TRACT NO. 7260
ASSOCIATION, INC.

2065 Kerwood Avenue, Los Angeles, CA 90025-6006 Fax or Phone: (310) 277-6505

September 27, 2002

Maya E. Zaitzevsky, Project Coordinator
Department of City Planning
200 North Spring Street, Room 763
Los Angeles, CA 90012

Dear Ms. Zaitzvevsky:

The enclosed attachment contains the Tract No. 7260 response as prepared by our traffic engineer, Tom Brohard, to the traffic element of the Draft EIR on the Trammell Crow project at 2000 Avenue of the Stars, Los Angeles.

Also, our organization would like to request that you send us an up-to-date complete copy of the allocation of Trips under the Century City North Specific Plan. We especially would like to know who currently owns each trip as well as who owns each unused Trip. Thank you for your help.

Sincerely,

Richard S Harmetz

Richard S Harmetz, Secretary, Tract No. 7260 Association, Inc.

FINAL REPORT

2000 AVENUE OF THE STARS PROJECT
IN THE CENTURY CITY
IN THE CITY OF LOS ANGELES

DRAFT EIR
AUGUST 2002

EVALUATION OF
TRAFFIC AND CIRCULATION ANALYSIS

PREPARED BY:

Tom Brohard

TOM BROHARD, PE
RCE 24577; RTE 724

TOM BROHARD AND ASSOCIATES
8215 VIA ESCONDIDA
WHITTIER, CALIFORNIA 90605

Phone: (562) 907-5680
Fax: (562) 907-4601
Email: tbrohard@earthlink.net

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Executive Summary

Our review of the traffic portions of the Draft EIR for the 2000 Avenue of the Stars Project disclosed the following:

1) A failure to appropriately measure and quantify traffic generation from the existing ABC Entertainment Center proposed to be demolished.
   a) The developer characterized these two buildings as being essentially vacant and dark at the project scoping meeting in January 2002.
   b) Existing traffic counts taken at intersections during a time of high vacancy in the ABC Entertainment Center should not be used as a baseline to estimate the net traffic impacts of the proposed project.
   c) In the theoretical evaluation used, trips at inflated rates with full occupancy of the ABC Entertainment Center were deducted from existing volumes.
   d) This combination grossly overstates the reduction in trips associated with removal of the present uses.
   e) It does not appropriately assess the traffic impacts of the proposed project as effectively a new generator of traffic.
   f) Instead, localized trip rates for the entire block could have been easily determined and should have been used to properly evaluate the removal of existing uses and their associated trips.

2) Faulty methodology was employed in the traffic study, inflating trips for the existing uses and lowering the trips associated with the proposed project.
   a) Unrealistically high trip estimates were used for the existing development, even after applying an arbitrary 50% reduction for internal walking trips to and from the restaurant and retail uses at the ABC Entertainment Center.
   b) Inflated peak hour trip rates were used for the existing restaurants, most of which are closed during the AM and PM peak traffic hours.
   c) High trip rates for suburban movie theaters were used to estimate the existing cinemas.
   d) An unrealistic Transportation Demand Management Program involving carpools, vanpools, and bicycles reduces project trips by 5%.
   e) Instead, a general office trip rate, consistent with the approved Draft EIR for Constellation Place, should be used for 2000 Avenue of the Stars.
   f) To generate the same number of trips as the ABC Entertainment Center realistically generates, the proposed project would have to be reduced by 200,000 square feet to about 625,000 square feet in size.

3) Revision of the Draft EIR will clearly disclose significant traffic impacts.
   a) All practical traffic mitigation measures including intersection widening and installation of signal systems will be constructed by approved projects.
   b) Barring a huge infusion of funds for extensive improvements such as people movers and associated parking structures, it does not appear that the proposed project's traffic impacts can be mitigated with typical traffic engineering solutions.

I. Overview of Approach and Major Findings

The purpose of this report is to evaluate the traffic and circulation analysis performed in relation to the 2000 Avenue of the Stars Project proposed by the Trammell Crow Company. The traffic portions of the August 2002 Draft Environmental Impact Report submitted to the Los Angeles Department of City Planning by Envicom Corporation as well as the June 2002 traffic impact study prepared by Crain & Associates were reviewed in detail. A field review of the intersections studied as well as observations of the existing pedestrian interaction at the project site with the Century Plaza Towers were also conducted. Additionally, various reports and documents relating to projects in Century City including Constellation Place, the expansion of Fox Studios, and the Santa Monica Boulevard Transit Parkway, as well as the Century City North Specific Plan and the West Los Angeles Transportation and Mitigation Specific Plan, were also reviewed.

As listed below, the Draft EIR and the supporting traffic study contains numerous flaws and many errors, and there are also a number of omissions of critically important issues. As a result, the Draft EIR fails to properly and adequately identify the traffic impacts of the 2000 Avenue of the Stars Project. The following summarizes the significant findings of our review of the Draft EIR for the 2000 Avenue of the Stars Project proposed in Century City in the City of Los Angeles.

II. Omissions from the Draft EIR Traffic Analysis

Significant omissions in the Draft EIR and the traffic study for the 2000 Avenue of the Stars Project include failures to appropriately measure and quantify traffic generation from the existing ABC Entertainment Center as well as the Century Plaza Towers and to thoroughly analyze and describe the impacts from alternative developments. Additional omissions include failures to properly evaluate and mitigate impacts associated with the loss of parking spaces during construction as well as vehicle queuing during the AM peak hour at the driveways serving the parking structure beneath the entire block upon completion of the proposed project.

A. Trip Generation from Existing ABC Entertainment Center Not Measured – Many letters submitted in response to the Notice of Preparation of the Draft EIR for the proposed project, contained in Appendix 20 of the document, requested the gathering of actual trip count data from the existing ABC Entertainment Center. Additional comments received during the January 14, 2002 Scoping Meeting as transcribed in Appendix 21 of the Draft EIR reiterated this request following the developer's comments about high vacancy rates at 2020 and 2040 Avenue of the Stars. As indicated on Page 14 of Appendix 21, the developer characterized these two buildings as being essentially vacant.

In 1991, the Institute of Transportation Engineers (ITE), an international educational and scientific association of transportation and traffic engineers and other professionals who are responsible for meeting mobility and safety needs, published Traffic Access and Impact Studies for Site Development, A Recommended Practice. As shown in Attachment 1 to this report, pages 24 and 30 of this publication indicate the following:

> "Most studies for new or expanding developments are concerned with assessing impacts of *additional* traffic and providing proper accommodations for *total* site traffic. As a result, the study should include the subtraction of existing site traffic if the current land use is to be replaced.... When traffic generated by an existing development is to be subtracted, estimate or count trip generation of the development to be removed...."
>
> "Traffic estimates for any site with current traffic activity should reflect not only the addition of traffic associated with new development, but also the subtraction of traffic currently generated by the existing development that will be removed because of the site's redevelopment."

It is always preferable to use actual traffic counts and to develop localized trip rates to properly evaluate the removal of existing uses and their associated trips. To establish the actual trip generation rates for this square footage, at a single uniform rate as recommended later in this report, traffic counts should have been made as part of the traffic study for the Draft EIR. This could have been done simply by counting all vehicles over 24 hours that entered and exited the carriage area and the combined parking structure under the ABC Entertainment Center and the Century Plaza Towers. With the actual traffic counts and by knowing how much floor area is in use, it is a very simple matter to calculate the actual trip generation rates for this block. This merely involves dividing the number of trips over 24 hours and during both peak hours by the occupied square footage in the Century Plaza Towers and the ABC Entertainment Center.

While the traffic study indicates that most of the existing traffic counts were taken in 2001 "at a time the site was fully occupied," this statement contradicts representations made by the developer during the Scoping Meeting. Clearly, traffic counts taken at intersections during a time of high vacancy in the ABC Entertainment Center should not be used to estimate the net traffic impacts of the proposed project.

In the theoretical evaluation conducted in the traffic study, trips at inflated rates and at the assumed full occupancy of the ABC Entertainment Center were deducted from the existing volumes. With the developer's comments regarding vacancy rates, this combination grossly overstates the reduction

in trips associated with removal of the present uses and does not appropriately assess the traffic impacts of the proposed project as effectively a new generator of traffic.

Instead of gathering specific trip information at the site proposed to be redeveloped as recommended by ITE and as described in this report, both the existing development and the proposed project were evaluated using estimated trip generation factors. An arbitrary 50% reduction was also applied to estimate the number of internal trips to and from the restaurant and retail uses at the ABC Entertainment Center within the block.

The approach taken in the traffic study is contrary to good traffic engineering practice and does not provide an accurate baseline from which to establish the true traffic impacts of the proposed project or the alternatives. This is absolutely critical, irrespective of the entitlement process and the applicable City codes and ordinances regarding traffic in Century City and West Los Angeles.

B. Analysis of Impacts of Alternative Developments Omitted - The Draft EIR identifies four alternatives and possible combinations of land uses on the site covered by the document. In addition to the no project alternative, an all office alternative of 1,276,000 square feet, a hotel/retail/entertainment alternative of 927,000 square feet, and a reduced density office alternative of 500,000 square feet are briefly described on Page 276 of the Draft EIR. The Draft EIR generally compares traffic volumes of the proposed project to the alternatives and indicates peak hour traffic volumes for three of the alternatives would be higher than the proposed project. The traffic study does not include this information regarding the number of peak hour trips that could be generated by the alternatives.

The Draft EIR fails to adequately compare and relate the alternatives to the proposed project as it offers no specific information regarding the distribution of the trips, analysis of traffic conditions and impacts in 2005, and necessary mitigation measures. Such analysis of alternatives is required in the Draft EIR for a proposed project and these evaluations must be completed and added to this Draft EIR.

C. Additional Omissions - The following additional omissions were also noted in our review of the Draft EIR and the traffic study:

1. Impacts On Parking During Construction Omitted – In their January 17, 2002 letter in Appendix 18, International Parking Design indicates there are 3,548 parking spaces under the existing Century Plaza Towers and that 4,205 parking spaces are required for the Towers. The use of 1,878 parking spaces under the ABC Entertainment Center will be lost during the construction of the redevelopment of the site.

During the construction period, there will be a shortage of 657 parking spaces that are needed to support the Century Plaza Towers. The traffic study and the Draft EIR need to evaluate this parking shortage and develop measures to mitigate this significant impact.

2. AM Peak Hour Vehicle Queuing Not Addressed – When the traffic study is revised to properly assess the traffic impacts of the proposed project, a significantly higher number of vehicle trips will arrive at the driveways during the morning peak hours. Without additional study and necessary mitigation, vehicles entering the parking structure can be expected to queue back into the adjacent streets around the perimeter, blocking through travel lanes on these important roadways. Vehicle queuing during the morning peak hours needs to be assessed and appropriate mitigation measures incorporated into the Draft EIR.

III. Faulty Methodology

The Draft EIR and traffic study employ faulty methodology by using inflated and unrealistically high peak hour trip generation rates for the existing land uses in the ABC Entertainment Center rather than using general office building trip rates. These general office rates must also be used to evaluate the proposed project at 2000 Avenue of the Stars for consistency with the approved Draft EIR and traffic study for Constellation Place. Erroneous trip distribution and assignment to the adjacent roadways as well as unrealistic Transportation Demand Management (TDM) Program reductions are also included in the traffic study and the Draft EIR for the proposed project.

