indicate they are necessary. However, TIA Reports must be prepared to satisfy CMP requirements, except as noted below, when a proposed change in land use, development project, or at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation or other CMA-approved data source. Pass-by trips shall not be considered in the threshold determination. However, industrial, warehousing and truck projects shall convert trucks to PCE's before applying the threshold.

Jurisdictions that have implemented qualifying development mitigation programs that achieve development contribution requirements established by the SANBAG Development Mitigation Nexus Study are not required to prepare TIA reports for CMA review. However, until these jurisdictions have agreements with Caltrans regarding State highway facilities within the jurisdiction, any project meeting the CMP threshold of 250 two-way peak hour trips that expects to add at least 50 peak hour trips to a State highway facility is required to prepare a TIA report for Caltrans' review. If a project is forecast to generate 100 to 250 peak hour trips and expects to add at least 50 peak hour trips to a State highway facility, the jurisdiction should consult with Caltrans to determine the need for a TIA report. Refer to Figure C-1 at the end of this Appendix for a flow chart that defines when TIA reports need to be prepared.

Projects shall not be split to avoid the CMP requirements. If an additional phase of a project, when added to the preceding phases, causes the sum of the phases to exceed the threshold, the entire project must be analyzed as a unit. The analysis must be conducted when the phases are anticipated and should not wait for later phases, even if earlier phases alone would not exceed the threshold.

Locally determined criteria may be developed which are more stringent than those identified above. Individual development projects, parcels, or proposals in the same geographic vicinity that can reasonably be combined into a single project for analysis purposes which meets the threshold requirements for a TIA Report shall be analyzed as a single project.

TIA REVIEW

All TIA Reports shall be copied to the CMA. If a TIA Report is prepared by the local jurisdiction as stated above, and if the TIA Report determines

that the project would add 50 or more 2-way peak-hour trips to a CMP arterial within another jurisdiction or 100 2-way peak-hour trips to a freeway, that jurisdiction (and Caltrans, if a state highway) shall be provided a copy of the TIA Report by the permitting jurisdiction. However, these criteria are not intended to determine when a local jurisdiction prepares a TIA Report.

It is the responsibility of the local jurisdiction to provide review copies of the TIA Report to the CMA and to potentially impacted jurisdictions so that review will occur in concert with the permitting jurisdiction's project review schedule, and prior to any approval or permitting activity. (Note: the transmittal letter shall indicate the agencies receiving the TIA report.) The period allotted for review shall be stipulated by the permitting jurisdiction but shall not be less than 15 working days from the date the CMA receives the report. To establish the date of receipt, it is encouraged the report be transmitted by certified mail. Should serious technical flaws be identified in the TIA Report such that the permitting jurisdiction chooses to recirculate the TIA Report, the recirculated document shall be reviewed no later than 10 working days from the date of receipt.

Note: Caltrans' review period is 30 days, consistent with CEQA. Lack of comment by Caltrans does not imply acceptance. If an encroachment permit will be required for the project, it is recommended that the jurisdiction work with Caltrans to resolve any outstanding comments before proceeding to project approval.

The reports focus on the potential impacts of land use decisions on the CMP system. These reports are used in conjunction with modeling for the CMP system to forecast transportation deficiencies in San Bernardino County. While there are unique aspects to many projects, the approach outlined here can be applied to the vast majority of projects. The preparer of the report is responsible for presenting all the relevant information that would be helpful in making transportation-related decisions. The guidelines presented here should be regarded as typical minimum requirements. They are not a substitute for exercising good planning and engineering judgment. Local agencies may wish to include additional requirements for traffic analysis beyond those for the CMP. Only the CMP requirements are addressed here; any requirements added by a jurisdiction apply only in that jurisdiction, unless otherwise agreed.

Other information relating to the preparation of a TIA Report may be found in Chapter 4 of the Congestion Management Program for San Bernardino County. Preparers of TIA Reports should consult the CMP for additional detail.

Implications of CMP Review

The authority to make land use decisions rests with local jurisdictions. A Land Use/Transportation Analysis Program consistent with the CMP guidelines has the potential to influence local land use decisions by requiring full evaluation and disclosure of impacts to the regional transportation system, regardless of jurisdictional boundaries. Local jurisdictions are required to maintain the adopted standards on the CMP system, so it is essential that local jurisdictions consider the necessary actions and costs required to mitigate impacts that result from local land use decisions.

