DOWNTOWN COMMERCIAL CORE SPECIFIC PLAN FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT

JUNE 2018

TUSTIN, CA

APPENDICES

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APPENDICES

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APPENDIX A: INITIAL STUDY/NOP/COMMENTS

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NOTICE OF PREPARATION AND SCOPING MEETING

POSTED

AUG 0 2 2016

HUGH NGUYEN, CLERK-RECORDER

BY: _____ DEPUT

DATE: August 1, 2016

TO: Agencies, Organizations and Interested Parties

SUBJECT: Notice of Preparation of a Draft Program Environmental Impact Report in Compliance with Title 14, Section 15082(a) of the California Code of Regulations

The City of Tustin is preparing the Tustin Downtown Commercial Core Specific Plan. As part of that process, the City intends to prepare a program environmental impact report (EIR), pursuant to the requirements of the California Environmental Quality Act (CEQA) for the proposed Specific Plan, described below. We request your review and comments as to the scope and content of the proposed environmental impact report, as summarized in the Initial Study, available on the City's website at http://www.tustinca.org/depts/cd/planningupdate.asp, or available at City offices, 300 Centennial Way, Tustin, California, 92780.

AGENCIES: The City requests your agency's review on the scope and content of the environmental information relevant to your agency's statutory responsibilities in connection with the proposed project, in accordance with California Code of Regulations, Title 14, Section 15082(b). Your agency will need to use the EIR prepared by the City when considering any permits that your agency must issue, or other approval for the project.

ORGANIZATIONS AND INTERESTED PARTIES: The City requests your comments and concerns regarding the environmental issues associated with implementation of the proposed project.

PROJECT TITLE: Tustin Downtown Commercial Core Specific Plan

PROJECT LOCATION: As shown in Figure 1, Regional & Vicinity Maps, the project area for the Tustin Downtown Commercial Core Specific Plan, is generally located immediately northeast of Interstate 5 and east of the Costa Mesa Freeway (Highway 55). The two highways limit the "Downtown" of Tustin and create a physical barrier to adjacent areas. The Planning Area is generally defined on the north side by First Street and on the east side by Newport Ave. The Planning Area includes parcels immediately on the north side of First Street and includes parcels immediately along the east side of Newport Avenue. The Planning Area is comprised of 220 acres located wholly within the City of Tustin, Orange County, California. The intersection of El Camino Real at Third Street is the approximate center of the Planning Area.

DESCRIPTION: The DCCSP identifies the long-term vision and objectives for Tustin's "Downtown" referred to in the EIR as the Planning Area or Project. The vision focuses on continuing to ensure an economically vital, walkable, bikeable, mixed-use center with a focus on active ground floor retail and office environments. The Specific Plan includes provisions for enhancing the public realm as an opportunity of public space and streets as a place for people. The DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 maximum Floor Area Ratio (FAR) and introduces the option to include residential intensity as a part of mixed-use projects that meet the high quality design criteria and requirements set by the Specific Plan.

In order to accomplish this vision, the DCCSP will rezone the parcels within the Planning Area to a new zoning designation, DCCSP. The Specific Plan establishes six Development Areas (DA) that identify development parameters including permitted land uses, development standards, and design guidelines. Each development area identifies specific characteristics in support of ensuring the vitality of Downtown. Hence, the land uses allowed, the development standards and design guidelines respond to those

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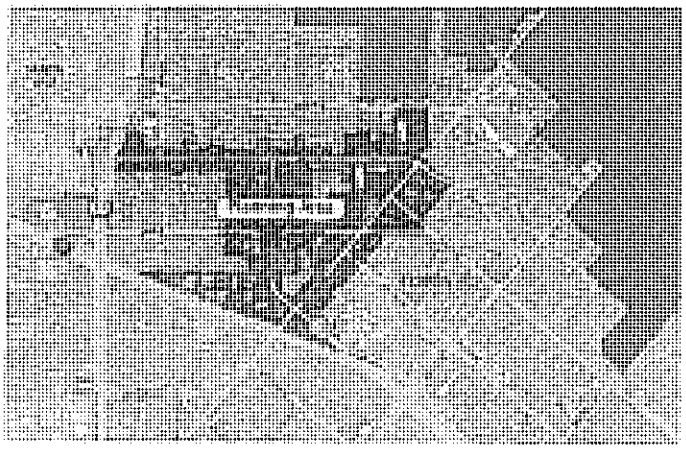
specific characters. All development and future projects are subject to each DA's development standards and design guidelines and the requirements of the Specific Plan.

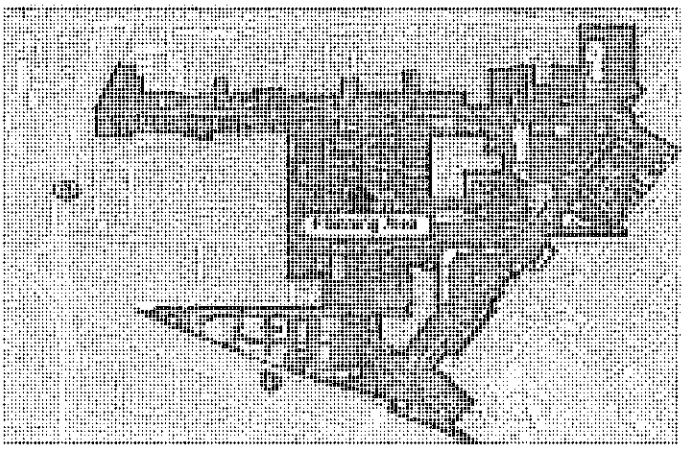
The City of Tustin has established an 887-unit residential bank that is available on a first come basis. Each DA has an allocated number of residential units that the City of Tustin holds and are not specifically associated with any parcel or ownership. High-quality, mixed use projects that meet the design criteria and development standards established by the Specific Plan may request to incorporate residential units through application and based on the discretion of the City of Tustin, Community Development Department.

Through the Specific Plan, the City of Tustin also establishes the ability to transfer of intensity from one DA to another DA. The transfer of intensity allows for the City of Tustin to increase residential intensity for exceptional projects that meet the highest quality design, meet the development standards, and provide a defined public benefit. The transfer of intensity is solely at the discretion of the City of Tustin, Community Development Department based on project review and application. An average of 25 dwelling units per acre will be maintained throughout the Planning Area.

POTENTIAL ENVIRONMENTAL EFFECTS: A Draft EIR will be prepared to evaluate the project's potential environmental impacts. As determined by the Initial Study, the topic areas to be discussed in the DEIR are, Air Quality, Cultural Resources, Greenhouse Gas Emissions, Land Use and Planning, Noise, Population and Housing, Transportation/Traffic, and Utilities and Service Systems impacts.

Figure 1 - Regional & Vicinity Maps





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PUBLIC REVIEW PERIOD: The City has determined to make this Notice of Preparation (NOP) and Initial Study available for public review and comment pursuant to California Code of Regulations, Title 14, Section 15082(b). Please provide any comments by August 31st at 5:00 p.m. to the contact person listed below. The comment period for the NOP begins August 1, 2016 and ends on August 31, 2016.

RESPONSES AND COMMENTS: Please indicate a contact person for your agency or organization and send your responses and comments to: Dana Ogdon, Assistant Director of Community Development; Phone: (714) 573-3109; E-mail: dogdon@tustinca.org; Mailing Address: City of Tustin, Community Development Department, 300 Centennial Way, Tustin, CA 92780.

SCOPING MEETING: One scoping meeting will be held to receive comments on the proposed scope and content of the Draft Program Environmental Impact Report (DEIR). You are invited to attend and present environmental information that you believe should be addressed in the DEIR. The meeting is scheduled for:

Date: August 16, 2016
Time: 3:00 PM
Place: Tustin Library – Training Center Room
345 E. Main Street
Tustin, CA 92780

If you have questions regarding the Scoping Meeting, please contact Mr. Dana Ogdon at (714) 573-3109 or at dogdon@tustinca.org.

DOCUMENT AVAILABILITY: The Initial Study is available for public review during regular business hours at the City of Tustin Community Development Department located at 300 Centennial Way, Tustin. The Initial Study can be viewed on the City of Tustin website at the following address (URL): http://www.tustinca.org/depts/cd/planningupdate.asp.

Dana L. Ogdon
Dana Ogdon

Assistant Director of Community Development
Title

(714)-573-3109
Telephone Number

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CITY OF TUSTIN

DOWNTOWN COMMERCIAL CORE SPECIFIC PLAN

Initial Study

Prepared for:

City of Tustin
Community Development Department
300 Centennial Way
Tustin, California 92780

Prepared by:

MIG
1500 Iowa Avenue, Suite 110
Riverside, California 92507

July 2016

- This document is designed for double-sided printing –
-- The reader should assume any blank pages are intentionally so. --

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1 INTRODUCTION

The City of Tustin (Lead Agency) is preparing the Tustin Downtown Commercial Core Specific Plan (Specific Plan) to guide the long-term growth and development in Old Town Tustin and surrounding areas, generally bound on the north by First Street, west by the I-55 highway, on the east by Newport Ave, and on the south by I-5 freeway. The adoption of the Specific Plan constitutes a *project* that is subject to review under the California Environmental Quality Act (CEQA) 1970 (Public Resources Code, Section 21000 et seq.), and State CEQA Guidelines (California Code of Regulations, Section 15000 et. seq.).

This Initial Study identifies potentially significant impacts related to the implementation of the proposed project and has been prepared in accordance with Section 15063 of the State CEQA Guidelines that sets forth the requirements of an initial study. The initial study includes:

- A description of the project, including the location of the project (See Section 2);
- Identification of the environmental setting (See Section 2);
- Identification of environmental effects by use of a checklist, matrix, or other methods, provided that entries on the checklist or other form are briefly explained to indicate that there is some evidence to support the entries (See Section 4);
- Discussion of ways to mitigate significant effects identified, if any (See Section 4);
- Examination of whether the project is compatible with existing zoning, plans, and other applicable land use controls (See Section 4.10); and
- The name(s) of the person(s) who prepared or participated in the preparation of the initial study (See Section 5).

PURPOSE OF CEQA

The body of state law known as CEQA was originally enacted in 1970. California Public Resources Code Section 21000 establishes legislative intent, as follows:

> *The Legislature finds and declares as follows:*
>
> *a) The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern.*
>
> *b) It is necessary to provide a high-quality environment that at all times is healthful and pleasing to the senses and intellect of man.*
>
> *c) There is a need to understand the relationship between the maintenance of high-quality ecological systems and the general welfare of the people of the state, including their enjoyment of the natural resources of the state.*
>
> *d) The capacity of the environment is limited, and it is the intent of the Legislature that the government of the State takes immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.*
>
> *e) Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.*
>
> *f) The interrelationship of policies and practices in the management of natural resources and waste disposal requires systematic and concerted efforts by public and private interests to enhance environmental quality and to control environmental pollution.*
>
> *g) It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian.*
>
> *The Legislature further finds and declares that it is the policy of the State to:*
>
> *h) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.*

i) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.

j) Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.

k) Ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions.

l) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.

m) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.

n) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment.

Public Resources Code Section 21002 provides concise statement of legislative policy, with respect to public agency consideration of projects for some form of approval, and is, quoted below:

The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects. The Legislature further finds and declares that in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.

TIERING

The following text from Section 15152 et. al. of the CEQA Guidelines describes “tiering” as a streamlining tool to reduce the need for repeated environmental review:

(a) “Tiering” refers to using the analysis of general matters contained in a broader [Environmental Impact Report] EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project.

(b) Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects including general plans, zoning changes, and development projects. This approach can eliminate repetitive discussions of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review. Tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy, or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration. Tiering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration. However, the level of detail contained in a first tier EIR need not be greater than that of the program, plan, policy, or ordinance being analyzed.

(c) Where a lead agency is using the tiering process in connection with an EIR for a large-scale planning approval, such as a general plan or component thereof (e.g., an area plan or community plan), the development of detailed, site-specific information may not be feasible but can be deferred, in many instances, until such time as the lead agency prepares a future environmental document in connection with a project of a more limited geographical scale, as long as deferral does not prevent adequate identification of significant effects of the planning approval at hand.

(d) Where an EIR has been prepared and certified for a program, plan, policy, or ordinance consistent with the requirements of this section, any lead agency for a later project pursuant to or consistent with the program, plan, policy, or ordinance should limit the EIR or negative declaration on the later project to affects which:

(1) Were not examined as significant effects on the environment in the prior EIR; or

(2) Are susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means.

(e) Tiering under this section shall be limited to situations where the project is consistent with the general plan and zoning of the city or county in which the project is located, except that a project requiring a rezone to achieve or maintain conformity with a general plan may be subject to tiering.

(f) A later EIR shall be required when the initial study or other analysis finds that the later project may cause significant effects on the environment that were not adequately addressed in the prior EIR. A negative declaration shall be required when the provisions of Section 15070 are met.

(1) Where a lead agency determines that a cumulative effect has been adequately addressed in the prior EIR that effect is not treated as significant for purposes of the later EIR or negative declaration, and need not be discussed in detail.

(2) When assessing whether there is a new significant cumulative effect, the lead agency shall consider whether the incremental effects of the project would be considerable when viewed in the context of past, present, and probably future projects. At this point, the question is not whether there is a significant cumulative impact, but whether the effects of the project are cumulatively considerable. For a discussion on how to assess whether project impacts are cumulatively considerable, see Section 15064(i).

(3) Significant environmental effects have been "adequately addressed" if the lead agency determines that:

a. They have been mitigated or avoided as a result of the prior environmental impact report and findings adopted in connection with that prior environmental report; or

b. They have been examined at a sufficient level of detail in the prior environmental impact report to enable those effects to be mitigated or avoided by site specific revisions, the imposition of conditions, or by other means in connection with the approval of the later project.

(g) When tiering is used, the later EIRs or negative declarations shall refer to the prior EIR and state where a copy of the prior EIR may be examined. The later EIR or negative declaration should state that the lead agency is using the tiering concept and that it is being tiered with the earlier EIR.