A. Unrealistically High Trip Generation Rates Used for the ABC Entertainment Center Were Used – The traffic study for the Draft EIR evaluated the existing ABC Entertainment Center by using estimated trip generation factors rather than actual counts. An arbitrary 50% reduction was then applied to estimate the number of internal walking trips to and from the restaurant and retail uses at the ABC Entertainment Center. The approach taken in the traffic study is contrary to good traffic engineering practice and does not provide an accurate baseline from which to evaluate the traffic impacts of the proposed project or the alternatives.

The traffic study used the average peak hour rates from the information in ITE's Trip Generation, 6th Edition to estimate trips generated by the 117,000 square feet of high turnover restaurant space in the ABC Entertainment Center. Information contained in the ITE publication covering this land use is shown in Attachment 2, with an average rate of 9.27 trips per thousand square feet of gross floor area and a range of rates from 0.53 to 25.60 trips per thousand square feet of gross floor area reported during the morning peak hour. During the afternoon peak hour, an average rate of 10.86 trips per thousand square feet of gross floor area

and a range of rates from 2.80 to 62.00 trips per thousand square feet of gross floor area were reported. The introduction to this land use indicates:

- "Vehicle occupancy ranged from 1.39 to 1.69 persons per automobile on an average weekday."

- "Users should exercise caution when applying statistics during the AM peak period as the sites contained in the data base for this land use may or may not be open for breakfast."

Using the ITE average rates and reducing these values by 50% for internal walking trips, the traffic study calculated that the high turnover restaurants in the ABC Entertainment Center generate 543 net AM peak hour trips (282 in and 261 out) and 757 net PM trips (454 in and 303 out) for the 117,000 square feet of this land use. The resulting number of net peak hour trips used in the traffic study is significantly higher than those that are actually occurring for several reasons including:

- All of the remaining 11 high turnover restaurants in the ABC Entertainment Center are open for lunch. However, only three of them are open for breakfast and only four are open for dinner.

- Parking rates at the ABC Entertainment Center are high, discouraging motorists from parking for brief periods to patronize the high turnover restaurants.

- There is no signing visible from the adjacent streets to attract passing motorists to these high turnover restaurants.

- There is significant pedestrian activity between the ABC Entertainment Center and the Century Plaza Towers. Between Noon and 12:30 PM on September 11, 2002, 450 employees walked from the Century Plaza Towers across the plaza to the ABC Entertainment Center. During the same 30 minute observation, 155 returned to the Towers, with 75 of them bringing food back to their offices for themselves and others.

The traffic study and the Draft EIR use similar unrealistic traffic projections for the high quality restaurant, retail, and health club uses in the ABC Entertainment Center. These facilities support and depend upon the Century Plaza Towers, not passing motorists on the adjacent streets.

In lieu of the preferred approach of gathering actual counts and developing trip generation rates for the block, an evaluation as suggested in the following sections of this report would have yielded specific and reliable trip generation data rather than the grossly inflated trip generation

estimates that were used for the restaurant, retail, and health club in the ABC Entertainment Center in the traffic study and the Draft EIR.

B. General Office Building Rates Should Be Used For the Restaurant, Retail, and Health Club In the ABC Entertainment Center – As indicated above, there is considerable existing pedestrian activity between the ABC Entertainment Center and the Century Plaza Towers. Very few vehicle trips to the restaurant, retail, and health club uses occur. While all are open for lunch, few of these high turnover restaurants are open for breakfast or dinner, acting as a food court does in a shopping mall. Trips associated with the high turnover restaurants at the ABC Entertainment Center should be treated as they would be in other types of development such as a shopping mall, at the same trip rate as the other project uses.

The traffic study should have used the trip generation rates for a general office building from ITE's Trip Generation, 6th Edition to estimate trips generated by the office, high turnover restaurant, quality restaurant, retail, and health club uses in the ABC Entertainment Center. As shown in Attachment 3, a general office building houses multiple tenants and typically includes various support services such as banks, restaurants and service retail facilities. Additionally:

> "When the buildings are interrelated (defined by shared parking facilities or the ability to easily walk between buildings) or house one tenant, it is suggested that the total area or employment of all the buildings be used for calculating trip generation."

The Trip Generation Handbook, An ITE Recommended Practice published in March 2001 also indicates that the development in this block should be treated as a general office building. Attachment 4 states:

> "Office buildings with support retail or restaurant facilities contained inside the building should be treated as general office buildings (Land Use Code 710) because the trip generation rates and equations already reflect such uses."

Using the ITE rates for general office buildings applied to the total of 595,000 square feet for office, restaurant, retail, and health club uses in the ABC Entertainment Center, about 5,200 daily trips would be generated including about 750 trips in the AM peak hour and about 750 trips in the PM peak hour. The following table contrasts the trip generation included in Table 6 of the traffic study for these uses with the proper approach of considering them at the general office building rates for trips generated by the ABC Entertainment Center:

		AM Peak		PM Peak	
Methodology	Daily	In	Out	In	Out
Traffic Study	14,700	750	340	830	920
General Office	5,200	660	90	130	620
Trips Overestimated	9,500	90	250	700	300

C. Cinema Trip Generation Rates in the PM Peak Hour Are Too High – The traffic study used PM peak hour trip generation rates that overstate the number of PM peak hour trips from this use. While 50% reduction factors were used for the trips associated with the restaurant, retail, and health club uses, no such reductions were applied to the cinema. Based upon the significant pedestrian interaction with the Century Plaza Towers and nearby portions of Century City, similar PM peak hour reductions should have been applied to the four movie screens.

While the traffic study used the City of San Diego's Trip Generation Manual to estimate daily and AM peak hour trips for the existing cinema at the ABC Entertainment Center, the traffic study used rates per seat associated with movie theaters in suburban areas rather than similar urban surroundings. A portion of the City of San Diego's manual provides trip generation data for the Centre City area, their urbanized core area. Trip rates for movie theaters in this setting generate 7 trips/thousand square feet. Based on 39,700 square feet, the cinemas in the ABC Entertainment Center would generate 280 daily trips, with 10 in and 10 out during the PM peak hour. These values are considerably less than those used in the traffic study as compared in the following table:

		AM Peak		PM Peak	
Methodology	Daily	In	Out	In	Out
Traffic Study	3,150	20	0	160	110
City of San Diego	280	0	0	10	10
Trips Overestimated	2,870	20	0	150	100

D. General Office Building Rates Should Be Used For All Floor Area In the Proposed Project – According to Table 6 in the traffic study, the proposed project would include about 826,000 square feet of office, restaurant, retail, and cultural uses. Applying the same approach by using the general office building trip rates, the proposed project would be expected to generate about 6,700 daily trips with about 1,000 trips in the AM peak hour and about 1,000 trips in the PM peak hour. The following table contrasts the trip generation included in Table 6 of the traffic study for these uses with the proper approach of considering them at the general office building rates for trips generated by the proposed project:

		AM Peak		PM Peak	
Methodology	Daily	In	Out	In	Out
Traffic Study	9,100	890	160	330	840
General Office	6,700	880	120	170	830
Trips Overestimated	2,400	10	40	160	10

E. The Proposed Project Should Be Reduced In Size To Generate the Same Number of Peak Hour Trips As the ABC Entertainment Center - Using the ITE rates for general office buildings applied to the total of 595,000 square feet for office, restaurant, retail, and health club uses in the ABC Entertainment Center, about 750 trips would be generated in each peak hour. Applying the same approach, the proposed project would generate about 1,000 trips in each peak hour. To compare the existing uses and the proposed project, trips shown above for an urban cinema and from Table 6 of the traffic study for the Shubert have been added to the 595,000 square feet of general office space in the following table:

	Morning Peak Hour			Afternoon Peak Hour		
Facility	In	Out	Total	In	Out	Total
ABC (595,000 SF)	660	90	750	130	620	750
Cinema (downtown)	0	0	0	10	10	20
Shubert	20	0	20	20	20	40
Subtotal Existing	680	90	770	160	650	810
Existing ABC	680	90	770	160	650	810
Proposed Project	880	120	1,000	170	830	1,000
Trip Difference	+200	+30	+230	+10	+180	+190

In order to generate the same number of peak hour trips as the ABC Entertainment Center realistically generates, the proposed project should be reduced by about 200,000 square feet, with the resulting general office project to be about 625,000 square feet in size.

F. General Office Rates Were Used to Evaluate the Constellation Place Project – The Draft EIR and traffic study prepared for the Constellation Place Project used the general office rates (ITE land use code 710) to evaluate the traffic impacts of this project. The documents for this project were approved and construction of the building south of Constellation Boulevard west of Avenue of the Stars is now underway. According to the Draft EIR, this project will contain 791,000 square feet including 770,000 square feet of office space and 21,000 square feet of supporting retail uses such as food service and dry cleaning. The trips forecast for this project were developed using the general office building rates for the entire 791,000 square feet of office and retail use as follows:

		AM Peak		PM Peak	
Constellation Place	Daily	In	Out	In	Out
General Office Rates	7,900	990	120	170	830

The same approach must be taken in the traffic analysis of the existing uses at the ABC Entertainment Center as well as the 2000 Avenue of the Stars Project.

G. Overall Trip Distribution Is Flawed – The traffic study assigns 25% of the project trips to the North, 20% to the South, 37% to the East, and 18% to the West. Additionally, the traffic study indicates that 60% of the trips will use surface streets and 40% will use freeways, with 23% assigned to the San Diego Freeway to the West and 17% assigned to the Santa Monica Freeway to the South. Flaws apparent in the trip distribution include:

- All traffic must use surface streets to reach the adjacent freeways approximately two miles to the West and to the South.

- Close examination of Figures 4(a) and 4(b) in the traffic study discloses 18% of the trips assigned to the San Diego Freeway, not the 23% shown in the text.

H. Unrealistic Transportation Demand Management (TDM) Program Reductions Are Used – The project description indicates the proposed project will contain "Class A" office space with a variety of amenities. Given this, it seems unlikely that employees of this upscale facility will be prone to use carpools, vanpools, public transportation, and bicycles to commute to and from their offices. The Transportation Demand Management (TDM) Program drafted for this project does not appear to be reasonable and it is very unlikely to reduce peak hour trips by 5%.

To provide a more realistic estimate of project traffic impacts, no reduction in peak hour trips should be credited for the proposed TDM Program. This approach is also consistent with the approach recommended by Caltrans for traffic studies. The recommended TDM monitoring period of three years suggested in the traffic study is inconsistent with the Draft EIR and other documents including the West Los Angeles Transportation Improvement and Mitigation Specific Plan.

IV. Insufficient Analysis

The study does not include sufficient analysis and detail in several areas including a failure to follow the Caltrans Traffic Study Guidelines, potential traffic intrusion into the adjacent residential areas, and appropriate analysis of actual intersection operations and pedestrian impacts at the intersections.

A. Caltrans Traffic Study Guidelines Not Followed – The text of the traffic study as prepared assigns 23% of the project trips to the San Diego Freeway and 17% to the Santa Monica Freeway. As pointed out above, only 18% of the project trips have actually been distributed to the San Diego Freeway ramps. When this is corrected, there will be different traffic volumes on these two freeways, not identical numbers as shown in the Congestion Management Program (CMP) analysis. When the trip distribution in the traffic study is revised, significantly more peak hour trips will occur on both the San Diego Freeway and the Santa Monica Freeway.

   The Draft EIR does not acknowledge the role of Caltrans early on in consultation. Moreover, the City must ensure that Caltrans has the opportunity to review the transportation and circulation portion of the document as well as the mitigation measures. The traffic study as prepared has not followed Caltrans' Guide for the Preparation of Traffic Impact Studies published in January 2001 (Attachment 5.)