The success of the program relies on consistency with applicable regional plans and the cooperative efforts of local jurisdictions, Caltrans, and the CMA. If an integration of land use decisions and the provision of transportation facilities is not accomplished as required by the program, a jurisdiction which fails to mitigate deficiencies on

the CMP system caused by its land use decisions will face withholding of its Proposition 111 gas tax increment funds.

Content of the TIA TIA Report

The TIA Report may be contained within other similar documents (e.g. an EIR prepared under CEQA), or it may be an independent document. The intent is to address all CMP concerns without duplication of other work. In some jurisdictions, the TIA Report may be prepared by the developer or developer's consultant. In other jurisdictions, the TIA Report may be prepared by the jurisdiction or jurisdiction's consultant. In either case, it is in the interest of all parties that the participants fully understand and come to agreement on the assumptions and methodology prior to conducting the actual analysis. This is particularly important when considering using assumptions that vary from the norm. The local jurisdiction may request a meeting with the developer and/or preparer of the TIA Report to discuss the methodology prior to the initiation of work on the analysis. A meeting with the CMA and/or Caltrans, where applicable, is also encouraged to address issues associated with large or extraordinary projects.

The following outline and commentary represents the recommended structure for the TIA Report.

I. Introduction.

Set the stage for the analysis, providing background information necessary for the unfamiliar reader to understand the magnitude of the project, location of the project, and special characteristics.

A. Project, general plan, or specific plan description.

The description must include project size by land use type, location of project, approximate location of proposed access points to the local and regional roadway system, and movements from adjacent streets allowed into and out of the project. This should be shown in a site diagram. Special characteristics of the site, such as unusual daily or seasonal peaking characteristics or heavy involvement of truck traffic, should be mentioned. If the description is included in another part of a more comprehensive document, that is acceptable.

B. Analysis methodology.

Provide a general description (overview) of the process used to analyze the project. Analysis years should be specified and the approach to the modeling/traffic forecasting process should be explained. The sources of information should be identified. The study area and method for level of service analysis for the various roadway types should be identified. At a minimum, the study area must include all freeway links with 100 or more peak-hour project trips (two-way) and other CMP roadways with 50 or more peak-hour project trips (two-way). The study area does not end with a city or county boundary. The study area is defined by the magnitude of project trips alone. In most cases, the analysis need not extend more than five miles beyond the project site, even if there are more than 50 project trips on an arterial and 100 project trips on a freeway. However, analysis of projects in isolated areas with few access routes should be continued until the 100 or 50-trip threshold is met. Within the defined study area, all "key intersections," as listed in the most current CMP, must be analyzed. Key intersections represent intersections of CMP roadways plus those additional intersections recognized by local jurisdictions and/or SANBAG to be important to mobility on CMP roadways. At a minimum, key intersections will include signalized intersections operating at LOS D or below. The distribution of

traffic must be shown for all roadways on which project trips occur (except those for internal circulation), whether or not they are on the CMP network.

The analysis of traffic operations and level of service is to be provided for the following conditions and is to include an assessment of traffic mitigation requirements for project opening day and future conditions.

1. Existing conditions – the conditions at the time of TIA preparation without the inclusion of the project generated trips. Existing deficiencies should be identified, but mitigation analysis is not required. The existing conditions analysis must include the full project impact area as defined above.

2. Project opening day conditions - the conditions on the opening day of the project for two scenarios: 1) excluding the project traffic, and 2) including the project traffic. Assume full trip generation impact of the site. Full mitigation analysis is to be performed for project opening day conditions. If it is deemed more appropriate because of the nature of the project, another intermediate scenario may be included to focus on the access requirements and/or immediate area surrounding the project, subject to a request by the local jurisdiction. The methodology used for distribution of project traffic at project opening day conditions is at the discretion of the local jurisdiction.

3. Future conditions - the conditions for two model forecast year scenarios: 1) excluding the project traffic, and 2) including the project traffic. Full mitigation analysis is to be performed for future conditions. In addition, a staging analysis of mitigations may be required for large projects constructed over a long time period. The need for a staging analysis will be determined by the local jurisdiction.