(h) There are various types of EIRs that may be used in a tiering situation. These include, but are not limited to, the following:

(1) General Plan EIR (Section 15166)

(2) Staged EIR (Section 15167)

(3) Program EIR (Section 15168)

(4) Master EIR (Section 15175)

(5) Multiple-family residential development/residential and commercial or retail mixed-use development (Section 15179.5)

(6) Redevelopment project (Section 15180)

(7) Projects consistent with community plan, general plan, or zoning (Section 15183)

The results of the analysis documented in this Initial Study will inform that the Program EIR is appropriate for the Tustin Downtown Commercial Core Specific Plan. The Program EIR will be used by the City of Tustin to minimize or eliminate the need for future environmental review of development projects within the Planning Area. The necessity for the future environmental review will be determine on a project-by-project basis after consideration of the size of the project, the proposed use, and the project's consistency with the analysis certified in the Program EIR.

PUBLIC COMMENTS

All agencies and individuals are invited to comment regarding the information contained in this Initial Study. Such comments should explain any perceived deficiencies in the assessment of impacts, identify the information that is purportedly lacking in the Initial Study and indicate where the information may be found. All comments on the Initial Study are to be submitted to:

Dana Ogdon, Assistant Director of Community Development
City of Tustin
Community Development Department
300 Centennial Way
Tustin, California 92780
DOgdon@tustinca.org

Following a 30-day period of circulation and review of the Initial Study, all comments will be considered by the City of Tustin prior to adoption.

AVAILABILITY OF MATERIALS

All materials related to the preparation of this Initial Study are available for public review. To request an appointment to review these materials, please contact:

Dana Ogdon, Assistant Director of Community Development
City of Tustin - Community Development Department
300 Centennial Way
Tustin, California 92780
(714) 573-3109
DOgdon@tustinca.org

2 PROJECT DESCRIPTION

PROJECT TITLE

Tustin Downtown Commercial Core Specific Plan

LEAD AGENCY NAME AND ADDRESS

City of Tustin - Community Development Department
300 Centennial Way
Tustin, California 92780

PROJECT LOCATION

Tustin is located in central Orange County, California, 12 miles inland from the Pacific Ocean, and is considered part of the greater Los Angeles metropolitan area. Tustin is bordered by the city of Irvine to the south and east, the city of Orange and the Tustin Foothills (County) to the north, and the city of Santa Ana to the west. The city of Tustin and the adjacent jurisdictions characterize the urbanized core of Orange County (see Exhibit 1 Regional Context and Vicinity Map).

The project "Planning Area" is generally located immediately northeast of the Interstate 5 and east of the Costa Mesa Freeway (Highway 55). The two highways limit the "Downtown" of Tustin and create a physical barrier to adjacent areas. The Planning Area is generally defined on the north side by First Street and on the west side by Newport Ave. The Planning Area includes parcels immediately on the north side of First Street and includes parcels immediately along the east side of Newport Avenue. The Planning Area is comprised of 220 acres located wholly within in the City of Tustin, Orange County, California (see Exhibit 2). The intersection of El Camino Real at Third Street is the approximate center of the Planning Area.

PROJECT SETTING

The project setting is a highly urbanized area that has been previously developed. There are existing buildings, street infrastructure, and utilities infrastructure in place. The Planning Area is centered around Old Town Tustin (El Camino Real between First Street and Main Street) which is the historic heart of the City of Tustin. In addition to the Old Town Tustin area, First Street, Main Street, and Newport Avenue provide physical access and visual relationships to the Old Town Tustin. The Tustin Downtown Commercial Core Specific Plan (DCCSP) was established to provide a comprehensive planning framework and implementation strategy for encouraging development that reflects and responds to the character of Old Town Tustin. In order to advance the character of Old Town Tustin in a complimentary manner in surrounding areas, DCCSP focuses on encouraging walkable, bikeable, and transit supportive environments with active ground floor building design and context sensitive design requirements. Additionally, the DCSSP is consistent with the City of Tustin General Plan and State of California AB32 mandate requiring reductions in greenhouse gas emissions compared to business as usual. The Planning Area is generally surrounded by single family residential development except for isolated portions to the east and southeast where commercial uses about the Planning Area. The Planning Area is an opportunity to provide a mixed-use walkable and bikeable center for the surrounding residential neighborhoods.

PROJECT COMPONENTS

The DCCSP identifies the long-term vision and objectives for Tustin's "Downtown" referred to in the EIR as the Planning Area or Project. The vision focuses on continuing to ensure an economically vital, walkable, bikeable, mixed-use center with a focus on active ground floor retail and office environments. The Specific Plan includes provisions for enhancing the public realm as an opportunity of public space and streets as a place for people. The DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 maximum Floor Area Ratio (FAR) and introduces the option to include residential intensity as a part of mixed-use projects that meet the high quality design criteria and requirements set by the Specific Plan.

In order to accomplish this vision, the DCCSP will rezone the parcels within the Planning Area to a new zoning designation, SP-DCCSP. The Specific Plan establishes six Development Areas (DA) that identify development parameters including permitted land uses, development standards, and design guidelines. Each development area identifies specific characteristics in support of ensuring the vitality of Downtown. Hence, the land uses allowed, the development standards and design guidelines respond to that specific character. All development and future projects are subject to each DA's development standards and design guidelines and the requirements of the Specific Plan (see Exhibit 2 Development Areas and Land Use Designations).

The City of Tustin has established an 887-unit residential bank that is available on a first come basis. Each DA has an allocated number of residential units that the City of Tustin holds an are not specifically associated with any parcel or ownership. High-quality, mixed use projects that meet the design criteria and development standards established by the Specific Plan may request to incorporate residential units through application and based on the discretion of the City of Tustin, Community Development Department.

Through the Specific Plan, the City of Tustin also establishes the ability to transfer of intensity from one DA to another DA. The transfer of intensity allows for the City of Tustin to increase residential intensity for exceptional projects that meet the highest quality design, meet the development standards, and provide a defined public benefit. The transfer of intensity is solely at the discretion of the City of Tustin, Community Development Department based on project review and application. An average of 25 dwelling units per acre will be maintained throughout the Planning Area.

ZONING

The Planning Area currently includes ten different zone designations as follows:

C1- Retail Commercial
C2 – Central Commercial
CG – Commercial General
MHP – Mobile Home Park
PC COM – Planned Community Commercial
PC-RES – Planned Community Residential
P&I – Public and Institutional
PR – Professional
PM – Planned Industrial
SP10 – First Street Specific Plan

As part of the zoning amendment, the majority of the Planning Area will be rezoned as SP-DCCSP with the exception of the areas identified as PC COM and PC RES. The parcels zones as PC COM and PC RES will retain the same zoning.

LAND USE

The Planning Area currently includes seven land use designations as follows:

CC – Community Commercial
I - Industrial
MHP – Mobile Home Park
OTC – Old Town Commercial
PI – Public/Institutional
PCCB – Planned Community Commercial/Business
PCR – Planned Community Residential

The Planning Area will receive the General Plan land use designation of DCCSP - Downtown Commercial Core Specific Plan with the exception of the land use designations PCCB and PCR. For the DCCSP designation, each DA identifies permitted land uses and additional land use information. The primary difference between the existing land use and the adoption of this Specific Plan is the ability to incorporate residential units as a part of mixed-use projects. Mixed-use projects desiring to incorporate residential intensity must meet the criteria set by the Specific Plan including design guidelines and development standards.

DEVELOPMENT AREAS (DA)

The Specific Plan is organized geographically by Development Area (DA). Each DA includes specific character elements, design guidelines, and development standards that are to guide future projects. The six DAs are summarized below:

- Development Area 1 (DA-1): First Street West
- Development Area 2 (DA-2): First Street Old Town
- Development Area 3: First Street East
- Development Area 4: Old Town Tustin
- Development Area 5: Newport Avenue
- Development Area 6: South of Sixth

The Specific Plan encourages mixed-use development. However, the DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 maximum Floor Area Ratio (FAR). Each DA encourages mixed-use development with active ground floor uses and residential intensity as a part of mixed-use projects. Each project regardless of uses will meet the high quality design criteria and requirements set by the Specific Plan.

DEVELOPMENT AREA 1 (DA-1): FIRST STREET WEST

The DA-1 comprises the western segment of First Street between Pasadena Avenue and C Street. This area is the first point of entry and gateway to Tustin's Downtown. The existing character in DA-1 is a mix of professional office space, limited commercial uses, and residential homes. The development standards associated with DA-1 encourages two to three stories with required step backs adjacent to existing residential homes and neighborhood areas). Active ground floor retail/commercial uses with office or residential units above is desired along First Street to activate a pedestrian friendly and bicycle friendly environment along First Street. First Street also serves as an important multi-modal corridor. It provides connections to transit options, incorporates a shared bicycle facility, and angled parking.

Land use designation(s): Downtown Commercial Mixed Use (DCMU)

DEVELOPMENT AREA 2 (DA-2): FIRST STREET OLD TOWN

DA-2 is the gateway to Old Town Tustin and extends along First Street from C Street to Centennial Way. DA-2 maximizes future potential and requires building forms that are limited to three stories with stepbacks adjacent to residential areas as well as stepbacks for parcels adjacent to C Street and El Camino Real. Parcels in DA-2 are small, have limited street frontage, and provide an opportunity for a variety of retail frontages that also provide a desired visual transition to Old Town. The public realm features for DA-2 require the creation of gateway features at C Street and El Camino Real in order to transition to Old Town Tustin, the historic commercial heart of Tustin (DA-4). Active ground floor commercial uses with residential units above is desired along First Street to activate Old Town Tustin. First Street also serves as an important multi-modal corridor. It provides connections to transit options, incorporates a shared bicycle facility, and angled parking.

Land use designation(s): Community Institutional (CI), Downtown Commercial Mixed Use (DCMU)

DEVELOPMENT AREA 3 (DA-3): FIRST STREET EAST

DA-3 is one of the few areas with larger parcels in the Downtown. DA-3 encompasses parcels on both sides of First Street from Centennial Way to Newport Avenue and immediately west of Newport Avenue, DA-3 extends north to Irvine Boulevard. DA-3 supports higher-intensity, mixed-use residential developments and large-format commercial and destination shopping space. There is a maximum height limit of five stories. The availability of larger parcels, adjacency to transit corridors, and the proximity to major roadways are seen as opportunities for desirable, future development. The Specific Plan allows for taller, more intense development on Newport Avenue with stepbacks along First Street and towards Centennial Way. The development standards required a decrease in building massing as DA-3 transitions to existing residential neighborhoods and Old Town Tustin. The public realm features for DA-3 require the creation of gateway features at Newport Avenue and First Street. First Street and Newport Avenue serves as important multi-modal corridors. First Street provides connections to transit options, incorporates a shared bicycle facility, and angled parking. Newport Avenue incorporates on-street parking and a separated bicycle facility.

Land use designation(s): Downtown Commercial Mixed Use (DCMU)

DEVELOPMENT AREA 4 (DA-4): OLD TOWN TUSTIN

DA-4 includes the heart of historic Downtown Tustin. DA-4 includes historic resources and extends from First Street to Sixth Street. The primary intent of this DA is to promote development and revitalization of the existing, pedestrian-oriented "Downtown" supporting a shopping destination and active streetscape defined by the constant movement of pedestrians. A maximum two-story development is envisioned along El Camino Real with active ground floor uses. The Old Town Tustin Development Area provides for opportunities for mixed-use projects along Main Street. Public and institutional uses such as the library and Peppertree Park support and enhance the City's civic center located west of C Street. DA-4 also supports the design and incorporation of parklets to further enhance outdoor retail and restaurant uses.

Land use designation(s): Community Institutional (CI), Mobile Home Park, (MHP), Open Space (OS), Old Town Mixed Use (OTMU), Planned Community Residential (PCR) (existing land use)

DEVELOPMENT AREA 5 (DA-5): NEWPORT AVENUE

DA-5 is spans both sides of Newport Avenue from Interstate 5 to First Street. DA-5 is envisioned as a regional commercial center and shopping destination with active streetscape defined by the constant move of pedestrians and cyclists. DA-5 supports a maximum of six story mixed-use development with stepbacks along Centennial Way and areas adjacent to existing residential neighborhoods. DA-5 has the ability to incorporate medium- and large-format buildings due to larger parcel sizes. DA-5 serves as the southern gateway to Old Town at approximately Prospect Avenue and Main Street. The public realm features for DA-5 require the creation of gateway features at Newport Avenue and Main Street and buildings to transition to Prospect Avenue and Main Street. Gateway features are also created at Newport Avenue and El Camino Real. Newport Avenue is envisioned as a transit-oriented corridor with a commercial street edge, walkable scale, and local and regional bicycle connections. Newport Avenue incorporates on-street parking and a separated bicycle facility.

Land use designation(s): Community Institutional (CI), Downtown Commercial (DC), Planned Community Commercial Business (PCCB) (existing land use)

DEVELOPMENT AREA 6 (DA-6): SOUTH OF SIXTH STREET

DA-6 includes parcels located adjacent to the I-5 highway. DA-6 requires a maximum of 6 stories with stepbacks that decrease in scale as projects approaches Sixth Street, DA-4, and existing residential neighborhoods to the north. DA-6 has the ability to incorporate medium- and large-format buildings due to larger parcel sizes. The public realm features for DA-6 require the creation of gateway features at Newport Avenue and El Camino Real. Newport Avenue is envisioned as a transit-oriented corridor with a commercial street edge, walkable scale, and local and regional bicycle connections. Newport Avenue incorporates on-street parking and a separated bicycle facility.

Land use designation(s): Downtown Commercial Mixed Use (DCMU); Downtown Multi-Family (DMF), Planned Community Residential (PCR) (existing land use)

RESIDENTIAL BANK

The Specific Plan introduces the ability to incorporate residential use into high quality, mixed-use projects meeting the design guidelines, development standards, and additional criteria set by the Specific Plan. Residential use through mixed use development is the primary change being introduced into the already urbanized context of the Planning Area. Each Development Area (DA) has a set number of residential units allocated to it. The use of these residential units is at the sole discretion of the City of Tustin, Community Development Department. The table below identifies the residential bank held by the City of Tustin. Residential units are not allocated to a specific parcel ownership and are available for use on a first come basis.

Table 1 (Residential Bank)

Development Area	Residential Bank
DA-1	45
DA-2	92
DA-3	200
DA-4	150
DA-5	0
DA-6	400
Total	887

TRANSFER OF INTENSITY

In addition, to the residential bank, the Specific Plan also includes the ability to transfer residential intensity between Development Areas. The ability to transfer residential intensity is solely at the discretion of the City of Tustin, Community Development Department. The transfer of intensity is established because the Planning Area is already a highly urbanized context and market pressures may create need for residential uses in certain Development Areas.