   The traffic study lacks proper analysis of the project traffic impacts on the nearby freeway interchanges. The traffic study does not include detailed analysis of these ramps and ramp junctions. It also does not provide operational analysis of impacted freeway sections and weaving areas that are typically required by the State when their facilities are approaching capacity. Appropriate mitigation measures, including fair share financial participation by the developer, have not been included in the Draft EIR.

B. Residential Streets May Be Impacted – When the trip generation for the proposed project is corrected, there may be traffic impacts to residential streets in the area. These impacts need to be determined and mitigation measures must be developed to address any of the associated impacts.

C. Further Analysis of Actual Intersection Operations Is Needed – While the Draft EIR and traffic study evaluate traffic impacts at a number of intersections in the area, the existing lane configurations are not fully functional at a number of these locations. Short storage areas exist for turning traffic at many intersections, with peak hour traffic volumes frequently exceeding the available areas for queuing and subsequently backing into and blocking through traffic lanes. Specific intersections and concerns that require further evaluation and correction in the traffic study and the Draft EIR include the following:

   1. Sunset/Beverly Glen – The southbound optional left/right turning lane does not function efficiently with the right turn green arrow overlap as it is frequently blocked by a left turning motorist.

   2. Santa Monica (N)/Wilshire – Lead-lag left turn phasing is being used for Wilshire Boulevard traffic, not split phasing. With this, the

southbound optional left/through lane does not function efficiently as it is frequently blocked by a through motorist.

3. Santa Monica (S)/Wilshire – Northbound and southbound Wilshire Boulevard traffic proceeds on separate, split phases rather than concurrently as was analyzed in the traffic study.

4. Constellation/Century Park East – The intersection currently operates with eastbound and westbound traffic moving on separate phases, with pedestrian crossings occurring with westbound traffic.

5. Olympic/Overland – 2005 geometry is shown as the same as existing conditions but the Constellation Place project is required to add an eastbound right turn lane.

6. Olympic/Century Park East – A third northbound through lane exists on Century Park East at this time.

7. Pico/Overland – Southbound left turn storage is shorter than peak hour turning demand, with the left turn lane queue frequently blocking southbound through traffic.

8. Pico/Patricia – Eastbound traffic in the PM peak has only two through lanes to utilize, not three as shown in the traffic study.

9. Pico/Beverly Glen – Westbound traffic in the AM peak has only two through lanes to utilize, not three as shown in the traffic study.

10. Pico/Century Park East – There is a third eastbound through lane available during both peak hours.

11. Manning/Motor – Westbound traffic has a dedicated left turn lane and a through/right turn lane, not a single westbound lane.

12. Santa Monica/405 Freeway Ramps – The dual left turn lanes under the freeway extend for only half of the width of the freeway, with traffic frequently queuing out into the through lanes. Adjacent ramp metering of the 405 Freeway on ramps frequently queues traffic back into the intersections with Santa Monica Boulevard on both sides of the freeway. On September 11, 2002, eastbound AM traffic on Santa Monica Boulevard was queued back to Federal Avenue six blocks to the West. The proposed Santa Monica Transit Parkway Project does not include interchange improvements to remedy these conditions.

13. 405 SB Off Ramp/Tennessee – Off ramp traffic proceeds on a separate phase from eastbound traffic on Tennessee.

14. Bus Priority System on Santa Monica Boulevard – The transit parkway project includes bus priority at traffic signals which will reduce the assumed benefits of the ATSAC and ATCS systems.

15. Other Intersections – The traffic study should evaluate impacts at existing four way stops including Overland at Missouri, at La Grange, and at Mississippi (adult crossing guard for the Westwood Charter School) as well as Motor/Dunleer. Impacts on Beverly Glen intersections where sight distance is limited also need mitigation.

D. Increased Pedestrian Crossings Not Evaluated – There is considerable pedestrian activity between the ABC Entertainment Center and the Century Plaza Towers. The proposed project will reduce the area devoted to high turnover restaurant uses by 100,000 square feet, creating significant additional pedestrian crossings of the streets in the area, particularly during lunch. The impacts of these additional pedestrian crossings on intersection capacity must be evaluated and mitigated.

V. Practical Mitigation Measures May Not Be Possible

When the trip generation and assignments for the proposed project are revised, there will be significant traffic impacts on the arterial street segments and intersections as well as on the adjacent freeways. All of the practical traffic mitigation measures including localized intersection widening and installation of the ATSAC and ATCS systems will be constructed as conditions of projects already approved. Barring a huge infusion of funds for extensive improvements such as people movers and associated parking structures, it does not appear that the proposed project's traffic impacts can be mitigated with typical traffic engineering solutions. However, should such mitigation be possible, then fair share cost estimates together with an implementation schedule are needed.

A. Fair Share Cost Estimates Are Required – Correcting the traffic study to properly account for development of the 2000 Avenue of the Stars Project and revising the trip generation rates and trip distribution assignments will significantly increase projected traffic volumes. As a result, traffic at the various intersections will be more congested than forecast in the traffic study and the project share of future peak hour traffic volumes will greatly increase. Revision of the present inaccuracy of the traffic forecast and trip assignments will impact the level of service at various other locations, requiring extensive traffic improvements. Cost estimates of these measures as well as the "fair share" of costs for this project must be prepared as part of the Draft EIR.

B. Timely Implementation Is Needed – With revisions to the traffic study and the Draft EIR, an implementation schedule for mitigation must be developed. Given the City's many high priority projects already scheduled for implementation, funding limitations, and other unforeseen uncertainties, improvements may not occur for many years. The DEIR should realistically assess the likely timing of the improvements and it should also develop realistic mitigation measures that could be implemented in a timely manner.

VI. Conclusion

In conclusion, the Draft EIR by Envicom Corporation and the supporting traffic study by Crain & Associates do not adequately or properly address the traffic impacts that will result from the 2000 Avenue of the Stars Project. As indicated above, these documents contain many errors and omissions. Significant additional work is needed to evaluate current conditions, to properly forecast the traffic volumes, to assess the traffic impacts of the project, and to develop appropriate and adequate mitigation of the traffic on the impacted streets and freeways in the vicinity of Century City in the City of Los Angeles.

Attachments

1 – Traffic Access and Impact Studies for Site Development, A Recommended Practice, Institute of Transportation Engineers, 1991.

2 – Trip Generation, 6th Edition, ITE, 1997, Land Use Code 832 – High Turnover (Sit Down) Restaurant

3 – Trip Generation, 6th Edition, ITE, 1997, Land Use Code 710 – General Office Building

4 - Trip Generation Handbook, An ITE Recommended Practice, ITE, March 2001

5 - Guide for the Preparation of Traffic Impact Studies, Caltrans, January 2001

Attachment 1

TRAFFIC ACCESS AND IMPACT STUDIES FOR SITE DEVELOPMENT

A Recommended Practice

INSTITUTE OF
TRANSPORTATION ENGINEERS

If modified work schedules (e.g., flextime, staggered schedules) are proposed as a means of reducing peak hour demand, current peaking characteristics by 15-minute periods over the two-hour peak periods should be examined to see if any further "spreading" or reducing of peak hour demand can be achieved. The ability (and means) for accomplishing any such proposed program should be documented and substantiated.

Driveway Volumes vs. Traffic Added to Adjacent Streets

It is usually assumed that all trips entering and exiting a new development are new trips that were not made to or through the area prior to the development being completed. However, a portion of these trips may be "captured" from trips already being made to other existing developments on the adjacent street system, or they may be merely passing by on the way from one place to another. This is particularly true for non-residential developments. The driveway volume for a new development may therefore be significantly different from the amount of traffic added to the adjacent street system. For example, retail establishments, restaurants, banks, service stations, and convenience markets attract people from the passing stream of traffic; these are known as pass-by trips.

Only limited data are available to adjust the trip generation rates for pass-by trips. Available studies for shopping centers show that the percentage of driveway volumes drawn from traffic already on the adjacent street system can range from 20% to 70%, depending on a variety of circumstances.[5-8]

ITE's Trip Generation contains discussions and references on the issue of pass-by trips.[1] That information should be reviewed. Because of the limited data available, adjustments should be applied carefully. If pass-by trips are a major consideration for the land use in question, studies and interviews at similar local land uses should be conducted or referenced.

Multi-Use Projects

Most of the trip generation rate data available have been developed from measurements at isolated single-use developments. When uses are combined, simply adding the single-use estimates together can result in a total trip generation estimate that is too high because it has not accounted for internal trip making among on-site land uses.

Although trip generation rates and equations are available for shopping centers, little data exist for other multi-use developments, such as downtowns, suburban mixed-use centers, and planned unit developments, which have a variety of land uses combined with a predominance of residential development. NCHRP Project 3-38(2), *Travel Characteristics at Large-Scale Suburban Activity Centers*, was completed in 1989 and provides data on this subject.[9]

Multi-use projects are another case in which any adjustments should be applied carefully because of the limited data available. If this is a major consideration for the land use in question, studies at similar land uses should be conducted. Until more data are available, planning and judgment will play an important part. In any case, an analysis should be performed to determine the amount of trips that would be external for single uses, but which would be internal in a proposed mixed-use development. The latest edition of *Trip Generation* provides some information on this subject.[1]

Special or Unusual Generators

From time to time, it is necessary to estimate the trips expected to be generated by a special or unusual land use type. In these cases, it is difficult to obtain information from existing data bases or to collect data at sites with such land uses. Judgment thus must be used to identify another land use or combination of land uses that may exhibit trip generation characteristics similar to the land use in question, and for which data are available or can be collected. Also, such parameters as employment, population, or other predictable demographic or reasonable predictor of trip generation may be used to arrive at a trip generation forecast. The reasoning and data used in developing a trip generation estimate for special/unusual generators needs to be justified and explained in the report.

Estimation of Trips Generated

Once the trip generation rates have been determined, they are applied to the proposed number of development units to obtain estimates of peak hour trip generation. The development units may be square feet, dwelling units, hotel rooms, or other independent variable, as discussed previously.

Concept of Additional Trip Generation

Most studies for new or expanding developments are concerned with assessing impacts of *additional* traffic and providing proper accommodations for *total* site traffic. As a result, the study should include the subtraction of existing site traffic if the current land use is to be replaced. This subtraction should be from non-site traffic; a simple reduction of trip generation for the new development is not appropriate unless the trip generation and distribution will have the same characteristics as the existing.

When traffic generated by an existing development is to be subtracted,

1. estimate or count trip generation of the development to be removed,
2. determine trip distribution for this traffic by survey or procedures described in Chapter 6,
3. determine traffic assignment for this traffic (see Chapter 6),
4. subtract this traffic from non-site traffic to estimate non-site traffic for this study.

Development Units

Most development proposals will be accompanied by an estimate of the number of development units being proposed. However, in some cases, particularly early in the development process, only land area may be known. Trip generation rates and equations by land area generally produce trip estimates of low accuracy. As a result, it is highly desirable to make an accurate estimate of the likely development units that will occur.

This can be done by utilizing a combination of land areas and development densities. These densities may be determined from discussions with the prospective developer (preferred method), from estimates by the local municipal planning department, or from densities of nearby similar developments. Both the prospective developer and the review agency should concur if development units are to be based on land area quantities and density assumptions.

Typical development sizes should be assumed if land uses are proposed for which densities may not be applicable (e.g., hotels). Again, these should be verified with the prospective developer and the review agency.

project-generated trips, by direction and turning movement, on each segment of the study area roadway network.