The analysis of the project opening day and future condition shall be based on, at a minimum, the PM peak-hour of the adjacent street traffic. An analysis of the AM peak-hour of the adjacent street traffic is also required for developments containing residential land uses, and may be required for other types of development at local discretion. Analysis may be required for peak-hours other than the AM and PM peak for some land uses. This determination will be made by the local jurisdiction. The peak traffic generation hour of the development, if different from peak AM and PM hours, must also be identified, and the total vehicle trips during the peak-hour of the generator must be estimated. This will facilitate a decision regarding the need to evaluate time periods other than the peak-hours of the adjacent streets.

Note: For State highway facilities, analysis of future conditions for is only required for the following: 1) jurisdictions that have not adopted qualifying development mitigation programs that achieve development contribution requirements established by the SANBAG Development Mitigation Nexus Study, and 2) State highway facilities that are not included in the SANBAG Development Mitigation Nexus Study or are not subject to an agreement with Caltrans.

II. Existing conditions.

A. Existing roadway system.

Provide a map and brief written description of the roadway network. The number and type of lanes

on freeways, principal arterials, and other impacted roadways should be identified. Signalized intersections and plans for signalization should be identified. The existing number of lanes at key CMP intersections should be clearly identified on a graphic or in conjunction with the level of service analysis output. Maps of the CMP network are available in the Congestion Management Program documentation, available from the CMA. Also describe the relevant portions of the future network as specified with officially approved funding sources.

B. Existing volumes.

Existing average weekday daily traffic (AWDT) should be identified for the CMP links in the study area. Historic volume growth trends in the study area should be shown. Consult the local jurisdiction, Caltrans, and San Bernardino County for additional information.

C. Existing levels of service.

A level of service analysis must be conducted on all existing segments and intersections on the CMP network potentially impacted by the project or plan (as defined by the thresholds in Section I. B). Urban segments (i.e., segments on roadways that are generally signalized with spacing less than 2 miles) do not require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections. Freeway mainline must be analyzed, and ramp/weaving analysis may be required at local discretion, if a ramp or weaving problem is anticipated. Chapter 2 of the CMP presents the acceptable LOS methodologies, based on the 2000 Highway Capacity Manual. Several software packages are available for conducting LOS analysis for signalized intersections, freeways, and other types of roadways. The software package and version used must be identified. Normally, the existing LOS analysis for intersections will be run using optimized signal timing, since the future analysis will normally need to be run using optimized timing. Signal timing optimization should consider pedestrian safety and signal coordination requirements. Minimum times should be no less than 10 seconds.

Saturation flow rates are considered as average field measured saturation flow rates, and in no case shall the adjusted saturation flow rates of the 2000 Highway Capacity Software be allowed to go lower than the specified saturation flow rates listed on page C-13, when field data are not available. However, there shall be no restriction on minimum saturation flow rates if actual saturation flow rates are available.

Default lost time is two seconds per phase, and a clearance signal time of three seconds. Without local data to show otherwise, a peak-hour factor of 0.95 may be assumed for existing and full generation scenarios. Variations from these values must be documented and justified. LOS analyses should be field-verified so that the results are reasonably consistent with observation and errors in the analysis are more likely to be caught. A brief commentary on existing problem areas must be included in this section, bringing existing problems to the attention of the readers.

Only project opening day and future scenarios with project require that traffic operational problems be mitigated to provide LOS E or better operation. If the lead agency or an affected adjacent jurisdiction requires mitigation to a higher LOS, this takes precedence over the CMP requirements. The LOS threshold for State highway facilities will be the same as the jurisdiction where the facility is located but no greater than a 45 second average delay per vehicle in the peak hour (middle of LOS "D"). Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

D. Related general plan issues.

The relationship to the general plan may be identified. This section should provide general background information from the Traffic Circulation Element of the General Plan, including plans for the ultimate number of lanes, new roadways planned for the future, and other information that provides a context for how the proposed project interrelates with the future planned transportation system.

III. Future conditions.

A. Traffic forecasts.

One of the primary products of the TIA is the comparison of future traffic conditions with and without the project. The primary forecasts will be for the CMP forecast year (consult the CMA for the most currently applicable forecast years). If a project is phased over a development period past the CMP forecast year, a buildout forecast with forecast background traffic must also be provided. There are two components of the forecast that need to be considered: background traffic and project traffic. Acceptable methodologies for these forecasts are described below.