At a minimum, high quality design projects must meet all development standards and design guidelines, and all criteria set by the Specific Plan. The City of Tustin, Community Development Department can grant a residential intensity increase up to 20% of each Development Area's (DA) total. The *intensity transfers* may increase the number of permitted dwelling units in a development area by reducing the allowable dwelling units in other development areas. An average of 25 dwelling units per acre will be maintained over the entire Planning Area. See table below.

Table 2 (Transfer of intensity)

Development Area	Residential Bank	Transferable Units
DA-1	45	Up to 8
DA-2	92	Up to 18
DA-3	200	Up to 40
DA-4	150	Up to 30
DA-5	0	0
DA-6	400	Up to 80
Total	887	

UTILITIES

STORMWATER MANAGEMENT

The Specific Plan area is well-served by a network of underground drainage pipes ranging in size from 18" to 66" diameter at the downstream confluence point (Newport Avenue/Interstate 5). Catch basins and other structures are well-maintained by Orange County Flood Control District and appear to be reliable platforms for subsequent improvements as needed for new development. The addition of medium-density housing, office and commercial retail uses will necessarily include a site-specific hydrology study with project-associated storm drain improvements. It is anticipated that new development will mitigate impacts with more pervious site improvements and detention. Since the Specific Plan area is already developed and mostly impervious, it is anticipated that the current storm drain system will accommodate the Specific Plan build-out.

SANITARY SEWER

The Downtown area is served by a network of underground sewer collection lines operated by the Orange County Sanitation District. Sizes range from 6" to 27" diameter at the downstream confluence (Newport Avenue/Interstate 5). The system is in good condition and well-maintained. Large diameter "trunk lines" cross the study area (Prospect Avenue-El Camino Real), offering a reliable platform for subsequent improvements as needed for new development.

Since the trunk line sewer in the Downtown core serves a much larger North Orange County area, it will be capable of accommodating the Specific Plan build-out. Additional collector sewers of 8" diameter may be needed as development progresses. Sewer Capacity Studies to ensure downstream capacity exists or to identify incremental "relief sewers" may be required at a project level.

DOMESTIC WATER

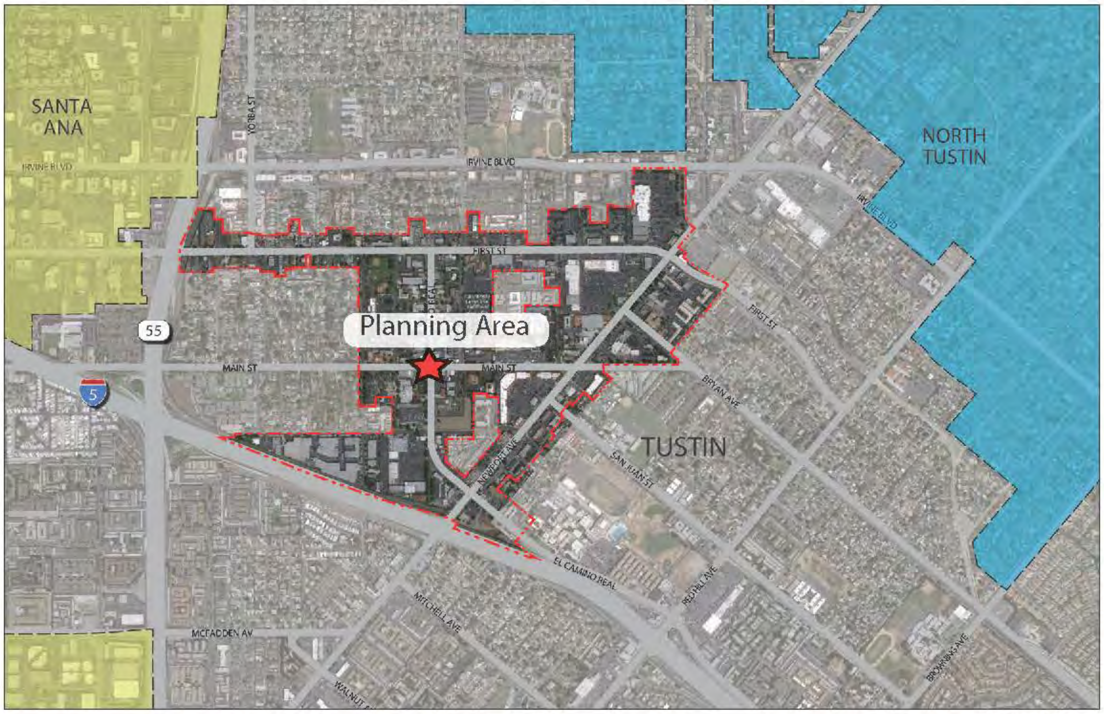
The Downtown area has a network of domestic water mains operated by the City Water Department. Potable water is supplied by the Metropolitan Water District and groundwater pumped from the Santa Ana River Basin via 12 City-operated wells. The system is currently adequate for both domestic water consumption and fire flow.

The additional development planned will increase the demand for potable water and supplies are constrained. A Water Supply Assessment study is recommended to ensure adequate wholesale supplies or additional groundwater extraction is available. To minimize consumption and demand, all new developments will be required to use low-flow plumbing fixtures, drought-tolerant

landscapes with low volume-low pressure irrigation and other water conservation measures. As new development occurs, smaller incremental extensions or duplications of distribution pipelines may be required on a project-by-project basis.

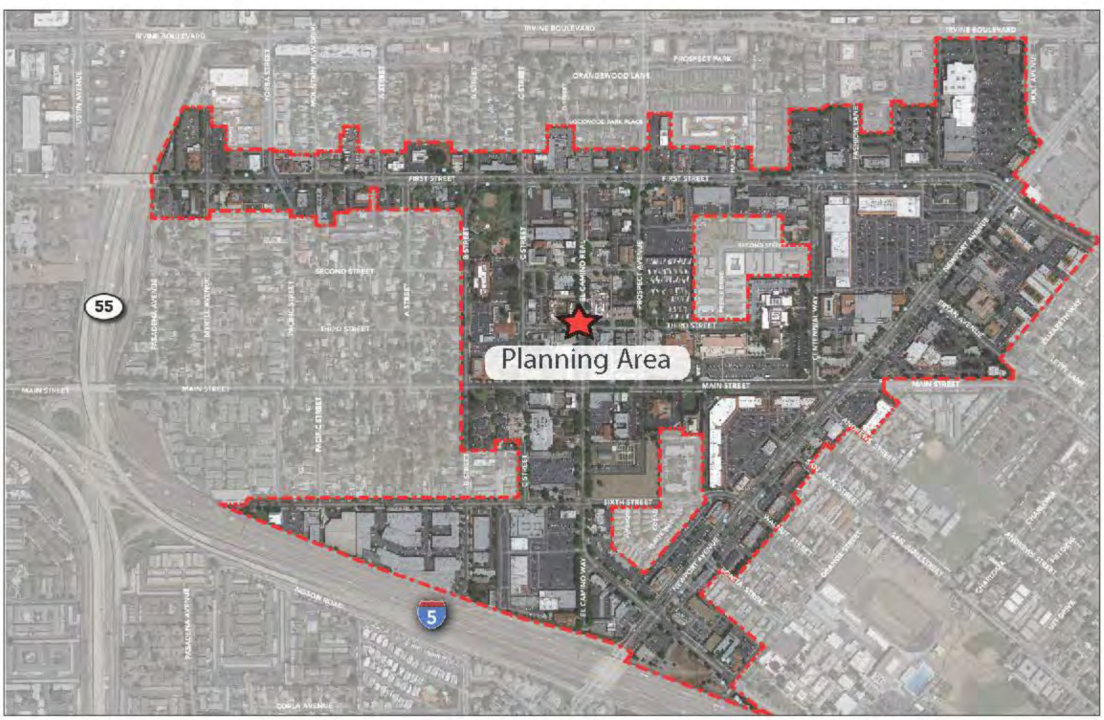
REQUIRED APPROVALS

- Zoning Amendment
- General Plan Amendment
- Adoption of the Specific Plan by ordinance
- Certification of the PEIR



Source: Tustin Downtown Core Specific Plan

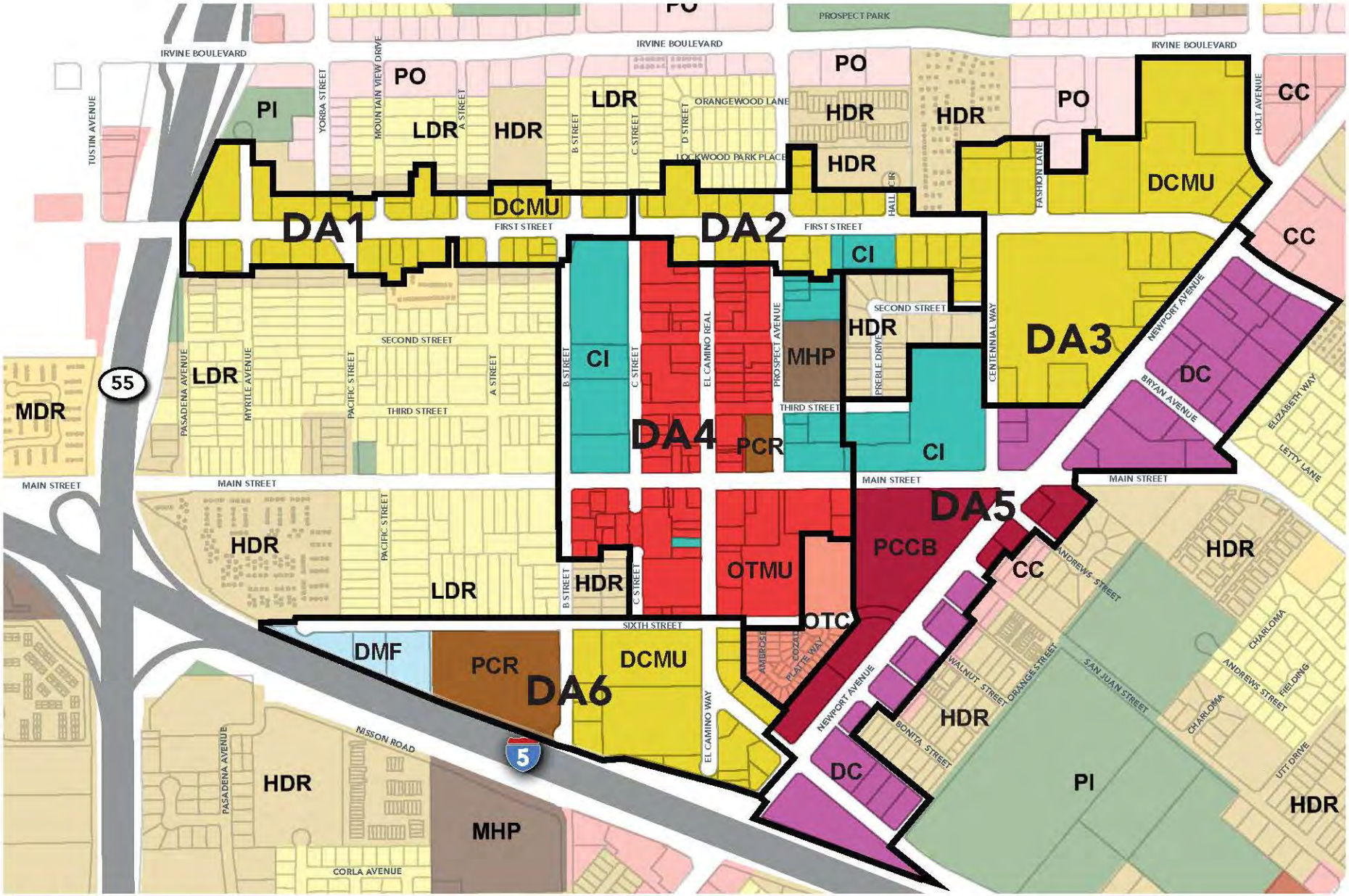
Regional



Source: Tustin Downtown Core Specific Plan

Vicinity

Exhibit 1 Regional and Vicinity Map



Legend

Planning Area

- LDR-Low Density Residential
- MDR-Medium Density Residential
- HDR-High Density Residential
- CC-Community Commercial
- PI-Public/Institutional
- OTC-Old Town Commercial
- PCR - Planned Community Residential
- PO - Professional Office
- MHP - Mobile Home Park
- CI-Community Institutional
- DCMU-Downtown Commercial Mixed Use
- OTMU-Old Town Mixed Use
- DC - Downtown Commercial
- DMF - Downtown Multi-Family
- PCCB - Planned Community Commercial/Business

DA 1-First Street West
DA 2-First Street Old Town
DA 3-First Street East
DA 4-Old Town Tustin
DA 5-Newport Avenue
DA 6-South of Sixth Street

Exhibit 2 Development Areas and Land Use Designations

Tustin Downtown Commercial Core Specific Plan
Tustin, California

3 DETERMINATION

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

DETERMINATION

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☐	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☒	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a 'potentially significant impact' or 'potentially significant unless mitigated' impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ Name: Elizabeth A. Binsack Director of Community Development	_____ Date

4 EVALUATION OF ENVIRONMENTAL IMPACTS

4.1 AESTHETICS

Would the project:

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

A) No Impact. The Tustin General Plan does not identify any scenic vistas. Views of the Santa Ana Mountains from within the Planning Area are intermittently obstructed by existing development but generally visible when looking east down road corridors (see Exhibit 4, Photo Location Map to Photographic Survey). Other topographic features in the area such as the Peralta Hills, Chino Hills, and San Joaquin Hills are not visible from within the Planning Area due to distance and obstruction by existing development. Existing development within the Planning Area is generally one- to two-stories in height intermixed with occasional three-story structures. The proposed Specific Plan will permit different building heights among the different Development Areas ranging from two to six stories. Redevelopment of the Planning Area pursuant to the development standards of the Specific Plan will result in increased height and mass in the Planning Area. However, no scenic vistas have been identified by the City of Tustin. No further analysis of impacts to scenic vistas will be required for development proposed within the Tustin Downtown Commercial Core Specific Plan area.

B) No Impact. A scenic resource is defined as an isolated source of aesthetic value such as an old oak tree, a unique rock formation, or a historic structure visible from a scenic highway. The Planning Area is urbanized and generally developed with urban uses. No site within the Planning Area contains any scenic resources that could be impacted by development supported by the Specific Plan. There are no scenic highways within or outside of the Planning Area.[1] No impact to any scenic resources could occur. No further analysis of impacts to scenic resources will be required for development proposed within the Tustin Downtown Commercial Core Specific Plan area.