Trip assignment should be made considering logical routings, available roadway capacities, left turns at critical intersections, and projected (and perceived) minimum travel times. Multiple paths should often be assigned between origins and destinations to achieve realistic estimates, rather than assigning all of the trips to the route with the shortest travel time. Pass-by trips are diverted from adjacent street flows and return in the same direction (Figure 6-3).

The assignment should reflect the horizon year(s) and should consider conditions at that time, such as road improvements and land uses. The assignment should also reflect the analysis time periods (usually the morning and afternoon peak hours). Assignment percentages usually apply to two-way trips, although one-way roads and turn restrictions must be considered.

Assignments can be accomplished either manually or with applicable computer models. Applicable models can sometimes greatly facilitate the calculations when a number of assignments are to be made because of multiple project phases or possible changes in the project size or land-use mix.

Regardless of whether a model or a manual procedure is used, it is important that trip lengths be considered, particularly for large study areas. Many trips will be completed within a few miles of the site. Unless a gravity model is used to account for trip lengths, a trip length frequency distribution curve should be utilized. Such curves are frequently available by trip purpose from local transportation planning agencies. (see Figure 6-4).[2]

The assignments should be carried through the external site access points and, in large projects, the internal roadways. When the site has more than one access driveway, logical routing and possibly multiple paths should be used to obtain realistic driveway volumes.

Pass-by Trips

Trip generation analysis yields the number of vehicle trips that a site is expected to generate *at its driveways*. Many land uses, particularly local retail and fast food outlets, do not generate only vehicle trips that are all new to the roadway system; a proportion of their trips are simply diverted from vehicle trips already passing by on nearby roads. Pass-by trips (also called captured trips) are those trips that are diverted from traffic already on the roadway system. If a thorough analysis is required to account for pass-by trips, the following procedure should be used:

1. For the peak hour being analyzed, determine the percentage of pass-by trips as part of the total trip generation. The basis for this estimate should be documented and based on driver response surveys for similar developments in the local area, where possible. Split the total trip generation number into a *new* trip amount and a *pass-by* trip amount.
2. In addition to estimating a normal trip distribution (for new trips), also estimate a trip distribution for pass-by trips (giving strong consideration to the commuting work trip).
3. Perform two separate trip assignments, based on the two distributions. One assignment applies to pass-by trips; the other assignment applies to new trips. Care must be taken as the pass-by trip assignment is more complicated. Pass-by assignment percentages should not automatically be applied to two-way traffic, since an outbound pass-by trip may use a different route than an inbound pass-by trip. Also, due to the diversion concept, pass-by trip assignment involves subtracting trips from some existing traffic movements and assigning the trips to other movements.
4. Combine the numerical pass-by and new trip assignments. Remember the subtraction required on some vehicle movements because of diversion. Proceed to the analysis process.

Upon completion of the initial site traffic assignment, the results should be reviewed to see if the volumes appear logical given the characteristics of the road system and trip distribution. Adjustments should be made if the initial results do not appear to be logical or reasonable. For example, pass-by trips diverted from a thoroughfare should be rechecked if they represent more than 15% of the traffic volume on that street.

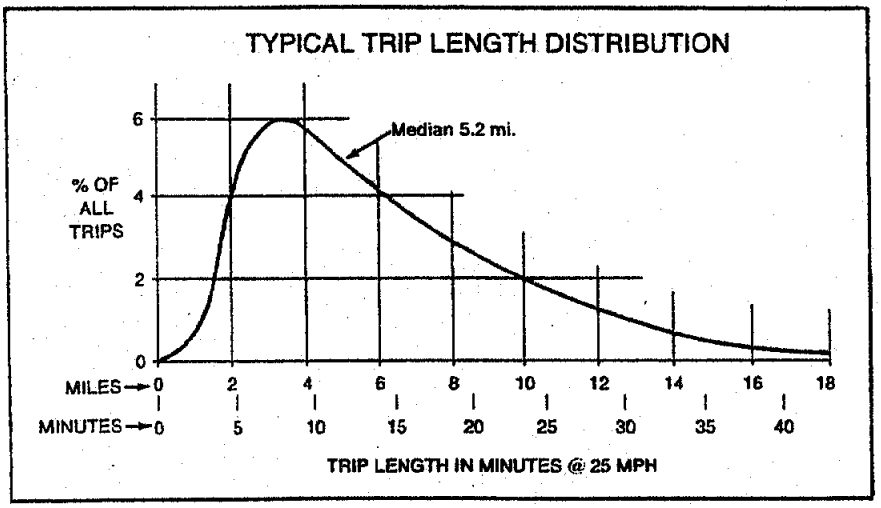


Figure 6-4. Trip length frequency distribution curve—sample illustration.

SOURCE: cited reference 2.

Redevelopment Projects

Traffic estimates for any site with current traffic activity should reflect not only the addition of traffic associated with new development, but also the subtraction of traffic currently generated by the existing development that will be removed because of the site's redevelopment.

References

1. Box, Paul C., and Joseph C. Oppenlander. *Manual of Traffic Engineering Studies*, 4th ed. Washington, D.C.: Institute of Transportation Engineers, 1976.
2. Barr, John W., and Richard R. Barr. "Forecasting Traffic Impacts to Improve Growth Management—Approaches Used in Florida." In *1986 Compendium of Technical Papers*. Washington, D.C.: Institute of Transportation Engineers, 1986, pp. 47-51.

Bibliography

Stover, Vergil, and Frank Koepke. *Transportation and Land Development*. Washington, D.C.: Institute of Transportation Engineers, 1987.

Attachment 2

Land Use: 832
High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down eating establishments with turnover rates of approximately one hour or less. This type of restaurant is usually moderately priced and frequently belongs to a restaurant chain. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours per day. Some facilities contained within this land use may also contain a bar area for serving food and alcoholic drinks. Quality restaurant (land use 831), fast-food restaurant without drive-through window (land use 833), fast-food restaurant with drive-through window (land use 834), fast-food restaurant with drive-through window and no indoor seating (land use 835), and drinking place (land use 836) are related uses.

Additional Data

Vehicle occupancy ranged from 1.39 to 1.69 persons per automobile on an average weekday. The average for the sites that were surveyed was approximately 1.52.

A significant number of the studies in this land use were conducted prior to 1980. A study was conducted to test the sensitivity of the older versus newer data. It was determined that there is no statistically significant difference between the pre- and post-1980 data, therefore, all of the data points were retained to maximize the size of the data base.

Users should exercise caution when applying statistics during the A.M. peak period as the sites contained in the data base for this land use may or may not be open for breakfast.

The sites were surveyed from the 1960s to the 1990s throughout the United States.

Source Numbers

2, 4, 5, 72, 90, 100, 126, 269, 275, 280, 300, 301, 305, 338, 340, 341, 358, 384, 424, 432, 437, 438, 444

High-Turnover (Sit-Down) Restaurant
(832)

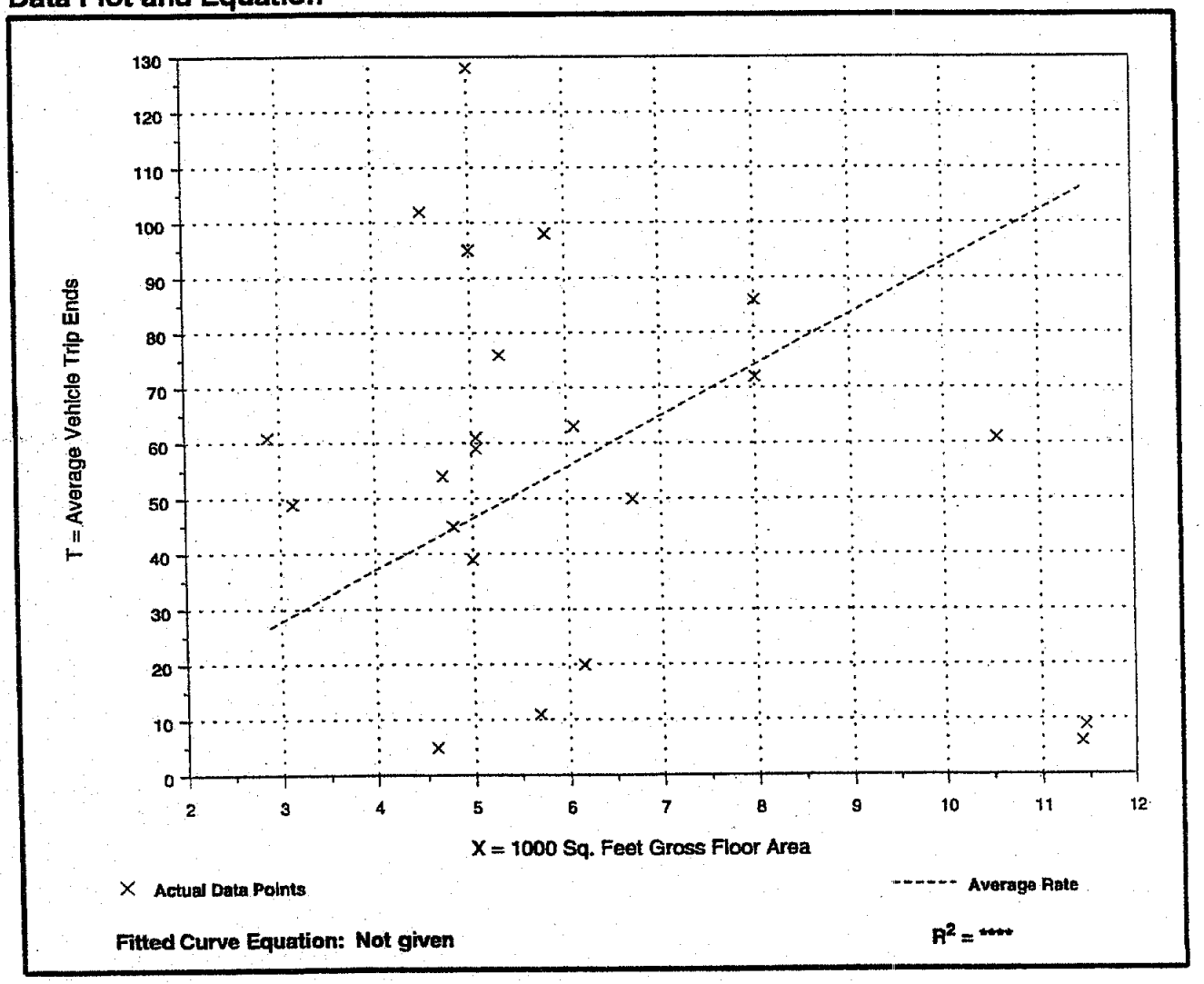
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 22
Average 1000 Sq. Feet GFA: 6
Directional Distribution: 52% entering, 48% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
9.27	0.53 - 25.60	7.46

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant
(832)