1. Project Traffic Forecasts - Two basic alternatives are available for forecasting project traffic:

   Manual method - Generate project trips using rates from the ITE Trip Generation report. Distribute and assign the trips based on the location of the project relative to the remainder of the urban area and on the type of land use. Rather than relying on pure judgment to develop the distribution of project traffic, the future year CMP model select zone needs to be obtained from SCAG to determine the distribution pattern. The percentage distribution should be reasonably related to the location of and the number of trips generated by zones surrounding the project. Computer-assisted trip distribution and assignment methods may be used as long as they reasonably represent the travel characteristics of the area in which the project is located. It should be noted that the model does not forecast project trucks. Therefore distribution needs to be made in a reasonable manner.

   Use of local model - Create a zone or zones that represent the project (if not already contained in the local model). The CMP model may be used if new zones are created to represent the project (it is unlikely that the CMP model will already have zones small enough to represent the project). The zone or zones should include the exact representation of driveway locations with centroid connectors. It is important that the driveway representations be exact to produce acceptable turning movement volumes. Some adjustments to the turning movement volumes may be needed, depending on the adequacy of this representation. (See page C-14.)

The above methodologies may produce different results, both in the generation of trips and the distribution of trips. However, both methods will have application, depending on the jurisdiction and on the type and size of project. It should be noted that a model select zone run shall be used

for distribution and ITE trip generation rates for project trips.

2. Background Traffic Forecasts - Background traffic refers to all traffic other than the traffic associated with the project itself. The background traffic shall include intersection turning movement and segment truck volumes by classification (converted to PCE's) as shown on page C-12 on arterial streets, interchange ramps, and mainline freeway lanes. Future scenarios shall use the truck model (converted to PCEs) or 150 percent of the existing truck volume for arterials and freeway ramps and 160 percent for mainline freeway lanes in a special generator area such as found in the City of Fontana (between I-15 and Citrus Avenue, and between San Bernardino Avenue and Jurupa Avenue).

   Several alternatives for forecasting background traffic are:

   For project opening day analysis - Use accepted growth rates provided by the jurisdictions in which the analysis is to take place. Each jurisdiction's growth rates should be used for intersections and segments within that jurisdiction. A table of growth rates may be available from the jurisdictions.

   For horizon year - The traffic passenger vehicle and truck classification (in PCEs) models will provide the needed forecasts and if requested, passenger vehicle background plus project forecasts. Local models may also be used to generate intersection and segment forecasts, if a traffic refinement process is properly applied to maximize the quality and reasonableness of the forecasts. Alternatively, the CMP model may be used to generate growth factors by subarea, which may be applied to existing intersection and segment volumes. The separate forecasting of background traffic by each TIA Report preparer is redundant, will only create conflict among reports, and should be avoided by the city/county providing an acceptable background forecast for use by all TIA Report preparers. Ideally, cities and/or the County should establish the background forecasts annually for use by project applicants. Until the city/county is in a position to produce these forecasts on a routine basis, they may wish to use the results of the background forecasts from prior acceptable TIA Reports as the basis for background forecasts for other TIA Reports. The availability of such forecasts should be established before initiating the preparation of a TIA Report. If the CMP model is being used as the basis for the forecast, assume that the project is not included in the CMP model forecast (unless it can be definitively proven otherwise). If a local model is being used, the background traffic will be derived by subtracting the project traffic from the forecast where the project is already represented in the model. Where the project is not represented in the model, the background traffic can be directly derived from the model (with appropriate refinement to maintain quality and reasonableness of the forecasts).

A Note on Methodology for General Plans and Specific Plans:

In the case of analysis of general plan revisions/updates or specific plans, the same approach is applied as above. However, the "project" to be analyzed shall consist of the

proposed land use. For threshold determination use the difference between the previously approved general plan and the proposed revision to the general plan. Unless otherwise agreed by the local jurisdiction, the analysis must assume the maximum intensity of land uses allowed (i.e., worst case) on the parcels to which the revision applies. All new specific plans must be analyzed based on worst case assumptions. Although general plans may not identify specific access locations, the analysis must assume access locations that are reasonable, based on the location and size of the plan.

B. Traffic added by project, general plan revision/update, or specific plan.

The methods for generating and distributing project trips must be consistent with the appropriate methodology listed above. The total number of trips generated by the project must be specified by land use. The source of the trip generation rates must be documented. Project trips (inbound and outbound) must be identified on a graphic map for both the peak hour or hours being studied.