C) Less than Significant Impact. The proposed Specific Plan includes development standards and design guidelines to guide long-term development within the Planning Area. Recycling and redevelopment of properties within the Planning Area will be subject to the design guidelines and development regulations of the Specific Plan. Changes to the visual character of the Planning Area will be less than significant with adherence to Specific Plan design guidelines and development regulations.

D) Less than Significant Impact. Excessive or inappropriately directed lighting can adversely impact night-time views by reducing the ability to see the night sky and stars. It can also impact surrounding land uses by excessively illuminating portions of those properties and causing distraction. Potential impacts caused by lighting can occur as a result of light emanating from the interior of structures passing through windows as well as from exterior sources, such as street lighting, security lighting, and landscape lighting. Unwanted or misdirected light may also “spillover” onto adjacent properties, causing adverse effects on landowners or occupants. The design guidelines and development standards include requirement for shielded lighting and directed lighting for street lights and bollards. However, development within the Planning Area will result in new light sources including the potential for increase pedestrian lighting, electric signs, security lighting, parking lot lighting, and street lights. Development within the

Planning Area will be subject to Tustin City Code Part 7 (General Regulations), Section 9271, hh (Specific Provisions, Light and Glare), all exterior outdoor lighting shall be designed so as to minimize impacts from light pollution including light trespass and glare to minimize conflict caused by unnecessary illumination. In addition, outdoor lighting fixtures that are used to illuminate a premises, architectural feature, or landscape feature on private property shall be directed, shielded, or located in such a manner that the light source is not directed off-site. This will ensure that development within the Planning Area is adequately illuminating on-site uses for security purposes without impacting adjacent properties. Impacts to day and night views from lighting will be less than significant with implementation of existing regulations. No further analysis of impacts related to lighting is anticipated to be required for development proposed within the Tustin Downtown Commercial Core Specific Plan area.

Glare effects may occur when luminance within the visual field is created that is significantly greater than the luminance to which one's eyes are adjusted. Glare is generated during the daytime from reflective surfaces such as glass, polished metals, or snow. Halos (rings of light around a light source) occur at night. In relationship to development, glare can be generated from projects using reflective building materials. Glare effects may result in general annoyance, physical discomfort, or a temporary loss in visibility. The proposed Specific Plan includes development standards and design guidelines related to building materials. The Specific Plan does not permit building materials that could generate glare. Adherence to the Specific Plan development standards will reduce the likelihood of creating glare within the Planning Area; therefore, future development within the Planning area could not result in glare effects and no impact will occur.

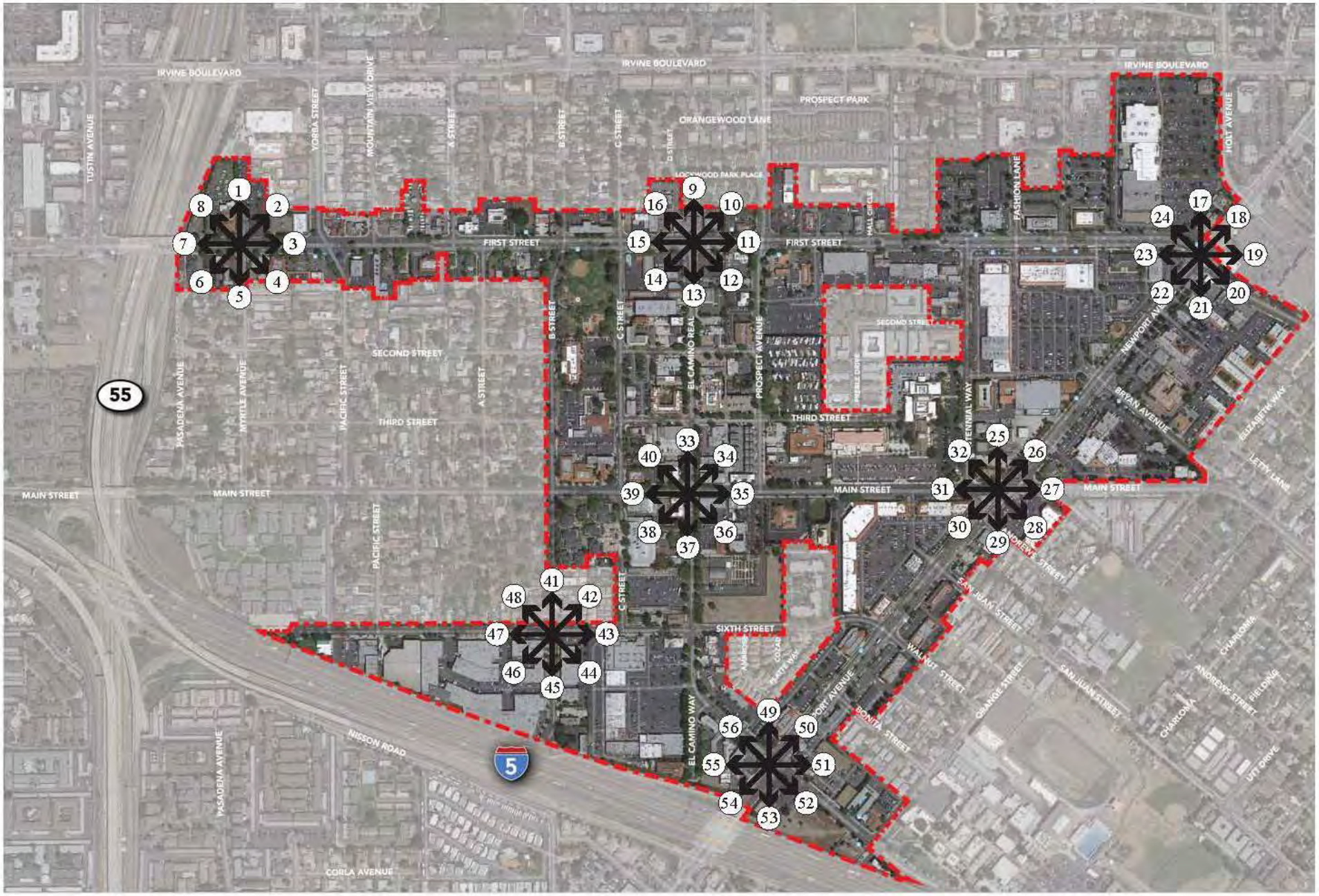


Exhibit 3 Photo Location Map

Tustin Downtown Commercial Core Specific Plan
Tustin, California

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Exhibit 3a Photographic Survey

Tustin Downtown Commercial Core Specific Plan

Tustin, California

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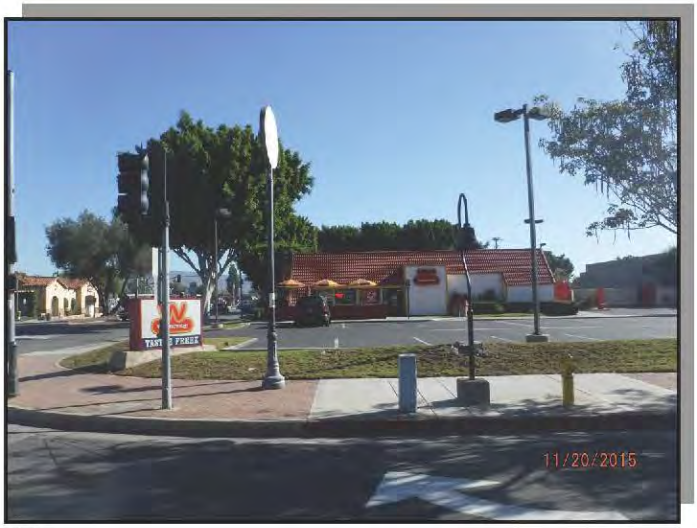

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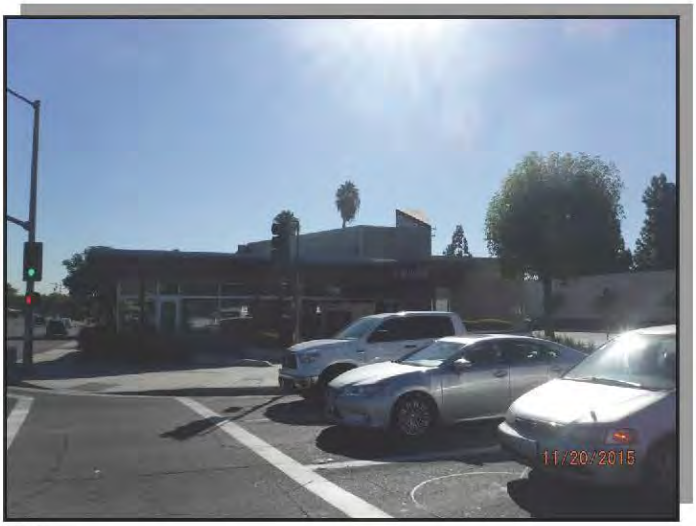

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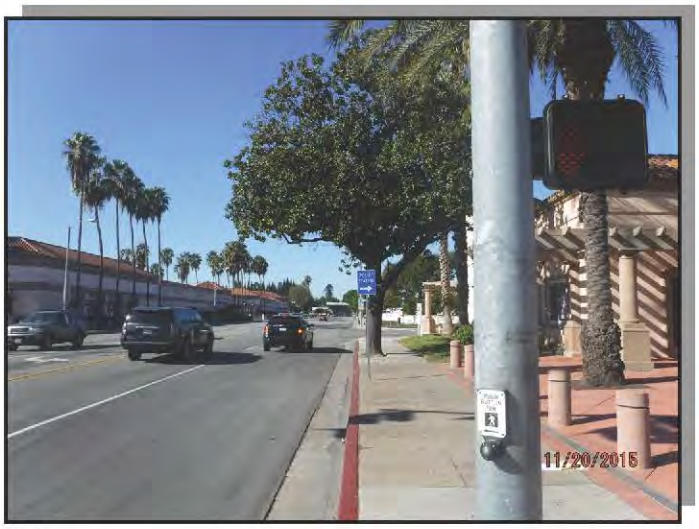

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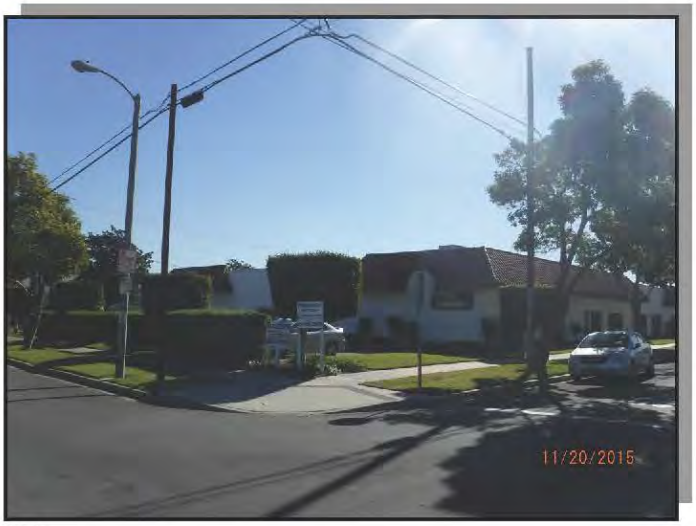

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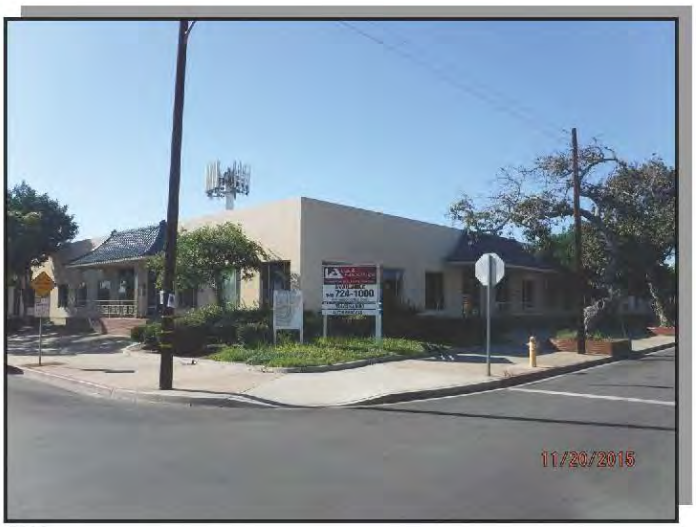

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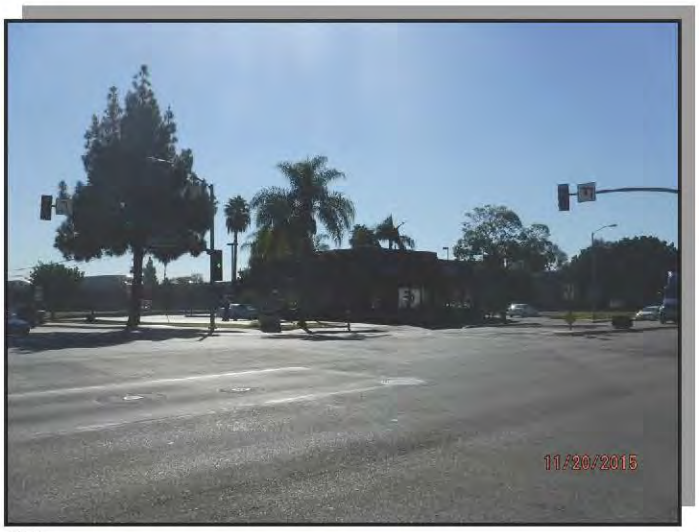

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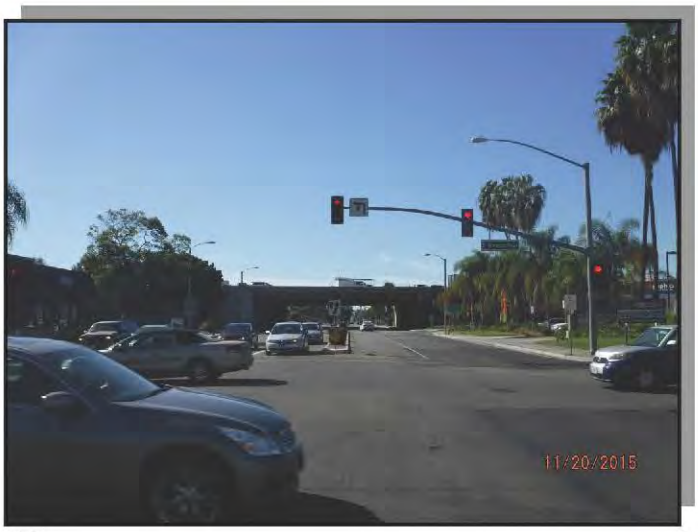

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4.2 AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
B) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
C) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?	☐	☐	☐	☒
D) Result in loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
E) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

A-E) No Impact.