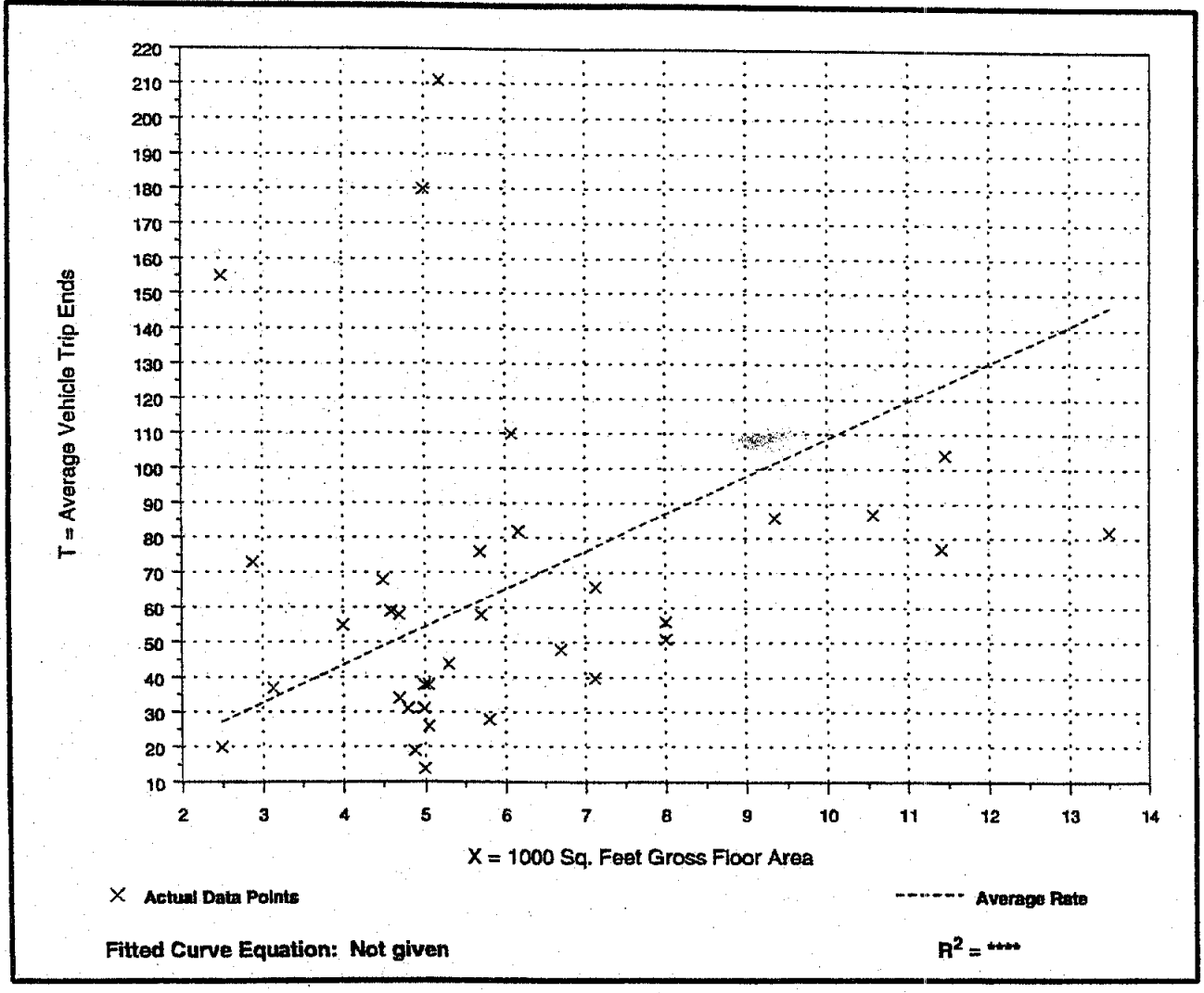
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 34
Average 1000 Sq. Feet GFA: 6
Directional Distribution: 60% entering, 40% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
10.86	2.80 - 62.00	9.83

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Attachment 3

Land Use: 710
General Office Building

Description

A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services; insurance companies; investment brokers; and tenant services such as a bank or savings and loan institution, a restaurant or cafeteria, and service retail facilities. Nearly all of the buildings surveyed were in suburban locations. Corporate headquarters (land use 714), single tenant office building (land use 715), and office park (land use 750) are related uses.

If information is known about individual buildings, it is suggested that the general office building category be used rather than office parks when estimating trip generation for one or more office buildings in a single development. The office park category is more general, and it should be used when a breakdown of individual or different uses is not known. If the general office building category is used and if additional buildings, such as banks, restaurants, or retail stores are included in the development, then the development should be treated as a multiuse project. On the other hand, if the office park category is used, internal trip making is already reflected in the data and does not need to be considered.

When the buildings are interrelated (defined by shared parking facilities or the ability to easily walk between buildings) or house one tenant, it is suggested that the total area or employment of all the buildings be used for calculating the trip generation. When the individual buildings are isolated and not related to one another, it is suggested that the trip generation be calculated for each building separately and then summed.

Additional Data

Average weekday transit trip ends —

> Transit service was either nonexistent or negligible at the majority of the sites surveyed in this land use. Recent studies indicate increased use of transit, carpools, and other transportation demand management (TDM) strategies. Information has not been analyzed to document the impacts of TDM measures on the total site generation.

The average building occupancy varied considerably within the studies where occupancy data was provided. For buildings with occupancy rates reported, the average percent of occupied gross leasable area was 88 percent.

In some regions peaking may occur earlier or later and last somewhat longer than the traditional 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M. peak period time frames.

The sites were surveyed from the 1960s to the 1990s throughout the United States.

General Office Building
(710)

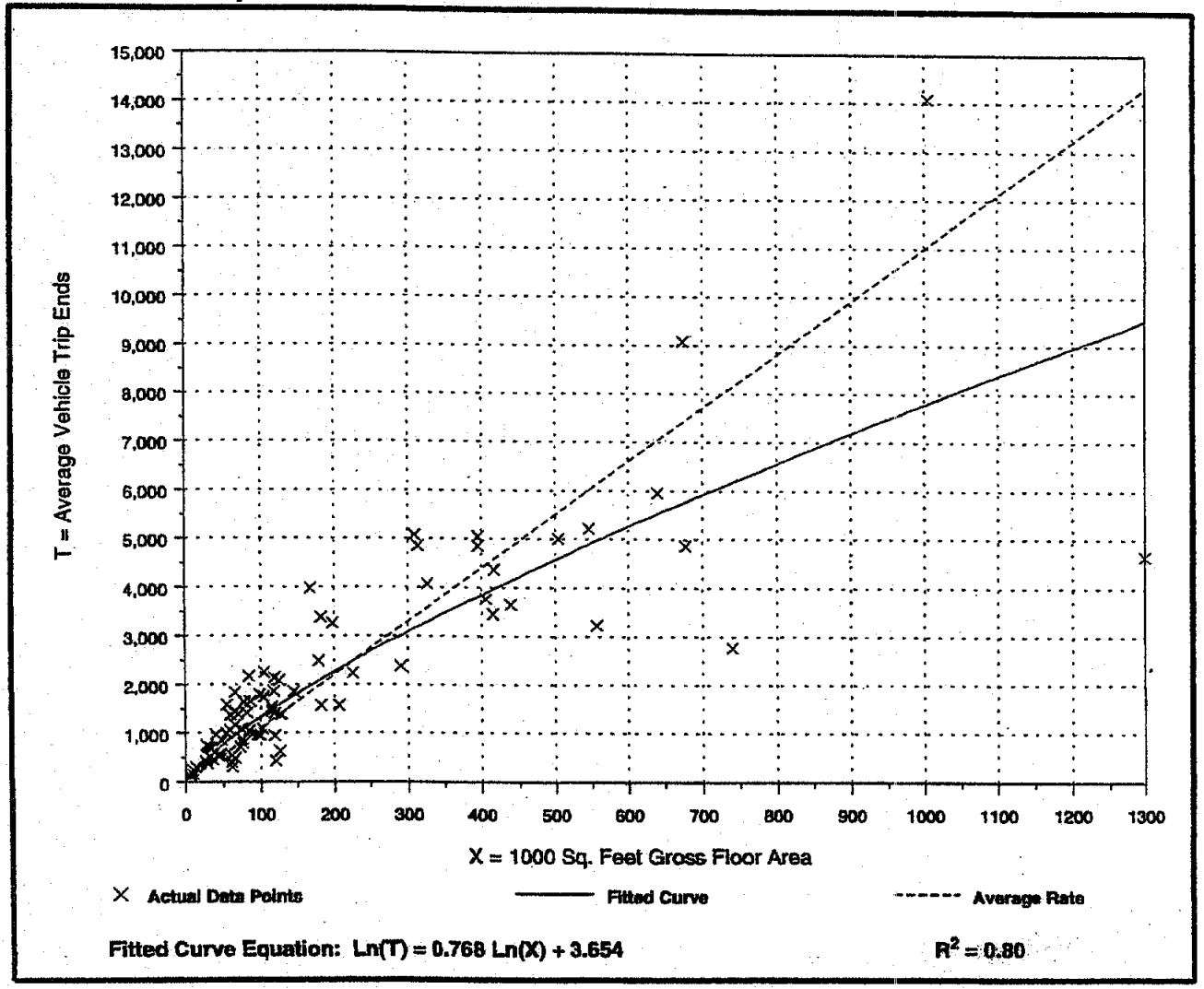
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday

Number of Studies: 78
Average 1000 Sq. Feet GFA: 199
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
11.01	3.58 - 28.80	6.13

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.768 Ln(X) + 3.654

R^2 = 0.80

General Office Building
(710)

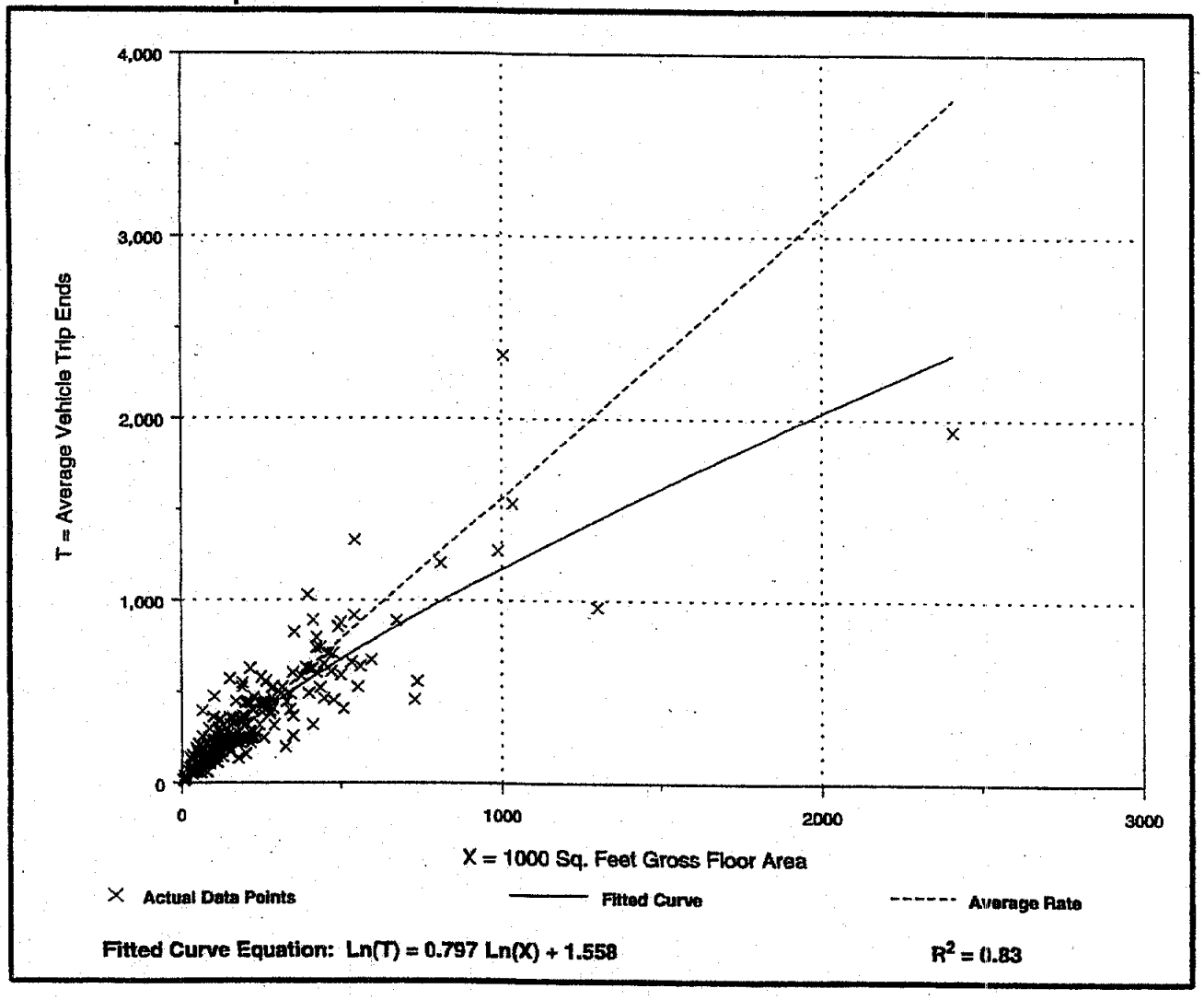
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
A.M. Peak Hour