Any assumed reductions in trip generation rates, such as internal trips, and transit/TDM reductions must be documented. Pass-by trips may be allowed only for retail uses and fast-food restaurants. The pass-by and internal trip percentages and methodology must be consistent with the estimates and methodology contained in the latest ITE Trip Generation handbook. The internal trip percentage must be justified by having a mixed-use development of sufficient size. In special cases, larger reductions may be allowed; but these must be documented and justified. Reductions for transit or TDM must be accompanied by an explanation of how the strategies will actually be implemented and may require a monitoring program.

Industrial and warehouse truck uses must also show the estimated number and distribution of truck trips (in PCE's) for the same hours. Appendix I contains guidelines for trip generation rates and truck percentages for industrial and warehouse land uses. Appendix I indicates trip rates to be used from either the latest edition of ITE's *Trip Generation* report or from the City of Fontana *Truck Trip Generation Study*, dated August 2003, depending on type of industrial or warehouse use. Appendix I also contains a memo specific to the use of trip generation rates for "high-cube warehouse". Trip generation rates for common carriers such as Yellow Freight, Roadway, or Swift shall be determined using the latest edition of ITE's *Trip Generation* report or a site specific study approved by the local jurisdiction.

C. Transit and TDM considerations.

Transit and travel demand management strategies are a consideration in many development projects. Requirements within each jurisdiction are contained in the local TDM ordinance, to be adopted by each local jurisdiction as part of the CMP requirements. Examples of items to include are location of transit stops in relationship to the proposed project, designation of ridesharing coordinator, posting of information on transit routes and ridesharing information, provision of transit passes, etc..

D. Traffic model forecasts.

Provide a map showing link volumes by direction. All CMP arterial links with 50 or more peak-hour project trips (two-way) and freeway links with 100 or more peak-hour project trips (two-way) must be shown. The factor to derive a peak-hour from the three-hour AM peak period is 0.38. The factor to derive a peak-hour from the four-hour PM peak is 0.28. All model forecasts shall be post processed.

Appendix H contains guidelines for model post processing.

E. Future levels of service.

Compute levels of service for CMP segments and intersections based on the procedures in the 2000 Highway Capacity Manual and subsequent updates. Refer to the procedures adopted in Chapter 2 of the CMP and the assumptions specified in section II.C of this appendix. Copies of the volumes, intersection geometry, capacity analysis worksheets, and all relevant assumptions must be included as appendices to the TIA Report. It should be noted that the v/c ratio and implied level of service that can be output by travel demand models are different from the level of service analysis prescribed in this section. The capacities used in the model are not typically the same capacities as used in the capacity analysis.

Intersections and segments on State highway facilities should be analyzed as a coordinated system. Left turn, through and right turn lane queuing analysis is highly desirable to validate an intersection's LOS. This more detailed analysis is meant to ensure the various movements do not overflow and impede adjacent movements, and is left to the discretion of the local agency.

F. Description of projected level of service problems.

Identify resulting levels of service for intersections and segments, as appropriate, on a map for applicable peak-hours. Describe in the text the nature of expected level of service problems. Describe any other impacts that the project may also have on the CMP roadway network, particularly access requirements.

G. Project contribution to total new volumes (forecast minus existing) on analyzed links.

Compute the ratio of traffic generated by the proposed development to the total new traffic (including project traffic) generated between the existing condition and forecast year for each analyzed link or intersection. The purpose of this calculation is to identify the proportion of volume increase that can be attributed to the proposed project. This will be a necessary component of any deficiency plans prepared under the CMP at a later date. The calculations are to be conducted for all applicable peak-hours. The results may be shown on a map or in a table by percentages to the nearest tenth of a percent.

IV. Project mitigation.

The mitigation of project impacts is designed to identify potential level of service problems and to address them before they actually occur. This will also provide a framework for negotiations between the local jurisdiction and the project developer. The CMA will not be involved in these negotiations unless requested by a local jurisdiction. Impacts beyond the boundaries of the jurisdiction must be identified in the same fashion as impacts within the jurisdictional boundary. Impacted local agencies outside the boundary will be provided an opportunity for review of the TIA Report. Negotiations with these outside jurisdictions and with Caltrans are a possible outcome, depending on the magnitude and nature of the impacts. For the CMP, the mitigations must bring the roadway into conformance with the LOS standards established for the CMP. However, local agencies may require conformance to higher standards, and these must be considered in consultation with the local jurisdiction. Measures to address local needs that are independent from the CMP network should be included in the TIA Report for continuity purposes. Consult the local jurisdiction to determine requirements which may be beyond the requirements of the CMP. The

information required in this part of the TIA Report is described below.