The Planning Area is completely urbanized and void of any agricultural uses or native open space. There is no farmland of any importance, Williamson Act contracts, or timberland within the Planning Area.[2] [3] No impacts to any of these resources could occur. No further analysis of impacts to agricultural or forestry will be required for development proposed within the Tustin Downtown Commercial Core Specific Plan area.

4.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
B) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
C) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
D) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
E) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

A-C) Potentially Significant Impact. The proposed Specific Plan will support long-term redevelopment of the Planning Area with higher intensity development and uses. Pollutant emissions will be generated from area and mobile sources within the Planning Area. The Specific Plan will conflict with the 2012 Air Quality Management Plan (AQMP) if the land uses, development intensities, and policies of the Specific Plan result in population, employment, or household growth or decline that was not assumed in the AQMP. Long-term development within the Specific Plan area will also result in constriction and operational emissions that could exceed daily thresholds established by the South Coast Air Quality Management District (SCAQMD) for the purpose assessing the significance of project-level impacts on regional and local air quality. Therefore, potentially significant impacts related to conflicts with the AQMP and violations of air quality standards will be fully evaluated in an EIR.

D) Potentially Significant Impact. The proposed Specific Plan does not include uses that could result in substantial emissions of toxic air contaminants (TACs) such as warehouses, heavy industrial, or manufacturing facilities; therefore, no impacts to sensitive receptors due to TAC emissions will occur as result of adoption of the proposed Specific Plan and no further analysis of such impacts for future development within the Planning Area will be required.

A carbon monoxide (CO) hotspot is an area of localized CO pollution that is caused by vehicle congestion on major roadways, typically near intersections.[4] CO hotspots have the potential to violate state and federal CO standards at affected intersections, even if the broader Basin is in attainment for federal and state levels. The proposed Specific Plan supports long-term redevelopment of the Planning Area that will result in changes to local and regional traffic patterns that could result in or contribute substantially to CO hotspots if those changes result in substantial peak hour volumes. Potential impacts related to CO hotspots will be evaluated in an EIR.

E) No Impact. According to the CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.).[5] The proposed Specific Plan does not support these types of uses. No impact could occur and analysis of impacts related to odors resulting from future development within the Planning Area will not be necessary.

4.4 BIOLOGICAL RESOURCES

Would the project:

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

A) No Impact. The California Natural Diversity Database (CNDDB) was consulted to determine the potential for occurrence of sensitive species within or in vicinity of the Planning Area (within one mile).[6] The result identified two sensitive species that have occurred within the project vicinity: the Mexican long-tongued bat (*Choeronycteris mexicana*) and San Bernardino aster (*Symphyotrichum defoliatum*). The Mexican long-tongued bat feeds on nectar and pollen of night-blooming succulents and is known to roosts in relatively well-lit caves and in and around buildings. This species was last observed in the vicinity of the Planning Area in 1995. San Bernardino aster is known to occur at elevations of 6 to 6,692 feet in the following habitats: meadows and seeps, cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, valley and foothill grassland, and disturbed areas. This species was last observed in the vicinity of the Planning Area in 1927. Considering the dates of the latest occurrences and the lack of habitat supporting sensitive species in the Planning Area, no impacts will occur and no further analysis of impacts to sensitive species or their habitat will be required for future development within the Planning Area.

B-C) No Impact. There is no riparian habitat or wetlands located within the Planning Area that could be impacted by long-term development supported by the proposed Specific Plan. No impacts related to these environmental issues could occur and no further analysis regarding these issues will be required for future development within the Planning Area.

D) Less than Significant Impact. The Planning Area includes no designated wildlife corridors or wildlife nurseries; thus, these types of resources could not be impacted by the project. Southern California is located along the Pacific Flyway, which is a colloquial term for the numerous and complex migratory routes used by bird species migrating within the 7,500-mile length between the Bering Strait and South America. Essentially, any waterbody or open space within the Pacific Flyway can serve as a travel node on a migratory path. Furthermore, any tree or sufficient collection of shrubbery can accommodate migratory bird layovers.

The proposed Specific Plan does not authorize any construction or improvements that could affect transitory, migratory birds; however, proponents of future development projects within the Planning Area guided by the policies and standards of the Specific Plan could impact migratory bird species if such species are nesting or otherwise present in landscaping or other vegetation upon commencement of demolition, site clearing, or earthmoving activities associated with construction of those projects.

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703) implements various treaties and conventions between the U.S., Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the MBTA, the taking, killing or possessing of migratory birds is unlawful, unless expressly permitted by other federal regulations. The MBTA provides that it is unlawful to pursue, hunt, take, capture or kill any migratory bird, part, nest, egg or product. The MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (1 February to 31 August, annually). Migratory bird species protected by this act are defined in Title 50, CFR Section 10.13. The California Department of Fish and Wildlife (CDFW) has expounded upon the critical nesting cycle phase and generally recommends that pre-construction surveys be conducted during any time of the year because of variations in migratory and nesting patterns amongst the extensive list of species covered under the MBTA. As such, applicants for entitlements within the Planning Area will be subject to the MBTA and will be required to perform pre-construction surveys (typically within three days of outset of vegetation removal) to ensure that nesting species are not present and to avoid any species that are found until the young have fledged and the nest vacated. Impacts to migratory birds will be less than significant through compliance with existing regulations.

E) No Impact. The City of Tustin does not have any local policies or ordinances established for the protection of biological resources or tree preservation. According to the Tustin City Code Sections 7308 and 7309, trees planted in the City of Tustin in public parkways, medians, streets, highways, alleys, sidewalks and right-of-way shall be consistent with the City Master Tree Plan. No impacts will occur.

F) No Impact. The City of Tustin is enrolled as a participating jurisdiction in the County of Orange (Central/Coastal) NCCP/HCP. The Central and Coastal Sub-region is a 208,000-acre area that includes the central portion of Orange County, incorporating the area from the coastline inland to Riverside County. However, the City of Tustin is not located within the 37,378-acre NCCP habitat Reserve System.[7] No other NCCPs or HCPs are located within the Planning Area. Thus, no impacts will occur.

4.5 CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	☒	☐	☐	☐
B) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	☒	☐	☐	☐
C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
D) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

A) Potentially Significant Impact. Historical resources typical become of concern when a structure is 50 years or older. Considering the age of development within the Planning Area, many structures are 50 years or older. Although the City of Tustin has a register of significant historic structures, few structures have been designated as historic. Potentially significant impacts could occur if a structure meeting the definition of a *historical resource* pursuant to CEQA is damaged or destroyed during redevelopment of the Planning Area. Potential impacts to historical resources will be evaluated in an EIR.

B) Potentially Significant Impact. Archaeological resources are buried cultural resources from historic or pre-historic eras. Surficial and near-surface archaeological resources in the Planning Area would have been destroyed or recovered as a result of past development and redevelopment; therefore, it is unlikely that archaeological resources are located in these locations under existing development. However, some archaeological resources may have been left in place which is the preferred treatment pursuant to CEQA. Furthermore, the proposed Specific Plan supports high-intensity development that could include multiple-story subsurface parking, resulting in the disturbance of soils at depths not previously disturbed by existing or past development. Future development could result in impacts to such archaeological resources if not treated properly. Potential impacts to archaeological resources will be evaluated in an EIR and reasonable mitigation measures will be identified, if necessary.

C) Less than Significant Impact. Paleontological resources are buried fossil remains. Surficial and near-surface paleontological resources in the Planning Area would have been destroyed or recovered as a result of past development and redevelopment; therefore, discovery of substantial deposits of paleontological resources will not occur. Impacts will be less than significant.

D) Less than Significant Impact. There are no cemeteries within the Planning Area. Considering that the Planning Area is developed, surficial and near-surface human remains would have been destroyed or recovered as a result of past development and redevelopment; therefore, it is unlikely that human remains are located under existing development. In the unlikely event that human remains are uncovered, future proponents of development within the Planning Area and the City will be required to comply with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code, including halting construction activities until a County Coroner can evaluate the discovery and potentially consult with a Native American Representative if the remains are of Native American Origin. Potential impacts to buried human remains will be less than significant with implementation of existing regulations.

4.6 GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
B) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
C) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
D) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☒	☐	☐
E) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Ai) No Impact. Although the project site is located in seismically active Southern California, there are no Alquist-Priolo Special Studies Zones faults located within the Planning Area.[8] Thus, no impacts will occur.

Aii) Less than Significant Impact. The Planning Area is subject to strong ground shaking due to seismic events prevalent throughout California.

Article 8 (Building Regulations), Chapter 1 (Building Codes and Construction Regulations) of the Tustin City Code formally adopted the 2013 California Building Code (CBC). The CBC requires adequate design of structures to prevent collapse during seismic events. Seismic hazards can be mitigated through a variety of solutions including soil excavation and replace, use of piles, post-tension foundations, and other geotechnical and structural options. Future development within the Planning Area will be subject to building and safety review and approval pursuant to the CBC that will identify any potential seismic hazards and require correction through standard foundation and/or structural design. Impacts related to seismic hazards will be less than significant with implementation of existing regulations and analysis of impacts related to seismic hazards will not be required for future development within the Planning Area. Impacts will be less than significant.

Aiii) Less than Significant Impact. Liquefaction is a phenomenon that occurs when soil undergoes transformation from a solid state to a liquefied condition due to the effects of increased pore-water pressure. This typically occurs where susceptible soils (particularly the medium sand to silt range) are located over a high groundwater table. Affected soils lose all strength during

liquefaction and foundation failure can occur. The southern portion of the Specific Plan area is subject to liquefaction defined as the loss of soil strength during ground shaking (see Exhibit 4, Liquefaction Hazards).[9] As discussed in Aii), Article 8 (Building Regulations), Chapter 1 (Building Codes and Construction Regulations) of the Tustin City Code formally adopted the 2013 California Building Code (CBC). The CBC requires adequate design of structures to prevent collapse during seismic events. Seismic hazards can be mitigated through a variety of solutions including soil excavation and replace, use of piles, post-tension foundations, and other geotechnical and structural options. Future development within the Planning Area will be subject to building and safety review and approval pursuant to the CBC that will identify any potential seismic hazards and require correction through standard foundation and/or structural design. Impacts related to seismic hazards will be less than significant with implementation of existing regulations and analysis of impacts related to seismic hazards will not be required for future development within the Planning Area. Impacts will be less than significant.

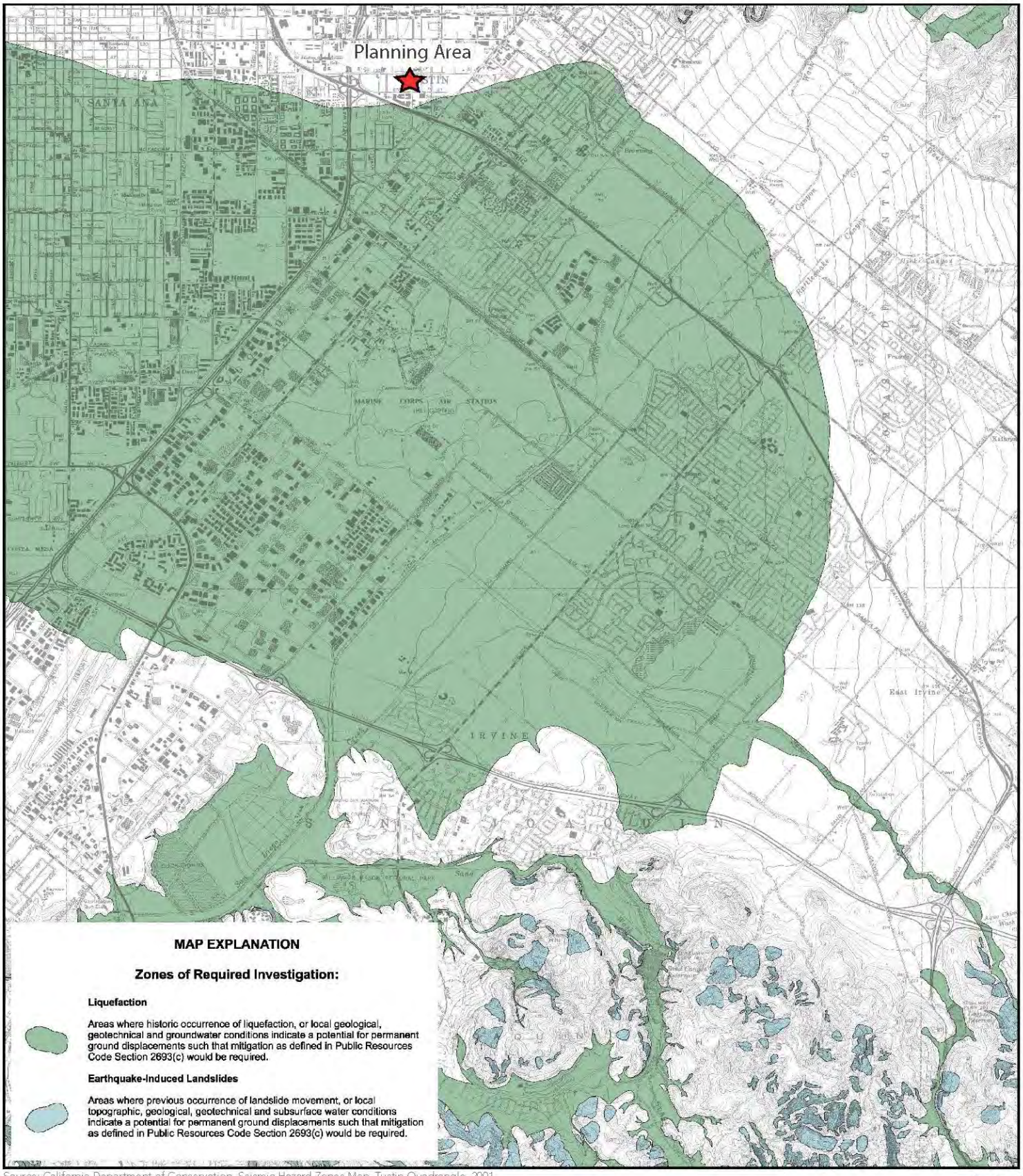
Aiv) No Impact. The Planning Area is not located within an area susceptible to landslides because the area is relatively flat and urbanized.[10] Thus, no impacts will occur.