Number of Studies: 216
Average 1000 Sq. Feet GFA: 223
Directional Distribution: 88% entering, 12% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.56	0.60 - 5.98	1.40

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.797\ Ln(X) + 1.558$

$R^2 = 0.83$

General Office Building
(710)

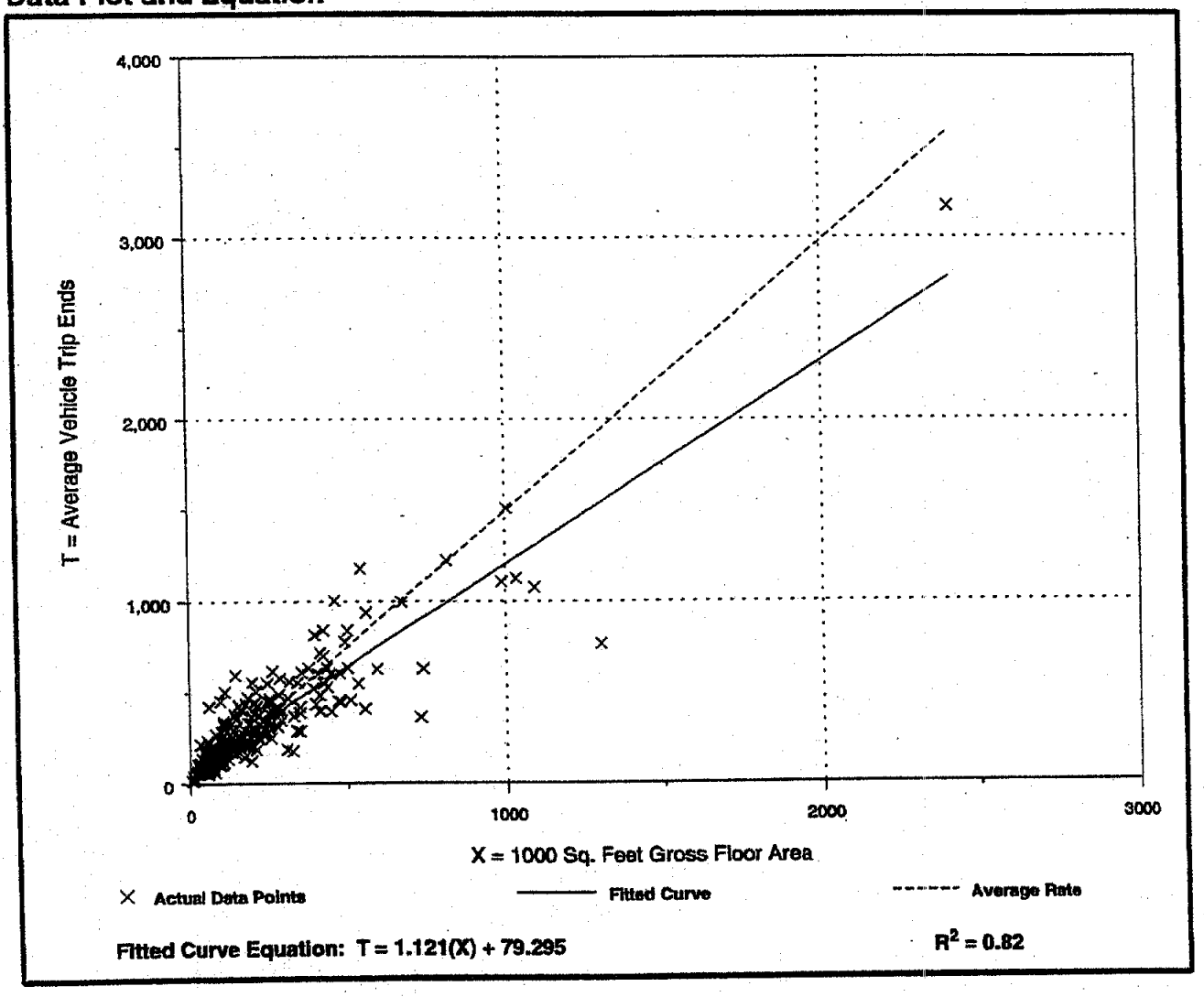
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 234
Average 1000 Sq. Feet GFA: 216
Directional Distribution: 17% entering, 83% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.49	0.49 - 6.39	1.37

Data Plot and Equation



Fitted Curve Equation: $T = 1.121(X) + 79.295$

$R^2 = 0.82$

Attachment 4

Trip Generation Handbook

An ITE Recommended Practice

March 2001

Institute of Transportation Engineers

7.3 What Is *Not* a Multi-Use Development?

In literal terms, a multi-use development could mean any combination of different land use types within a defined, congruous area. But that definition would encompass a wide range of potential applications, many of which are not intended to be the focus of this chapter.

A traditional **downtown or central business district (CBD)** is not considered a multi-use development for purposes of this handbook. Downtown areas typically have a mixture of diverse employment, retail, residential, commercial, recreation, and hotel uses. Extensive pedestrian interaction occurs because of the scale of the downtown area, the ease of access, and the proximity of the various uses. Automobile occupancy, particularly during peak commuting hours, is usually higher in the CBD than in the outlying areas. Some downtowns have excellent transit service. For these reasons, trip generation characteristics in a downtown environment are different from those found in outlying or suburban areas. The focus of the data presented throughout *Trip Generation* is on sites in suburban settings with limited or no transit service and with free parking. ***Accordingly, trip generation characteristics in this chapter, and specifically in the case of capture rates at multi-use developments, are directly applicable only to sites outside the traditional downtown.*** The potential effects of transit service and on site parking fees are discussed in appendix B.

A **shopping center** could also be considered a multi-use development. However, because data have been collected directly for them, shopping centers are considered in *Trip Generation* as a single land use. The associated trip generation rates and equations given in *Trip Generation* reflect the "multi-use" nature of the development because of the way shopping center data have been collected. ***Accordingly, internal capture rates are not applicable and should not be used to forecast trips for shopping centers if using Land Use Code 820 statistics and data.*** However, if the shopping center is planned to have out-parcel development of a significantly different land use classification or a very large percentage of overall GLA, the site could be considered a multi-use development for the purpose of estimating site trip generation.

Likewise, a subdivision or planned unit development containing general office buildings and support services such as banks, restaurants, and service stations arranged in a park- or campus-like atmosphere should be considered as an **office park** (Land Use Code 750), not as a multi-use development. Similarly, office buildings with support retail or restaurant facilities contained inside the building should be treated as **general office buildings** (Land Use Code 710) because the trip generation rates and equations already reflect such support uses. A hotel with an on-site restaurant and small retail falls within Land Use Code 310 and should not be treated as a multi-use development.

7.4 Methodology for Estimating Trip Generation at Multi-Use Sites

Internally captured trips can be a significant component in the travel patterns at multi-use developments. However, more studies are needed to thoroughly quantify this phenomenon. Section 7.5 presents a recommended procedure for estimating internal capture rates (and a worksheet for organizing and documenting the analysis assumptions used in the estimation of the internal capture rates) for multi-use development sites.

The internal trip-making characteristics of multi-use development sites are directly related to the mix of on-site land uses (which are typically a combination of residential, office, shopping/retail, restaurant, entertainment, and hotel/motel). When combined within a single mixed-use development, these land uses tend to interact, and thus to attract a portion of each other's trip generation.

The recommended methodology for estimating internal capture rates and trip generation at multi-use sites is based on two fundamental assumptions. First, the proportions of trips between interacting land use types (which will be satisfied internally by pairs of land uses) are assumed to be relatively stable. Second, if sufficient data were available, these internal capture percentages could be predicted with adequate confidence. The need for additional data collection at multi-use developments is described in section 7.7.

Attachment 5

GUIDE FOR THE PREPARATION

OF

TRAFFIC IMPACT STUDIES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

January 2001

The California Department of Transportation (Caltrans) has developed this "Guide for the Preparation of Traffic Impact Studies" in response to a survey of cities and counties in California. The purpose of that survey was to improve the Caltrans local development review process (also known as the Intergovernmental Review/California Environmental Quality Act or IGR/CEQA process). The survey indicated that approximately 30 percent of the respondents were not aware of what Caltrans required in a traffic impact study (TIS).

In the early 1990s. the Caltrans District 6 office located in Fresno identified a need to provide better quality and consistency in the analysis of traffic impacts generated by local development and land use change proposals that effect State highway facilities. At that time District 6 brought together both public and private sector expertise to develop a traffic impact study guide. The District 6 guide has proven to be successful at promoting consistency and uniformity in the identification and analysis of traffic impacts generated by local development and land use changes.

The guide developed in Fresno was adapted for statewide use by a team of Headquarters and district staff. The guide will provide consistent guidance for Caltrans staff who review local development and land use change proposals as well as inform local agencies of the information needed for Caltrans to analyze the traffic impacts to State highway facilities. The guide will also benefit local agencies and the development community by providing more expeditious review of local development proposals.

Even though sound planning and engineering practices were used to adapt the Fresno TIS guide. it is anticipated that changes will occur over time as new technologies and more efficient practices become available. To facilitate these changes. Caltrans encourages all those who use this guide to contact their nearest district office (i.e., IGR/CEQA Coordinators) to coordinate any changes with the development team.

ACKNOWLEDGEMENTS

The District 6 traffic impact study guide provided the impetus and a starting point for developing the statewide guide. Special thanks is given to Marc Birnbaum for recognizing the need for a TIS guide and for his valued experience and vast knowledge of land use planning to significantly enhance the effort to adapt the District 6 guide for statewide use. Randy Treece from District 6 provided many hours of coordination. research and development of the original guide and should be commended for his diligent efforts. Sharri Bender Ehlert of District 6 provided much of the technical expertise in the adaptation of the District 6 guide and her efforts are greatly appreciated.

A special thanks is also given to all those Cities. Counties. Regional Agencies. Congestion Management Agencies. Consultants. and Caltrans Employees who reviewed the guide and provided input during the development of this Guide for the Preparation of Traffic Impact Studies.