A. Other transportation improvements already programmed and fully funded.

Only transportation improvements that are fully funded should be assumed in forecast.

B. Roadway improvements needed to maintain CMP level of service standard.

These should include an evaluation of intersection turn lanes, signalization, signal coordination, and link lane additions, at a minimum. If a freeway is involved, lane requirements and ramp treatments to solve level of service deficiencies must be examined. Prior studies on the same sections may be furnished to the preparer of the TIA, and such studies may be referenced if they do, in fact, provide the necessary mitigation for the proposed project. However, the calculation of percentage of contribution of the project to the growth in traffic must still be provided for the appropriate peak-hours, as described earlier. If the physical or environmental constraints make mitigation unlikely, then the contribution may be used to improve level of service elsewhere on the system or another location that would relieve the impact. The point of referencing a previously conducted study is to avoid unnecessary duplication of effort on the same sections of roadway. Copies of previously conducted relevant studies in the area may be obtained from the local jurisdictions or the CMA, including any plans resulting from the annual modeling runs for the CMP.

C. Other improvements needed to maintain the LOS standard.

In some cases, additional transit and TDM strategies beyond what was in the original assumptions may be necessary to provide an adequate mitigation. These must be described and the method for implementation must be discussed.

D. Level of service with improvements.

The level of service with improvements must be computed and shown on a map or table along with the traffic level of service without improvements. Delay values, freeway volume/capacity ratios, or other measures of level of service must be included in the results (could be in an appendix) along with the letter designation.

E. Cost estimates.

The costs of mitigating deficiencies must be estimated for deficiencies that occur either within or outside the boundaries of the jurisdiction. The costs must be identified separately for each jurisdiction and for Caltrans roadways. Prior studies and cost estimates by SANBAG, Caltrans and other jurisdictions may be referenced, or the Preliminary Construction Cost Estimates provided in Appendix G may be used. Used together with the analysis conducted in Section III.G, this will provide an approximation of project contribution to the needed improvements. This estimate is prepared for discussion purposes with the local jurisdiction and with neighboring jurisdictions and Caltrans. It does not imply any legal responsibility or formula for contributions to mitigations. If a mitigation is identified as necessary to bring a deficiency into conformance with the level of service standard, but physical or environmental constraints make the improvement impractical, an equivalent contribution should be considered to improve the LOS elsewhere on the system or another location providing direct relief.

F. Relationship to other elements.

While the measures required to address air quality problems are not required for the TIA Report, they may be required as part of a CEQA review. The

TIA Report may be integrated with environmental documents prepared for CEQA requirements. This is at the discretion of the local jurisdiction.

V. Conclusions and recommendations.

A. Summary of proposed mitigations and costs.

Provide a summary of the impacts, proposed mitigations, and the costs of the mitigations. A cost estimate for the proposed mitigations must be included. Generalized unit costs will be available from either Caltrans, the local jurisdiction, or Appendix G. The source of the unit cost estimates used must be specified in the TIA Report.

B. Other recommendations.

List any other recommendations that should be brought to the attention of the local jurisdiction, the CMA, or Caltrans. This may include anticipated problems beyond the forecast year or on portions of the network not analyzed.

Summary List of Typical Figures and Tables to Be Included in a TIA Report.

- Project location and 5 mile limit study area (map)
- Project size by land use (table)
- Trips generated by land use for AM and PM weekday peak-hours of adjacent street traffic and for daily traffic inbound and outbound (table) and other applicable peak-hours
- List of other planned transportation improvements affecting the project
- Existing intersection and link volumes and levels of service (map)
- Distribution and assignment of project trips (map)
- Forecast traffic without project and with project for applicable peak-hours (map or table)
- Levels of service without project and with project (map or table)
- Improvements required to mitigate project opening day and forecast year scenario impacts (map and/or table)
- Ratio of project traffic to new traffic (new traffic means the difference between existing and forecast) on analyzed links or intersections (map or table)
- Improvement costs by jurisdiction and for Caltrans roadways

SUMMARY OF ANALYSIS ASSUMPTIONS FOR THE CMP TRAFFIC IMPACT ANALYSIS GUIDELINES

Level of Service Analysis Procedures and Assumptions

Intersections

- 2000 HCM operational analysis.
- Optimized signal timing/phasing for future signal analysis, unless assumed to be in a coordinated system, in which case estimated actual cycle length is used. The maximum cycle length for a single

signalized intersection or system should be 130 seconds.