B) Less than Significant Impact. Topsoil is used to cover surface areas for the establishment and maintenance of vegetation due to its high concentrations of organic matter and microorganisms. Native topsoil is unlikely to occur in the Planning Area because the Planning Area is underlain with fill soils associated with existing and past development. Future development within the Planning Area will be subject to SCAQMD Rule 403 (Fugitive Dust) to prevent loss of any soil located within the Planning Area due to wind. Water erosion will be prevented through the City's standard erosion control practices required pursuant to the California Building Code such as silt fencing or sandbags. Impacts related to loss of topsoil will be less than significant with implementation of existing regulations and analysis of impacts related to loss of topsoil will not be required for future development within the Planning Area.

C) Less than Significant Impact. As discussed in Section 4.6.A, impacts related to seismic and geotechnical issues are subject to the requirements of the CBC to prevent structural failure. Impacts related to geology and soils will be less than significant with implementation of existing regulations and analysis of impacts related to geology and soils will not be required for future development within the Planning Area.

D) Less than Significant with Mitigation Incorporation. The Planning Area is completely urbanized and any expansive soils that were underlying the Planning Area have likely been removed in place of fill materials used for past and existing development. Should expansive soils be present in the Planning Area, they will be required to be mitigated prior to construction through removal, watering and compression, foundation design, or other recommendation provided by the project civil/geotechnical engineer pursuant to the requirements of the CBC. Impacts related to expansive soils will be less than significant with implementation of existing regulations and analysis of impacts related to expansive soils will not be required for future development within the Planning Area.

E) No Impact. No development within the Planning Area will require septic systems because there is a fully functional sewer system serving the Planning Area. No impact could occur and impacts related to septic systems will not be required for future development within the Planning Area.



Source: California Department of Conservation, Seismic Hazard Zones Map, Tustin Quadrangle, 2001

Exhibit 4 Liquefaction and Landslide Hazards Map

Tustin Downtown Commercial Core Specific Plan
Tustin, California

4.7 GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
B) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

A-B) Potentially Significant Impact. The proposed Specific Plan supports long-term development of mixed uses within the Planning Area that will generate greenhouse gas (GHG) emissions from energy demand, mobile, water demand, wastewater generation, and solid waste generation sources. GHG emissions could contribute considerably to the cumulative impacts of climate change. Potential impacts related to GHG emissions and efforts to reduce GHG emissions will be evaluated in an EIR.

4.8 HAZARDS AND HAZARDOUS MATERIALS

Would the Project:

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

A) Less than Significant Impact. During construction of future development within the Planning Area, there will be some level of transport, use, and disposal of hazardous materials and wastes that are typical of construction projects. This will typically include fuels and lubricants for construction machinery and coating materials (e.g. paints). Routine construction control measures and best management practices for hazardous materials storage, application, waste disposal, accident prevention and clean-up will be as required by state and federal regulations will be implemented to ensure that construction activities do not unduly expose people or the environment within or outside of the Planning Area to significant hazard.

Asbestos. Activities associated with the demolition of the existing structures in the Planning Area that were constructed in the 1950s and 1960s, may pose a hazard with regard to asbestos containing materials (ACM). ACM were used on a widespread basis in building construction prior to and into the 1980s. Asbestos generally does not pose a threat when it remains intact. When asbestos is disturbed and becomes airborne, such as during demolition activities, significant impacts to human health could occur. Construction workers completing demolition activities, as well as surrounding uses, have the potential to be exposed to airborne asbestos emissions due to the potential presence of ACM. SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation

Activities) requires work practices that limit asbestos emissions from building demolition and renovation activities, including the removal and disturbance of ACM.[11] This rule is generally designed to protect uses and persons adjacent to demolition or renovation activity from exposure to asbestos emissions. Rule 1403 requires surveys of any facility being demolished or renovated for the presence of all friable and Class I and Class II non-friable ACM. Rule 1403 also establishes notification procedures, removal procedures, handling operations, and warning label requirements, including HEPA filtration, the *glovebag* method, wetting, and some methods of dry removal that must be implemented when disturbing appreciable amounts of ACM (more than 100 square feet of surface area).

Lead-Based Paints. Exposure of construction workers to lead-based paint during demolition activities is also of concern, similar to exposure to asbestos. Specific testing is required to determine if paint or other materials used in the construction of buildings within the Planning Area contains significant levels of lead. Exposure of surrounding land uses to lead from demolition activities is generally not a concern because demolition activities do not result in appreciable emissions of lead. The primary emitters of lead are industrial processes. Improper disposal of lead-based paint can contaminate soil and subsurface groundwater in and under landfills not properly equipped to handle hazardous levels of this material. If lead-based paint exists in structure proposed for future demolition within the Planning Area, 8 CCR Section 1532.1 (California Construction Safety Orders for Lead) is applicable requiring exposure assessment and compliance measures to keep worker exposure below actionable levels. Future demolition within the Planning Area will also be subject to Title 22 requirements for the disposal of solid waste contaminated with excessive levels of lead.

The proposed Specific Plan does not support uses that would result in substantial use, transport, and/or disposal of hazardous materials or wastes typically associated with industrial uses. Operation of future commercial and residential uses within the Planning Area as supported by the proposed Specific Plan will result in the use of widely used hazardous materials common to these types of uses to include paints and other solvents, cleaners, and pesticides. The remnants of these and other products are disposed of as household hazardous waste (HHW) that includes used dead batteries, electronic wastes, and other wastes that are prohibited or discouraged from being disposed of at local landfills. Regular operation and cleaning of future uses will not result in significant impacts involving use, storage, transport or disposal of hazardous wastes and substances. Use of common household hazardous materials and their disposal does not present a substantial health risk to the community.

Based on the preceding analysis of future construction and operational activities within the Planning Area, impacts associated with the routine transport, use of hazardous materials or wastes will be less than significant with implementation of existing regulations and analysis of impacts related to hazardous materials will not be required for future development within the Planning Area.

B) Less than Significant Impact. The SWRCB Geotracker database identified two open leaking underground storage tank (LUST) sites within the Planning Area. Descriptions of the two sites are listed in Table 2, State Water Resources Control Board GeoTracker Database Results.

Table 3
State Water Resources Control Board GeoTracker Database Results

Name	Address	Contaminant of Concern	Media of Concern	Cleanup Status
Tustin Auto Wash (T0605984477)	13561 Newport Avenue	Gasoline	Other Groundwater (Uses other than drinking water)	Open – Eligible for Closure as of 5/13/16
Tustin Auto Wash (T0605902351)	535 E. Main Street	Gasoline, MTBE, Other fuel oxygenates	Aquifer used for drinking water supply, soil	Open – Site Assessment as of 8/5/2014
Source: SWRCB GeoTracker, 2016				

Tustin Auto Wash located at 13561 Newport Avenue contained three 12,000-gallon gasoline underground storage tanks. A separate site, also referred to as Tustin Auto Wash (535 E. Main Street) abuts the southern border of the 13561 Newport Avenue site. The site located at 535 E. Main Street is the location of the former Tustin Auto Wash which contained leaking underground storage tanks as well. These sites are undergoing monitoring and cleanup by the State Water Resources Control Board. Discussion of SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities) and 8 CCR Section 1532.1 (California Construction Safety Orders for Lead) is included in Section A) herein. Impacts will be less than significant.

C) No Impact. No schools are located within the Planning Area. However, several schools are located within 0.25 miles of the Planning Area boundary including Columbus Tustin Middle School (17952 Beneta Way), CC Lambert Elementary School (1151 San Juan Street), and Tustin High School (1171 El Camino Real). As discussed within A) and B) herein, the proposed Specific Plan does not support uses that would handle hazardous or acutely hazardous materials or result in hazardous emissions. No further analysis of impacts related to the emitting or handling of hazardous emissions or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school will be required for development proposed within the Tustin Downtown Commercial Core Specific Plan area.

D) Less than Significant Impact. No property within the Planning Area is identified on the *Cortese List* that includes hazardous waste and substance sites listed by the Department of Toxic Substances Control (DTSC), hazardous solid waste disposal sites as listed by the SWRCB, Cease and Desist Order (CDO) or a Cleanup and Abatement Order (CAO) sites as issued by the SWRCB, or hazardous waste facilities subject to corrective action by the DTSC.[12] [13] [14] [15]

However, as discussed in B) herein, the SWRCB Geotracker database identified two open leaking underground storage tank (LUST) sites within the Planning Area.[16] Descriptions of the two sites are listed in Table 2, State Water Resources Control Board GeoTracker Database Results. These sites are undergoing monitoring and cleanup by the State Water Resources Control Board. Impacts will be less than significant.

E-F) No Impact. The Planning Area is not within the influence area of any public airport or private airstrip.[17] No impact could occur and analysis of impacts related to airport hazards will not be required for future development within the Planning Area.

G) No Impact. The proposed Specific Plan does not include features that could physically impact rescue and evacuation efforts within or surrounding the Planning Area. No impact could occur and analysis of impacts related to conflicts with emergency responses and evacuation will not be required for future development within the Planning Area.

H) No Impact. The Planning Area is not located in an area susceptible to wildland fires.[18] No impact could occur and analysis of impacts related to wildland fires will not be required for future development within the Planning Area.

4.9 HYDROLOGY AND WATER QUALITY

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
B) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
C) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
D) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
E) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
F) Otherwise substantially degrade water quality?	☐	☐	☐	☒
G) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
H) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
I) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
J) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

A) Less than Significant Impact. Future development within the Planning Area will be subject to the provisions of the National Pollution Discharge Elimination System (NPDES) to protect downstream water quality pursuant to the Clean Water Act (CWA). Discharges into stormwater drains or channels from construction sites of one acre or larger are regulated by the General Permit for Storm Water Discharges Associated with Construction Activity (Order 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ)) issued by the State Water Quality Control Board. The General Permit was issued pursuant to National Pollutant Discharge Elimination System (NPDES) regulations of the Environmental Protection Agency (EPA), as authorized by the Clean Water Act. Compliance with the General Permit involves developing and implementing a Storm Water Pollution Prevention Plan

(SWPPP) specifying best management practices (BMPs) that a project will use to minimize pollution of stormwater. The SWPPP BMPs will follow the guidelines set forth by the State Water Resources Control Board (SWRCB). Proponents of future projects within the Planning Area will be required to comply with NPDES permit requirements through the preparation and implementation of a SWPPP for construction activities. The City implements NPDES requirements through Tustin City Code Article 4 (Health and Sanitation), Chapter 9 (Water Quality Control). Impacts to water quality due to construction activities will be less than significant with implementation of existing regulations and analysis of impacts to water quality due to construction activities will not be required for future development within the Planning Area.

Operationally, future development and uses will be required to prepare a water quality management plan (WQMP) to implement measures as outlined by the Orange County Flood Control District in the Drainage Area Management Plan (DAMP). [19] The WQMP should include, but is not limited to: 1) Site design measures and hydrologic source controls, 2) Low Impact Development BMPs, 3) Hydromodification BMPs, and 4) Applicable source control BMPs.[20] Standard conditions of the WQMP will also include providing a thorough description of operation and maintenance activities, and providing a schedule of the frequency of operation and maintenance for each BMP. The potential impacts to water quality resulting from operation of future development within the Planning Area will be less than significant with implementation of existing regulations and analysis of impacts water quality due to operational activities will not be required for future development within the Planning Area.

B) Less than Significant Impact. According to the Tustin 2010 Urban Water Management Plan, the City receives its water from two main sources, the Lower Santa Ana River Groundwater basin, which is managed by the Orange County Water District (OCWD) and imported water from the Municipal Water District of Orange County (MWDOC) through East Orange County Water District (EOCWD). MWDOC is Orange County's wholesale supplier and is a member agency of the Metropolitan Water District of Southern California. The City receives approximately 85% of its water from the Lower Santa Ana Groundwater Basin and 15% is imported water purchased from EOCWD. The City delivers water supplies through 170 miles of 1.5-inch to 20-inch water mains and three booster stations. The City pumps its groundwater from 12 wells, inclusive of five wells that undergo nitrate and total dissolved solids (TDS) removal through the Main Street Plant and the 17th Street Desalter Treatment Plant. The UWMP projects that the City of Tustin will have adequate water supplies during normal year, single dry-year, and multiple dry-year conditions. The City of Tustin also implements water conservation measures, referred to as demand measurement measures within the UWMP, such as residential water surveys, residential plumbing retrofits, landscape conservation programs, high-efficiency washing machine rebates, and water waste prohibition programs.[21] Thus, impacts will be less than significant and analysis of impacts related to groundwater recharge and supply will not be required for future development within the Planning Area.

C) No Impact. The Planning Area is completely urbanized with a fully functional storm drain system. The drainage pattern of properties within the Planning Area have been engineered through past and present development to not result in on- or off-site erosion as all properties convey storm water to the existing storm drain system. Future redevelopment of the Planning Area will be subject to entitlement and building permit requirements to submit grading and drainage plans that identify on-site drainage design and the provisions for cross-lot drainage and/or conveyance to off-site facilities (see Tustin City Code Article 9, Chapter 2, for specific drainage requirements based on zoning district and proposed development type). Implementation of existing requirements will ensure that on- and off-site erosion does not occur and analysis of impacts related to on- and off-site erosion will not be required for future development within the Planning Area.

D) Less than Significant Impact. The Planning Area is completely urbanized with a fully functional storm drain system. The drainage pattern of properties within the Planning Area have been engineered through past and present development to not result in on- or off-site flooding as all properties convey storm water to the existing storm drain system. Future redevelopment of the Planning Area will be subject to entitlement and building permit requirements to submit grading and drainage plans that identify on-site drainage design and the provisions for cross-lot drainage and/or conveyance to off-site facilities (see Tustin City Code Article 9, Chapter 2, for specific drainage requirements based on zoning district and proposed development type). Implementation of existing requirements will ensure that on- and off-site flooding will be less than significant and analysis of impacts related to on- and off-site flooding will not be required for future development within the Planning Area.