TABLE OF CONTENTS

I. INTRODUCTION

Caltrans desires to provide a safe and efficient State transportation system for the citizens of California pursuant to various Sections of the California Streets and Highway Code. This is done in partnership with local and regional agencies through procedures established by the California Environmental Quality Act (CEQA) and other land use planning processes. The intent of this guide is to provide a starting point and a consistent basis in which Caltrans evaluates traffic impacts to State highway facilities. The applicability of this guide for local streets and roads (non-State highways) is at the discretion of the effected jurisdiction.

Caltrans reviews federal, state, and local agency development projects[1], and land use change proposals for their potential impact to State highway facilities. The primary objectives of this guide is to provide:

- guidance in determining if and when a traffic impact study (TIS) is needed,
- consistency and uniformity in the identification of traffic impacts generated by local land use proposals.
- consistency and equity in the identification of measures to mitigate the traffic impacts generated by land use proposals.
- lead agency[2] officials with the information necessary to make informed decisions regarding the existing and proposed transportation infrastructure (see Appendix A. Minimum Contents of a TIS)
- TIS requirements early in the planning phase of a project (i.e., initial study, notice of preparation, or earlier) to eliminate potential delays later.
- a quality TIS by agreeing to the assumptions, data requirements, study scenarios, and analysis methodologies in advance of beginning the study, and
- early coordination during the planning phases of a project to reduce the time and cost of preparing a TIS.

II. WHEN A TRAFFIC IMPACT STUDY IS NEEDED

The level of service[3] (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs (see Appendix "C-2") describe the measures best suited for analyzing State highway facilities (i.e., freeway sections, signalized intersections, on- or off-ramps, etc.). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, 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 MOE should be maintained.

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[1] "Project" refers to activities directly undertaken by government, financed by government, or requiring a permit or other approval from government as defined in Section 21065 of the Public Resources Code and Section 15378 of the California Code of Regulations.

[2] "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a project. Defined in Section 21165 of the Public Resources Code, the "California Environmental Quality Act, and Section 15367 of the California Code of Regulations.

[3] "Level of service" as defined in the latest edition of the Highway Capacity Manual, Special Report 209. Transportation Research Board, National Research Council.

A. Trip Generation Thresholds

The following criterion is a starting point in determining when a TIS is needed. When a project:

1. Generates over 100 peak hour trips assigned to a State highway facility
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – the following are examples that may require a full TIS or some lesser analysis[4]:
   a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (LOS "E" or "F").
   b. The potential risk for a traffic incident is significantly increased (i.e., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points, etc.).
   c. Change in local circulation networks that impact a State highway facility (i.e., direct access to State highway facility, a non-standard highway geometric design, etc.).

Note: A traffic study may be as simple as providing a traffic count to as complex as a microscopic simulation. The appropriate level of study is determined by the particulars of a project, the prevailing highway conditions, and the forecasted traffic.

B. Exceptions

Exceptions require consultation between the lead agency, Caltrans, and those preparing the TIS. When a project's traffic impact to a State highway facility can clearly be anticipated without a study and all the parties involved (lead agency, developer, and the Caltrans district office) are able to negotiate appropriate mitigation, a TIS may not be necessary.

C. Updating An Existing Traffic Impact Study

A TIS requires updating when the amount or character of traffic is significantly different from an earlier study. Generally a TIS requires updating every two years. A TIS may require updating sooner in rapidly developing areas and not as often in slower developing areas. In these cases, consultation with Caltrans is strongly recommended.

III. SCOPE OF TRAFFIC IMPACT STUDY

Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended before commencing work on the study to establish the appropriate scope. At a minimum, the TIS should include the following:

A. Boundaries of the Traffic Impact Study

All State highway facilities impacted in accordance with the criteria in Section II should be studied. Traffic impacts to local streets and roads can impact intersections with State highway facilities. In these cases, the TIS should include an analysis of adjacent local facilities, upstream and downstream, of the intersection (i.e., driveways, intersections, and interchanges) with the State highway.

[4] A "lesser analysis" may include obtaining traffic counts, preparing signal warrants, or a focused TIS, etc.

B. Traffic Analysis Scenarios

Caltrans is interested in the effects of general plan updates and amendments as well as the effects of specific project entitlements (i.e., site plans, conditional use permits, sub-divisions, rezoning, etc.) that have the potential to impact a State highway facility. The complexity or magnitude of the impacts of a project will normally dictate the scenarios necessary to analyze the project. Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to determine the appropriate scenarios for the analysis. The following scenarios should be addressed in the TIS when appropriate:

1. When only a general plan amendment or update is being sought, the following scenarios are required:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only with Select Link[5] Analysis - Trip generation and assignment for build-out of general plan.
   c) General Plan Build-out Only - Trip assignment and peak hour LOS analysis. Include current land uses and other pending general plan amendments.
   d) General Plan Build-out Plus Proposed Project - Trip assignment and peak hour LOS analysis. Include proposed project and other pending general plan amendments.

2. When a general plan amendment is not proposed and a proposed project is seeking specific entitlements (i.e., site plans, conditional use permits, sub-division, rezoning, etc.), the following scenarios must be analyzed in the TIS:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only - Trip generation, distribution, and assignment in the year the project is anticipated to complete construction.
   c) Cumulative Conditions (Existing Conditions Plus Other Approved and Pending Projects Without Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   d) Cumulative Conditions Plus Proposed Project (Existing Conditions Plus Other Approved and Pending Projects Plus Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   e) Cumulative Conditions Plus Proposed Phases (Interim Years) - Trip assignment and peak hour LOS analysis in the years the project phases are anticipated to complete construction.

3. In cases where the circulation element of the general plan is not consistent with the land use element or the general plan is outdated and not representative of current or future forecasted conditions, all scenarios from Sections III. B. 1. and 2. should be utilized with the exception of duplicating of item 2.a.

[5] "Select link" analysis represents a project only traffic model run, where the project's trips are distributed and assigned along the highway network. This procedure isolates the specific impact on the State highway network.

IV. TRAFFIC DATA

Prior to any fieldwork, consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to reach consensus on the data and assumptions necessary for the study. The following elements are a starting point in that consideration.

A. Trip Generation

The latest edition of the Institute of Transportation Engineers' (ITE) TRIP GENERATION report should be used for trip generation forecasts. Local trip generation rates are also acceptable if appropriate validation is provided to support them.

1. Trip Generation Rates – When the land use has a limited number of studies to support the trip generation rates or when the Coefficient of Determination (R^2) is below 0.75, consultation between the lead agency, Caltrans and those preparing the TIS is recommended.
2. Pass-by Trips[6] – Pass-by trips are only considered for retail oriented development. Reductions greater than 15% requires consultation and acceptance by Caltrans. The justification for exceeding a 15% reduction should be discussed in the TIS.
3. Captured Trips[7] – Captured trip reductions greater than 5% requires consultation and acceptance by Caltrans. The justification for exceeding a 5% reduction should be discussed in the TIS.
4. Transportation Demand Management (TDM) – Consultation between the lead agency and Caltrans is essential before applying trip reduction for TDM strategies.

NOTE: Reasonable reductions to trip generation rates are considered when adjacent State highway volumes are sufficient (at least 5000 ADT) to support reductions for the land use.

B. Traffic Counts

Prior to field traffic counts, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to determine the level of detail (e.g., location, signal timing, travel speeds, turning movements, etc.) required at each traffic count site. All State highway facilities within the boundaries of the TIS should be considered. Common rules for counting vehicular traffic include but are not limited to:

1. Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday and conducted in favorable weather conditions.
2. Vehicle counts should be conducted during the appropriate peak hours (see peak hour discussion below).
3. Seasonal and weekend variations in traffic should also be considered where appropriate (i.e., recreational routes, tourist attractions, harvest season, etc.).

C. Peak Hours

To eliminate unnecessary analysis, consultation between the lead agency, Caltrans and those preparing the TIS is recommended during the early planning stages of a project. In general, the TIS should include a morning (a.m.) and an evening (p.m.) peak hour analyses. Other peak hours (e.g., 11:30 a.m. to 1:30 p.m., weekend, holidays, etc.) may also be required to determine the significance of the traffic impacts generated by a project.

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[6] "Pass-by" trips are made as intermediate stops between an origin and a primary trip destination (i.e., home to work, home to shopping, etc.).

[7] "Captured Trips" are trips that do not enter or leave the driveways of a project's boundary within a mixed-use development.

D. Travel Forecasting (Transportation Modeling)

The local or regional traffic model should reflect the most current land use and planned improvements (i.e., where programming or funding is secured). When a general plan build-out model is not available, the closest forecast model year to build-out should be used. If a traffic model is not available, historical growth rates and current trends can be used to project future traffic volumes. The TIS should clearly describe any changes made in the model to accommodate the analysis of a proposed project.

V. TRAFFIC IMPACT ANALYSIS METHODOLOGIES

Typically, the traffic analysis methodologies for the facility types indicated below are used by Caltrans and will be accepted without prior consultation. When a State highway has saturated flows, the use of a micro-simulation model is encouraged for the analysis. Other analysis methods may be accepted, however, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to agree on the information necessary for the analysis.

A. Freeway Sections – Highway Capacity Manual (HCM)* Chapter 3, operational analysis
B. Weaving Areas – Caltrans Highway Design Manual (HDM) Chapter 500
C. Ramps and Ramp Junctions – HCM* Chapter 5, operational analysis or Caltrans HDM Chapters 400 and 500, Caltrans Ramp Metering Guidelines (most recent edition)
D. Multi-Lane Rural and Urban Highways – HCM* Chapter 7, operational analysis
E. Two-lane Highways – HCM* Chapter 8, operational analysis
F. Signalized Intersections[8] – HCM* Chapter 9, Highway Capacity Software**, operational analysis, TRAFFIX[TM]**, Synchro**, see footnote 8
G. Unsignalized Intersections – HCM* Chapter 10, operational analysis, Caltrans Traffic Manual for signal warrants if a signal is being considered
H. Transit Capacity – HCM* Chapter 12, operational analysis
I. Pedestrians - HCM* Chapter 13
J. Bicycles – HCM* Chapters 14, use operational analysis when applying Chapter 9 and 10 HCM methods to bicycle analysis
K. Caltrans Criteria/Warrants – Caltrans Traffic Manual (stop signs, traffic signals, freeway lighting, conventional highway lighting, school crossings)
L. Channelization – Caltrans guidelines for Reconstruction of Intersections, August 1985, Ichiro Fukutome

*The most current edition of the Highway Capacity Manual, Special Report 209, Transportation Research Board, National Research Council, should be used.

**NOTE: Caltrans does not officially advocate the use of any special software. However, consistency with the HCM is advocated in most but not all cases. The Caltrans local development review units utilize the software mentioned above. If different software or analytical techniques are used for the TIS then consultation between the lead agency, Caltrans and those preparing the TIS is recommended. Results that are significantly different than those produced with the analytical techniques above should be challenged.

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[8] The procedures in the Highway Capacity Manual "do not explicitly address operations of closely spaced signalized intersections. Under such conditions, several unique characteristics must be considered, including spill-back potential from the downstream intersection to the upstream intersection, effects of downstream queues on upstream saturation flow rate, and unusual platoon dispersion or compression between intersections. An example of such closely spaced operations is signalized ramp terminals at urban interchanges. Queue interactions between closely spaced intersections may seriously distort the procedures in" the HCM. Scope of Manual, page 1-2, Highway Capacity Manual, Special Report 209, updated December 1997.