- 10 second minimum phase time, including change interval.
- Average arrivals, unless a coordinated signal system dictates otherwise.
- Ideal lane width (12 feet).
- 2 second lost time/phase.
- "Required" solution if analysis by Webster.
- Exclusive right turn lane is assumed to exist if pavement is wide enough to permit a separate right turn, even if it is not striped. (Minimum 20' from curb line to lane stripe.)
- A full saturation flow rate can be assumed for an extra lane provided on the upstream of the intersection only if this lane also extends at least 600 ft downstream of the intersection (or to the next downstream intersection).
- PHF = 0.95 for future analysis.
- The lane utilization factor may also be set at 1.00 when the v/c ratio for the lane group approaches 1.0, as lanes tend to be more equally utilized in such situations.
- For light duty trucks (such as service vehicles, buses, RV's and dual rear wheels) use a PCE of 1.5. For medium duty trucks with 3 axles use a PCE of 2.0. For heavy duty trucks with 4 axles, use a PCE of 3.0.
- Industrial, warehousing and other Projects with high truck percentages should convert to PCE's before applying thresholds.
- When field saturation flow rates and any special intersection characteristics are not available, the following field adjusted saturation flow rates are recommended for analysis.

<u>Existing and Opening Day Scenarios</u>

- Exclusive thru: 1800 vphgpl
- Exclusive left: 1700 vphgpl
- Exclusive right: 1800 vphgpl
- Exclusive double left: 1600 vphgpl
- Exclusive triple left: 1500 vphgpl or less

<u>Future Scenarios</u>

- Exclusive thru: 1900 vphgpl
- Exclusive left: 1800 vphgpl
- Exclusive double left: 1700 vphgpl
- Exclusive right: 1900 vphgpl
- Exclusive double right: 1800 vphgpl
- Exclusive triple left: 1600 vphgpl

<u>Note:</u> Existing field saturation flow rates should be used if they are available

and any special traffic or geometric characteristics should also be taken into account if known to affect traffic flow.

Freeways

- Capacity of 2,300 vehicles/hour/lane (1600/hr/lane/HOV)
- Use Caltrans truck percentages (includes trucks, buses and RV's)
- Peak-hour factor of 0.98 for congested areas and 0.95 for less congested areas
- Directional distribution of 55% and 45%, if using non-directional volumes from Caltrans volume book
- Design speed of 70 mph
- Volumes used from Caltrans' annual volume book are assumed to be PM peak-hour. AM peak mainline volumes assumed as 90% of PM peak, if using Caltrans volume book

Stop Controlled Intersections

- 2000 HCM for 2-way and 4-way stops

Project-Related Assumptions

- Use the latest ITE Trip Generation handbook for mixed use internal trip percentages. Higher percentages must be fully justified.
- Pass by trips - Retail uses and fast food restaurants only
    - Use ITE procedures to estimate percentage
    - For analysis at entry points into site, driveway volume is not reduced (i.e., trip generation rate is still the same). Rather, trips are redistributed based on the assumed prevalent directions of pass-by trips (see recommended ITE procedure).
- Reductions for transit or TDM are a maximum of 10% unless higher can be justified.

Other

- If a new traffic generating development project (other than a single family residential unit) within a federally designated urbanized area abuts a state highway or abuts a highway that intersects a State highway within 500 feet of that intersection, the local jurisdiction in which the development occurs must notify Caltrans and the CMA.
- The TIA procedures will be reviewed biannually. Forward comments to the CMA.
- Industrial warehouse and truck projects may distribute only truck trips by hand. (Employee trip distribution shall be modeled.)
- Intersections will be considered deficient (LOS “F”) if the critical v/c ratio equals or exceeds 1.0, even if the level of service defined by the delay value is above the defined LOS standard.
- All the computer-generated traffic forecasts need to be refined for use in TIA reports to provide the best estimate of future volumes possible. Traffic forecasts should be post processed by using “B”

turns software available through SCAG's Riverside Office or another approved methodolgy as found in the Federal Transportation Research Board Report 255. However, the post processing of turning movements is restricted to local models only.

Figure C-1: Peak Hour Trip Generation Thresholds for Preparation of SANBAG and Caltrans TIA Reports