E) No Impact. The Planning Area is fully urbanized and generally constructed with impervious surfaces. Future redevelopment of the Planning Area will result in mixed use development that could increase impervious surfaces and result in additional stormwater runoff to local and regional storm drain and flood control facilities. Pursuant to NPDES requirements and current focus on Low Impact Development (LID) standards, no increase in stormwater runoff from any development within the Planning Area will be permitted. Any calculated increase in stormwater runoff, as identified in the project WQMP, will be required to be absorbed and/or retained on site; therefore, no increase in stormwater runoff could occur and storm drain capacity will not be impacted. Analysis of impacts related to storm drain capacity will not be required for future development within the Planning Area.

F) No Impact No other impacts related to water quality will result from development supported by the proposed Specific Plan. Analysis of miscellaneous impacts related to water quality will not be required for future development within the Planning Area.

G-H) No Impact. The Planning Area is not located within a 100-year flood zone. No impact to housing or flood elevation levels could occur. Analysis of impacts related to flood hazards will not be required for future development within the Planning Area.

I) Less than Significant Impact. According to the 1993 General Plan EIR, large water storage facilities within and to the north of the City could endanger property and life in the event of dam failure. Santiago Reservoir (Irvine Lake) stores up to 25,000 acre feet of water and is owned by the Serrano and Irvine Ranch Water Districts. An earthen dam traps water in Santiago Reservoir. The Villa Park Reservoir is an earthen flood control facility with a capacity of 15,600 acre feet. The inundation areas within the City are subject to sheet flow water damage. The Santiago Reservoir inundation area assumes that if the dam were destroyed, then runoff would also destroy the Villa Park Reservoir.

Based on the analysis in the 1993 General Plan EIR, potential impacts related to dam inundation are less than significant with mitigation incorporated. These dams are managed by the California State Department of Water Resources Division of Safety of Dams that conducts mandatory inspections to verify the integrity of the reservoir dams.[22] In addition, the National Dam Safety Act authorized programs to reduce the risks to life and property from dam failure by establishing a safety and maintenance program. The program requires regular inspection of dams to reduce the risks associated with dam facilities. Based on the analysis documented in the General Plan EIR and the regulatory requirements for dam safety, potential impacts related to dam inundation will be less than significant and analysis of impacts related to dam and levee inundation will not be required for future development within the Planning Area.

J) No Impact. The Planning Area is not subject to seiche, tsunami, or mudflow because conditions that could result in these hazards do not exist within or in vicinity of the Planning Area. No impact could occur and analysis of impacts related to seiche, tsunami, or mudflow will not be required for future development within the Planning Area.

4.10 LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Physically divide an established community?	☐	☐	☐	☒
B) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
C) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

A) No Impact. There are no established communities within the Planning Area and the Specific Plan does not propose any land use or zoning changes that could result in the long-term division of any community. No impact could occur and analysis of impacts related to division of communities will not be required for future development within the Planning Area.

B) Potentially Significant Impact. The proposed Specific Plan will include new goals and development standards for long-term redevelopment of the Planning Area. In addition, implementation of the Specific Plan will require a Zoning Code Amendment and General Plan Amendment. The General Plan Amendment will ensure consistency between the Specific Plan and General Plan. However, there is potential for the provisions of the Specific Plan to change the existing General Plan policies that were identified as mitigation measures in the General Plan EIR. Potential impacts related to conflicts with mitigating policies will be evaluated in an EIR.

C) No Impact. The City of Tustin is enrolled as a participating jurisdiction in the County of Orange (Central/Coastal) NCCP/HCP. The Central and Coastal Sub-region is a 208,000-acre area that includes the central portion of Orange County, incorporating the area from the coastline inland to Riverside County. However, the City of Tustin is not located within the 37,378-acre NCCP habitat Reserve System.[23] Thus, no impacts will occur.

4.11 MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
B) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

A-B) No Impact. The Planning Area is designated as Mineral Resource Zone (MRZ) 3 indicating that the area contains mineral deposits; however, the significance of those deposits cannot be evaluated from available data.[24] The City is completely urbanized with no capability or permission for mineral extraction activities. Any opportunity for extraction of underlying mineral resources has been lost due to urbanization. The General Plan does not identify any locally important mineral resources within the City. No impact to state, regional, or local mineral resources could occur and future analysis of impacts to these resources will not be required for future development within the Planning Area.

4.12 NOISE

Would the project result in:

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

A-D) Potentially Significant Impact. Construction activities and operation of development within the Planning Area will generate temporary, periodic, and permanent sources of noise and vibration. Temporary noise and vibration will be generated by construction activities. Periodic noise will be generated from common urban sources such as delivery loading and unloading, landscape maintenance, and special events. Permanent increases in ambient noise will result from incremental increase in traffic volumes as the redevelopment of the Planning Area result in more intense development. Increases in noise levels could result in exceedance of General Plan and/or Tustin City Code noise standards. Potential impacts will be evaluated further in an EIR.

E-F) No Impact. The Planning Area is not within the noise contours of any public airport or private airstrip.[25] No impact could occur and analysis of impacts related to airport noise will not be required for future development within the Planning Area.

4.13 POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☒	☐	☐	☐
B) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
C) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

A) Potentially Significant Impact. The proposed Specific Plan is designed specifically to encourage growth in the Planning Area through infill mixed-use development. This will result in growth in the Planning Area that will be evaluated in an EIR.

B-C) No Impact. The proposed Specific Plan includes no physical changes to the Planning Area and does not include any provisions that would remove housing or people in the Planning Area. The proposed Specific Plan is designed to guide the natural recycling and redevelopment of the Planning Area. The proposed Specific Plan supports housing over the long-term and includes zoning districts allowing infill mixed-use development. No impact could occur and analysis of impacts related to displacement of housing or people will not be required for future development within the Planning Area.

4.14 PUBLIC SERVICES

A) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

A) Less than Significant Impact. The Planning Area is within the existing service areas of the Orange County Fire Authority (OCFA), the Tustin Police Department, Tustin Unified School District, and the Tustin Library, which is part of the Orange County Public Library system.[26] [27] [28] [29] Because the Planning Area is within the existing service area of applicable public services, service areas will not need to be expanded to serve the Planning Area. Fire, police, and library services are funded through taxes and will be incrementally funded as new development occurs within the Planning Area. Schools are funded through development impact fees (DIF) pursuant to the Leroy F. Green School Facilities Act and are paid prior to issuance of building permits. Facilities may be expanded or renovated incrementally as growth in the Planning Area and greater service area increases. Construction of public facilities will be subject to standard environmental review processes to determine if potentially significant impacts would occur and appropriate mitigation incorporated, as necessary, pursuant to CEQA. Impacts will be less than significant with implementation of existing regulations and analysis of potential impacts related to the construction of public facilities due to incremental growth within the Planning Area and will not be required for future development within the Planning Area.

4.15 RECREATION

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
B) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

A) Less than Significant Impact. Long-term redevelopment of the Planning Area will result in new residential units resulting in the incremental need for local and regional park facilities. The City of Tustin has an established park standard of three acres of parkland per 1,000 persons. According to the 2013 Tustin General Plan Conservation/Open Space/Recreation Element, Table COSR-4 Existing and Future Park Acreage Needs, there was a shortfall of 114 parkland acres and a shortfall of 107 school playground acres. As recognized in the 1993 General Plan EIR, impacts to park and recreational facilities from the implementation of the General Plan are significant, but can be reduced to less than significant levels with mitigation incorporated. According to the General Plan EIR, park deficiency is common in older communities such as Tustin where park standards were established after community buildout or near-buildout and little or no vacant land currently exists for park use. Population based standards and park fee ordinances were not in existence when older communities were initially being established. While a park deficit will still exist after mitigation measures are implemented, the resulting impact is not considered significant because the park standards were established after the older parts of Tustin were developed. The Planning Area currently contains limited parkland and open space consisting of the 4-acre Peppertree Park located at 230 W. 1st Street. The Specific Plan proposes “pocket parks” and “parklets” which are small green spaces that can often fit within the public right-of-way, replacing underutilized parking spaces, parts of the sidewalk, or the roadway with planted and other passive spaces for people to sit.

The proposed Specific Plan is consistent with the analysis in the General Plan EIR and will result in less than significant impacts related to the accelerated needs of parks and recreation facilities. Analysis of potential impacts related to the accelerated needs of parks and recreation facilities will not be required for future development within the Planning Area.

B) Less than Significant Impact. As mentioned herein, the Planning Area lacks available park and open space beyond the existing Peppertree Park. Considering open space in the Planning Area is limited and on-site recreation facilities would be accessory to primary development efforts on individual sites, impacts would amount to nominal construction activities such as fine grading, pouring of concrete, installation of playground and other activity facilities, minor construction of accessory buildings such as bathrooms, and installation of landscaping and outdoor lighting. These types of construction activities do not result in significant impacts to the environment and are common in urban environments. Impacts will be less than significant and analysis of potential impacts related to the construction of parks and recreation facilities will not be required for future development within the Planning Area.

4.16 TRANSPORTATION AND TRAFFIC

Would the project:

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
B)	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
C)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
D)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
E)	Result in inadequate emergency access?	☐	☐	☒	☐
F)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☒	☐	☐	☐

A-B) Potentially Significant Impact. Long-term growth within the Specific Plan area will accommodate increased trip generation that exceeds that contemplated in the General Plan and thus in the Regional Transportation Plan. This effect in the local and regional roadway system could result in potentially significant impacts if local and regional roadways are not sized sufficiently to accommodate the necessary throughput of vehicle volumes to maintain and acceptable level of service. A traffic impact analysis is currently being prepared to evaluate potential impacts to local and regional roadways and freeways that may result from implementation of the proposed Specific Plan. Potential impacts will be evaluated in an EIR.

C) No Impact. The project is not located within the imaginary surfaces or influence area of any airport where height restrictions are in place to avoid obstruction of air traffic routes.[30] The project will accommodate growth in the Planning Area and a portion of that growth will utilize air travel in the future. Air travel trip generation is a regional, nation, and international concern and cannot be significantly impacted by local plans for growth and development management. No impact to air traffic patterns will occur and analysis of potential impacts related to air traffic will not be required for future development within the Planning Area.

D) No Impact. The proposed Specific Plan includes no street alignments or roadway configurations that could result in hazardous traffic conditions. The proposed Specific Plan includes no land use designations or zoning districts that support uses that could conflict will normal traffic operations. No impact will occur and analysis of potential impacts related to hazardous traffic conditions will not be required for future development within the Planning Area.

E) Less than Significant Impact. Future development within the Planning Area will be subject to fire code requirements and Fire Department review and approval ensuring adequate emergency access. Adequate emergency access is provided in the forms of primary and secondary ingress and egress, adequate driveway width and slope to accommodate emergency vehicles, fire hydrant placement, and/or access requirements for gated facilities. The proposed Specific Plan includes no development standards that would interfere with implementation of emergency access requirements. Impacts will be less than significant and analysis of potential impacts related to emergency access will not be required for future development within the Planning Area.

F) Potentially Significant Impact. The proposed Specific Plan includes development standards, design guidelines, and streetscape improvements designed to promote pedestrian mobility and alternative transportation modes in the Planning Area. The potential impacts and/or benefits of these features, as related to consistency with local and regional transportation plans and policies, will be evaluated in an EIR.

4.17 Utilities and Service Systems

Would the project:

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

A-B, E) Potentially Significant Impact. The proposed Specific Plan will support growth in the Planning Area that will result in an increase in water demand and wastewater discharges. These increases could require new construction or expansion of conveyance facilities and changes in associated permits to accommodate the increased demand. Potential impacts to water and wastewater facilities will be evaluated in an EIR.

C) No Impact. As discussed in Section 4.9.E, the Planning Area is fully urbanized and generally constructed with impervious surfaces. Future redevelopment of the Planning Area will result in high-intensity development that could increase impervious surfaces and result in additional stormwater runoff to local and regional storm drain and flood control facilities. Pursuant to NPDES requirements and current focus on Low Impact Development (LID) standards, no increase in stormwater runoff from any development within the Planning Area will be permitted. Any calculated increase in stormwater runoff, as identified in the project WQMP, will be required to be absorbed and/or retained on site; therefore, no increase in stormwater runoff could occur and storm drain capacity will not be impacted. Analysis of impacts related to storm drain capacity will not be required for future development within the Planning Area.

D) Potentially Significant Impact. The proposed Specific Plan will result in an increase in water demand in the Planning Area that may not have been contemplated in the local water districts' Urban Water Management Plans (UWMP) and thus could require acquisition of new or expanded supplies. The need for additional water supplies will be evaluated in an EIR.

F-G) Less than Significant Impact. In 2014, solid waste within the City was primarily disposed of at the Frank R. Bowerman Sanitary Landfill and the Olinda Alpha Sanitary Landfill.[31] In reality any number of landfills will serve the City and the Planning Area over the long-term depending on daily intake limits and annual capacity limitations. According to the California Department of

Resources Recycling and Recovery (CalREcycle), annual and lifetime capacity in Orange County is sufficient to meet long-term demand. Annual disposal in the County is limited to approximately 8.4 million tons. Landfill estimates between 2015 and 2025 are estimated at 4 million tons and 4.9 million tons, respectively. This is approximately half of the annual allowable disposal amount; therefore, there is sufficient annual disposal capacity to serve the uses resulting from the long-term development of the Planning Area. By 2025, remaining capacity in landfills throughout the County is approximately 45 million tons; therefore, there is sufficient lifetime capacity to serve the uses resulting from the long-term development of the Planning Area.[32] All uses within the Planning Area will be subject to applicable local and state regulations related to solid waste disposal and recycling and no portion of the proposed Specific Plan will conflict with implementation of such regulations. Impacts will be less than significant and analysis of impacts related to solid waste will not be required for future development within the Planning Area.

4.18 MANDATORY FINDINGS OF SIGNIFICANCE

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
B) Does the project have impacts that are individually limited, but cumulatively considerable?	☒	☐	☐	☐
C) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

A) Potentially Significant Impact. The proposed Specific Plan could result in significant impacts related to glare and could result in significant impacts related to local and regional emissions of criteria pollutants. The proposed Specific Plan may impact historical, archaeological, and/or paleontological resources. The proposed Specific Plan could result in significant impacts related to greenhouse gas emissions. The proposed Specific Plan will have no impacts on biological resources. Based on the preceding analysis of potential impacts in the responses to items 4.1 through 4.17, evidence is presented that this project could degrade the quality of the environment. The City hereby finds that potential impacts related to degradation of the environment and cultural resources are potentially significant and an EIR will be prepared.