VI. MITIGATION MEASURES

The TIS should provide the nexus [Nollan v. California Coastal Commission, 1987. 483 U.S. 825 (108 S.Ct. 314)] between a project and the traffic impacts to State highway facilities. The TIS should also establish the rough proportionality [Dolan v. City of Tigard. 1994. 512 U.S. 374 (114 S. Ct. 2309)] between the mitigation measures and the traffic impacts. One method for establishing the rough proportionality or a project proponent's equitable responsibility for a project's impacts is provided in Appendix "B." Consultation between the lead agency, Caltrans and those preparing the TIS is recommended to reach consensus on the mitigation measures and who will be responsible.

Mitigation measures must be included in the traffic impact analysis. This determines if a project's impacts can be eliminated or reduced to a level of insignificance. Eliminating or reducing impacts to a level of insignificance is the standard pursuant to CEQA and the National Environmental Policy Act (NEPA). The lead agency is responsible for administering the CEQA review process and has the principal authority for approving a local development proposal or land use change. Caltrans, as a responsible agency, is responsible for reviewing the TIS for errors and omissions that pertain to State highway facilities. The authority vested in the lead agency to administer the CEQA process does not take precedence over other authorities in law.

If the mitigation measures require work in the State highway right-of-way an encroachment permit from Caltrans will be required. This work will also be subject to Caltrans standards and specifications. Consultation between the lead agency, Caltrans and those preparing the TIS early in the planning process is strongly recommended to expedite the review of local development proposals and to reduce conflicts and misunderstandings in both the local agency CEQA review process as well as the Caltrans encroachment permit process.

APPENDIX "A"

MINIMUM CONTENTS

OF A

TRAFFIC IMPACT STUDY

MINIMUM CONTENTS OF TRAFFIC IMPACT STUDY REPORT

I. EXECUTIVE SUMMARY

II. TABLE OF CONTENTS

A. List of Figures (Maps)
B. List of Tables

III. INTRODUCTION

A. Description of the proposed project
B. Location of project
C. Site plan including all access to State highways (site plan. map)
D. Circulation network including all access to State highways (vicinity map)
E. Land use and zoning
F. Phasing plan including proposed dates of project (phase) completion
G. Project sponsor and contact person(s)
H. References to other traffic impact studies

IV. TRAFFIC ANALYSIS

A. Clearly stated assumptions
B. Existing and projected traffic volumes (including turning movements). facility geometry (including storage lengths), and traffic controls (including signal phasing and multi-signal progression where appropriate) (figure)
C. Project trip generation including references (table)
D. Project generated trip distribution and assignment (figure)
E. LOS and warrant analyses - existing conditions, cumulative conditions, and full build of general plan conditions with and without project

V. CONCLUSIONS AND RECOMMENDATIONS

A. LOS and appropriate MOE quantities of impacted facilities with and without mitigation measures
B. Mitigation phasing plan including dates of proposed mitigation measures
C. Define responsibilities for implementing mitigation measures
D. Cost estimates for mitigation measures and financing plan

VI. APPENDICES

A. Description of how traffic data was collected
B. Description of methodologies and assumptions used in analyses
C. Worksheets used in analyses (i.e., signal warrant. LOS. traffic count information. etc.)

APPENDIX "B"

METHODOLOGY FOR

CALCULATING EQUITABLE

MITIGATION MEASURES

METHOD FOR CALCULATING EQUITABLE MITIGATION

The methodology below is neither intended as, nor does it establish, a legal standard for determining equitable responsibility and cost of a project's traffic impact. the intent is to provide:

1. A starting point for early discussions to address traffic mitigation equitably.
2. A means for calculating the equitable share for mitigating traffic impacts.
3. A means for establishing rough proportionality [Dolan v. City of Tigard, 1994, 512 U.S. 374 (114 S. Ct. 2309)].

The formulas should be used when:

- A project has impacts that do not immediately warrant mitigation, but their cumulative effects are significant and will require mitigating in the future.
- A project has an immediate impact and the lead agency has assumed responsibility for addressing operational improvements

NOTE: This formula is not intended for circumstances where a project proponent will be receiving a substantial benefit from the identified mitigation measures. In these cases, (e.g., mid-block access and signalization to a shopping center) the project should take full responsibility to toward providing the necessary infrastructure.

EQUITABLE SHARE RESPONSIBILITY: **Equation C-1**

NOTE: $T_E < T_B$, see explanation for T_B below.

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

Where:

P = The equitable share for the proposed project's traffic impact.

T = The vehicle trips generated by the project during the peak hour of adjacent State highway facility in vehicles per hour, vph.

T_B = The forecasted traffic volume on an impacted State highway facility at the time of general plan build-out (e.g., 20 year model or the furthest future model date feasible), vph.

T_E = The traffic volume existing on the impacted State highway facility plus other approved projects that will generate traffic that has yet to be constructed/opened, vph.

EQUITABLE COST: **Equation C-2**

$$C = P\ (C_T)$$

Where:

C = The equitable cost of traffic mitigation for the proposed project. ($). (Rounded to nearest one thousand dollars)

P = The equitable share for the project being considered.

C_T = The total cost estimate for improvements necessary to mitigate the forecasted traffic demand on the impacted State highway facility in question at general plan build-out. ($).

NOTES

1. Once the equitable share responsibility and equitable cost has been established on a per trip basis, these values can be utilized for all projects on that State highway facility until the forecasted general plan build-out model is revised.
2. Truck traffic should be converted to passenger car equivalents before utilizing these equations (see the Highway Capacity Manual for converting to passenger car equivalents).

APPENDIX "C"

MEASURES OF EFFECTIVENESS

BY

FACILITY TYPE

MEASURES OF EFFECTIVENESS BY FACILITY TYPE

TYPE OF FACILITY	MEASURE OF EFFECTIVENESS
Freeways	
Basic Freeway Segments	Density (pc/mi/ln)
Weaving Areas	Density (pc/mi/ln)
Ramp Junctions	Flow Rates (pcph)
Multi-Lane Highways	Density (pc/mi/ln) Free-Flow Speed (mph)
Two-Lane Highways	Time Delay (percent)
Signalized Intersections	Average Control Delay (sec/veh)
Unsignalized Intersections	Average Control Delay (sec/veh)
Arterials	Average Travel Speed (mph)
Transit	Load Factor (pers/seat. veh/hr. people/hr)
Pedestrians	Space (sq. ft./ped)

Measures of effectiveness for level of service definitions located in table 1-2. Chapter 1. of the 1997 Highway Capacity Manual. Special Report 209. Transportation Research Board. National Research Council.

Transition between LOS "C" and LOS "D" Criteria
(Reference 1997 Highway Capacity Manual)

Basic Freeway Sections

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum Service Flow Rate (pcphpl)	Maximum Volume/Capacity Ratio
	Free-Flow Speed = 70 mph			
A	10.0	70.0	700	0.29
B	16.0	70.0	1120	0.47
C	24.0	68.0	1632	0.68
D	32.0	64.0	2048	0.85
E	45.0	53.0	2400	1.00
F	var	var	var	var

Weaving Areas

LOS	MAXIMUM DENSITY (pc/mi/ln)	
	Freeway Weaving Area	Multi-lane and C - D Weaving Areas
A	10	12
B	20	24
C	28	32
D	35	36
E	<= 43	<= 40
F	> 43	>40

Ramp-Freeway Junction Areas of Influence

LOS	Maximum Density (Primary Measure) (pc/mi/ln)	Minimum Speed (Secondary Measure) (MPH)
A	10	58
B	20	56
C	28	52
D	35	46
E	> 35	42
F	a	a

[a] Demand flows exceed limits of table 5-1.

Signalized Intersections

LOS	Control Delay Per Vehicle (sec)
A	10
B	20
C	35
D	55
E	80
F	> 80

..... Dotted line represents the transition between LOS "C" and LOS "D"

Any Party, outside of Caltrans, that does work on a State Highway or Interstate Highway in California needs to apply for an encroachment permit. To acquire any encroachment permit, environmental concerns must be addressed. Environmental review of encroachment permit applications may take 3 weeks if the application is complete or longer if the application is incomplete. For soil disturbing activities (e.g. geotechnical borings, grading, usage of unpaved roads from which dirt and other materials may be tracked onto the State/Interstate highways, etc.), compliance with Water Quality and Cultural Resources Provisions are emphasized. Surveys may/ may not be soil-disturbing activities, depending on the site and survey method.

A complete application for environmental review includes the following:

1. If an environmental document (CE, EIR/EIS, ND, etc.) has been completed for the project, copy of the final, approved document must be submitted with the application.

2. **Water Quality Provision:** All work within the State Right of Way must conform to Caltrans Standard Plans and Standard Specifications for Water Pollution Control including production of a Water Pollution Control Program or Storm Water Pollution Prevention Plan as required. The applicant must provide Encroachments with a copy of the Storm Water Pollution Prevention Plan (SWPPP) including Best Management Practices (BMPs) to be implemented for construction activities impacting Caltrans Right of Way, prepared for this as required by the NPDES Statewide Storm Water Permit for General Construction Activities. If no SWPPP has been prepared for this project, then the applicant must follow the requirements described in the attached Water Pollution Control Provisions (please see attachment).

3. **Cultural Resources Provisions:** If not included in the environmental document, before permit approval and project construction, the encroachment permit applicant must complete a *Cultural Resource Assessment* pursuant to Caltrans Environmental Handbook, Volume 2, Appendix B-1, and Exhibit 1, as amended. The Cultural Resources Assessment ascertains the presence or absence of cultural resources within a one-mile radius of the project area and evaluates the impact to any historical/cultural resource. Cultural Resources include "those resources significant in American history, architecture, archaeology, and culture, including Native American Resources" (Caltrans Environmental Handbook, Volume 2, Chapter1, as amended)]. The Cultural Resource Assessment must include:
   a) a clear project description and map indicating project work, staging areas, site access, etc.;
   b) a Record Search conducted at the South Central Coastal Information Center (SCCIC) located at California State University, Fullerton. For information call (714) 278-5395;
   c) proof of Native American consultation. Consultation involves contacting the Native American Heritage Commission (NAHC), requesting a search of their Sacred Lands File, and following the recommendations provided by the NAHC. For information call (916) 653-4082;
   d) documentation of any historic properties (e.g. prehistoric and historic sites, buildings, structures, objects, or districts listed on, eligible for, or potentially eligible for listing on the National Register of Historic Places) within a one mile radius of the project area;
   e) and a survey by qualified archaeologist for all areas that have not been previously researched.

   The SCCIC and NAHC have an approximate turn around time of 2 weeks.

4. **Biological Resources Provisions:** Work conducted within Caltrans Right of Way should have the appropriate plant and wildlife surveys completed by a qualified biologist. If the information is not included in the environmental document, Environmental Planning requests that the applicant submit a copy of the biological study, survey, or technical report by a qualified biologist that provides details on the existing vegetation and wildlife at the project site and any vegetation that is to be removed during project activities. Official lists and databases should also be consulted for sensitive species such as the California Natural Diversity Database and lists provided by the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Any impacts that affect waterways and drainages and/or open space during construction, or that occur indirectly as a result of the project must be coordinated with the appropriate resource agencies. As guidance, we ask that the applicant include:
   a) clear description of project activities and the project site
   b) completed environmental significance checklist (not just yes and no answers, but a description should be given as to the reason for the response),
   c) staging/storage areas noted on project plans,
   d) proposed time of year for work and duration of activities (with information available),
   e) any proposed mitigation (if applicable to the project),
   f) and a record of any prior resource agency correspondence (if applicable to the project).