B) Potentially Significant Impact. Cumulative impacts can result from the interactions of environmental changes resulting from one proposed project with changes resulting from other past, present, and future projects that affect the same resources, utilities and infrastructure systems, public services, transportation network elements, air basin, watershed, or other physical conditions. Such impacts can be short-term and temporary, usually consisting of overlapping construction impacts, as well as long term, due to the permanent land use changes involved in the project. Based on the preceding analysis in Sections 4.1 through 4.17, the proposed Specific Plan has the potential to contribute considerably to short- and long-term cumulative impacts at local, regional, and global contexts. The City hereby finds that cumulative impacts are potentially significant and an EIR will be prepared.

C) Potentially Significant Impact. The analysis documented in Sections 4.1 through 4.17 identify potential direct and indirect impacts to human beings related to air quality, greenhouse gas emissions, noise, and traffic. The City hereby finds that direct and indirect impacts to human beings are potentially significant and an EIR will be prepared.

5 REFERENCES

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None

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7/22/2016

X S. Richards

Savannah Richards

Signed by: savannahr

Community Development
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cityofirvine.org
949-724-6000

August 23, 2016

Mr. Dana Ogdon
Assistant Director of Community Development
City of Tustin, Community Development Department
300 Centennial Way
Tustin, CA 92780

Subject: Review Notice of Preparation of a Draft EIR for Tustin Downtown Commercial Core Specific Plan

Dear Mr. Ogdon:

Thank you for the opportunity to review the proposed project. City of Irvine staff has the following comment:

> As part of the project's preparation of the traffic impact analysis, include in the study area the intersections along Newport Avenue between Irvine Blvd and the I-5 freeway on- and off-ramps, as well as the intersection of Red Hill Ave and Irvine Blvd. These study locations are located within the City of Irvine's IBC Vision Plan traffic study area and Irvine's NITM traffic study area.

Staff would appreciate the opportunity to review the Draft Environmental Impact Report and any further information regarding this project as the planning process proceeds. If you have any questions, I can be reached at 949-724-6364, or at jequina@cityofirvine.org.

Sincerely,

Justin Equina
Associate Planner

ec: Bill Jacobs, Principal Planner
Sun-Sun Murillo, Supervising Transportation Analyst

The Planning Area will receive the General Plan land use designation of DCCSP - Downtown Commercial Core Specific Plan with the exception of the land use designations PCCB and PCR. For the DCCSP designation, each DA identifies permitted land uses and additional land use information. The primary difference between the existing land use and the adoption of this Specific Plan is the ability to incorporate residential units as a part of mixed-use projects. Mixed-use projects desiring to incorporate residential intensity must meet the criteria set by the Specific Plan including design guidelines and development standards.

Development Areas (DA)

The Specific Plan is organized geographically by Development Area (DA). Each DA includes specific character elements, design guidelines, and development standards that are to guide future projects. The six DAs are summarized below:

- Development Area 1 (DA-1): First Street West
- Development Area 2 (DA-2): First Street Old Town
- Development Area 3 (DA-3): First Street East
- Development Area 4 (DA-4): Old Town Tustin
- Development Area 5 (DA-5): Newport Avenue
- Development Area 6 (DA-6): South of Sixth Street

The Specific Plan encourages mixed-use development. However, the DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 maximum Floor Area Ratio (FAR). Each DA, except DA-5, encourages mixed-use development with active ground floor uses and residential intensity as a part of mixed-use projects. Each project regardless of uses will meet the high quality design criteria and requirements set by the Specific Plan.

Development Area 1 (DA-1): First Street West

The DA-1 comprises the western segment of First Street between Pasadena Avenue and C Street. This area is the first point of entry and gateway to Tustin's Downtown. The existing character in DA-1 is a mix of professional office space, limited commercial uses, and residential homes. The development standards associated with DA-1 encourages two to three stories with required stepbacks adjacent to existing residential homes and neighborhood areas. Active ground floor retail/commercial uses with office or residential units above is desired to activate a pedestrian friendly and bicycle friendly environment along First Street. First Street also serves as an important multi-modal corridor. It provides connections to transit options, incorporates a shared bicycle facility, and angled parking.
Land use designation(s): Downtown Commercial Mixed Use (DCMU)

Development Area 2 (DA-2): First Street Old Town

DA-2 is the gateway to Old Town Tustin and extends along First Street from C Street to Centennial Way. DA-2 maximizes future potential and requires building forms that are limited to three stories with stepbacks adjacent to residential areas as well as stepbacks for parcels adjacent to C Street and El Camino Real. Parcels in DA-2 are small, have limited street frontage, and provide an opportunity for a variety of retail frontages that also provide a desired visual transition to Old Town. The public realm features for DA-2 include the creation of gateway elements at C Street and El Camino Real in order to transition to Old Town Tustin, the historic commercial heart of Tustin (DA-4). Active ground floor commercial uses with residential units above is desired along First Street to activate Old Town Tustin. First Street also serves as an important multi-modal corridor. It provides connections to transit options, incorporates a shared bicycle facility, and angled parking.
Land use designation(s): Community Institutional (CI), Downtown Commercial Mixed Use (DCMU)

Development Area 3 (DA-3): First Street East

DA-3 is one of the few areas with larger parcels in the Downtown. DA-3 encompasses parcels on both sides of First Street from Centennial Way to Newport Avenue and immediately west of Newport Avenue, DA-3 extends north to Irvine Boulevard. DA-3 supports higher-intensity, mixed-use residential developments and large-format commercial and destination shopping space. There is a maximum height limit of five stories. The availability of larger parcels, adjacency to transit corridors, and the proximity to major roadways are seen as opportunities for desirable, future development. The Specific Plan allows for taller, more intense development on Newport Avenue with stepbacks along First Street and towards Centennial Way. The development standards require a decrease in building massing as DA-3 transitions to existing residential neighborhoods and Old Town Tustin. The public realm features for DA-3 include the creation of gateway elements at Newport Avenue and First Street. First Street and Newport Avenue serve as important multi-modal corridors. First Street provides connections to transit options, incorporates a shared bicycle facility, and angled parking. Newport Avenue incorporates on-street parking and a separated bicycle facility.

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Number: 1 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:25:32 PM -07'00'

Is PCR a new designation? It's not one of the 7 listed above. Sounds more like a zone designation.

Number: 2 Author: Tony7 Subject: Highlight Date: 8/14/2016 3:19:09 PM -07'00'

Land use designation(s): Downtown Commercial Mixed Use (DCMU)

Development Area 4 (DA-4): Old Town Tustin

DA-4 includes the heart of historic Downtown Tustin. DA-4 includes historic resources and extends from First Street to Sixth Street. The primary intent of this DA is to promote development and revitalization of the existing, pedestrian-oriented "Downtown" supporting a shopping destination and active streetscape defined by the constant movement of pedestrians. A maximum two-story development is envisioned along El Camino Real with active ground floor uses. A maximum two-story development is envisioned throughout DA-4. Development standards and design guidelines highlight and encourage active ground floor uses along El Camino Real. The Old Town Tustin Development Area provides for opportunities for mixed-use projects along Main Street. Public and institutional uses such as the Tustin Area Senior Center and Peppertree Park support and enhance the City's civic center located east of C Street. DA-4 also supports the design and incorporation of parklets to further enhance outdoor retail and restaurant uses.
Land use designation(s): Community Institutional (CI), Mobile Home Park, (MHP), Old Town Mixed Use (OTMU), Planned Community Residential (PCR)

Development Area 5 (DA-5): Newport Avenue

DA-5 spans both sides of Newport Avenue from Interstate 5 to First Street. DA-5 is envisioned as a regional commercial center and shopping destination with active streetscape defined by the constant move of pedestrians and cyclists. DA-5 supports a maximum of six story development with stepbacks along Centennial Way and areas adjacent to existing residential neighborhoods. DA-5 has the ability to incorporate medium- and large-format buildings due to larger parcel sizes. DA-5 serves as an eastern and southern gateway to Old Town. The public realm features for DA-5 include the creation of gateway elements at Newport Avenue and Main Street. Gateway features are also created at Newport Avenue and El Camino Real. Newport Avenue is envisioned as a transit-oriented corridor with a commercial street edge, walkable scale, and local and regional bicycle connections. Newport Avenue does not allow on-street parking and includes a separated bicycle facility.
Land use designation(s): Community Institutional (CI), Downtown Commercial (DC), Planned Community Commercial Business (PCCB)

Development Area 6 (DA-6): South of Sixth Street

DA-6 includes parcels located adjacent to the I-5 highway. DA-6 allows a maximum of 6 stories with stepbacks that decrease in scale as projects approach Sixth Street, DA-4, and existing residential neighborhoods to the north. DA-6 has the ability to incorporate medium- and large-format buildings due to larger parcel sizes. The public realm features for DA-6 include the creation of gateway elements at Newport Avenue and El Camino Real. Newport Avenue is envisioned as a transit-oriented corridor with a commercial street edge, walkable scale, and local and regional bicycle connections. Newport Avenue does not allow on-street parking and includes a separated bicycle facility.
Land use designation(s): Downtown Commercial Mixed Use (DCMU); Downtown Multi-Family (DMF), Planned Community Residential (PCR)

Residential Bank

The Specific Plan introduces the ability to incorporate residential use into high quality, mixed-use projects meeting the design guidelines, development standards, and additional criteria set by the Specific Plan. Residential use through mixed use development is the primary change being introduced into the already urbanized context of the Planning Area. Each Development Area (DA), except DA-5, has a set number of residential units allocated to it. The use of these residential units is at the sole discretion of the City of Tustin, Community Development Department. The table below identifies the residential bank held by the City of Tustin. Residential units are not allocated to a specific parcel ownership and are available for use on a first come basis.

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Number: 1 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:18:13 PM -07'00'

What is a stepback?

Number: 2 Author: Tony7 Subject: Highlight Date: 8/14/2016 3:18:39 PM -07'00'

Number: 3 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:29:06 PM -07'00'

So, no residential LUD in DA5, right?

Table 1 (Residential Bank)

Development Area	Residential Bank (Dwelling Units)
DA-1	45
DA-2	92
DA-3	200
DA-4	150
DA-5	0
DA-6	400
Total	887

TRANSFER OF INTENSITY

In addition, to the residential bank, the Specific Plan also includes the ability to transfer residential intensity between Development Areas. The ability to transfer residential intensity is solely at the discretion of the City of Tustin. The transfer of intensity is established because the Planning Area is already a highly urbanized context and market pressures may create need for residential uses in certain Development Areas.

At a minimum, high quality design projects must meet all development standards and design guidelines, and all criteria set by the Specific Plan. The City of Tustin Community Development Department can grant a residential intensity increase up to 20% of each Development Area's (DA) total. The *intensity transfers* may increase the number of permitted dwelling units in a development area by reducing the allowable dwelling units in other development areas. An average of 25 dwelling units per acre will be maintained over the entire Planning Area. See table below.

Table 2 (Transfer of Intensity)

Development Area	Residential Bank (Dwelling Units)	Transferable Units
DA-1	45	Up to 8
DA-2	92	Up to 18
DA-3	200	Up to 40
DA-4	150	Up to 30
DA-5	0	0
DA-6	400	Up to 80
Total	887	

UTILITIES

STORMWATER MANAGEMENT

The Specific Plan area is well-served by a network of underground drainage pipes ranging in size from 18" to 66" diameter at the downstream confluence point (Newport Avenue/Interstate 5). Catch basins and other structures are well-maintained by Orange County Flood Control District and appear to be reliable platforms for subsequent improvements as needed for new development. The addition of medium-density housing, office and commercial retail uses will necessarily include a site-specific hydrology study with project-associated storm drain improvements. It is anticipated that new development will mitigate impacts with more pervious site improvements and detention. Since the Specific Plan area is already developed and mostly impervious, it is anticipated that the current storm drain system will accommodate the Specific Plan build-out.

SANITARY SEWER

The Downtown area is served by a network of underground sewer collection lines operated by the Orange County Sanitation District. Sizes range from 6" to 27" diameter at the downstream confluence (Newport Avenue/Interstate 5). The system is in good condition and well-maintained. Large diameter "trunk lines" cross the study area (Prospect Avenue-El Camino Real), offering a reliable platform for subsequent improvements as needed for new development.

Page: 13

Number: 1 Author: Tony7 Subject: Highlight Date: 8/14/2016 3:32:30 PM -07'00'

Number: 2 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:33:59 PM -07'00'

Interesting transfer power bestowed on Community Development Department.

4.3 Air Quality

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
B) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
C) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
D) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
E) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

A-C) Potentially Significant Impact. The proposed Specific Plan will support long-term redevelopment of the Planning Area with higher intensity development and uses. Pollutant emissions will be generated from area and mobile sources within the Planning Area. The Specific Plan will conflict with the 2012 Air Quality Management Plan (AQMP) if the land uses, development intensities, and policies of the Specific Plan result in population, employment, or household growth or decline that was not assumed in the AQMP. Long-term development within the Specific Plan area will also result in constriction and operational emissions that could exceed daily thresholds established by the South Coast Air Quality Management District (SCAQMD) for the purpose assessing the significance of project-level impacts on regional and local air quality. Therefore, potentially significant impacts related to conflicts with the AQMP and violations of air quality standards will be fully evaluated in an EIR.

D) Potentially Significant Impact. The proposed Specific Plan does not include uses that could result in substantial emissions of toxic air contaminants (TACs) such as warehouses, heavy industrial, or manufacturing facilities; therefore, no impacts to sensitive receptors due to TAC emissions will occur as result of adoption of the proposed Specific Plan and no further analysis of such impacts for future development within the Planning Area will be required.

A carbon monoxide (CO) hotspot is an area of localized CO pollution that is caused by vehicle congestion on major roadways, typically near intersections.[4] CO hotspots have the potential to violate state and federal CO standards at affected intersections, even if the broader Basin is in attainment for federal and state levels. The proposed Specific Plan supports long-term redevelopment of the Planning Area that will result in changes to local and regional traffic patterns that could result in or contribute substantially to CO hotspots if those changes result in substantial peak hour volumes. Potential impacts related to CO hotspots will be evaluated in an EIR.

E) No Impact. According to the CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.).[5] The proposed Specific Plan does not support these types of uses. No impact could occur and analysis of impacts related to odors resulting from future development within the Planning Area will not be necessary.

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Number: 1 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:42:25 PM -07'00'

...of...

Number: 2 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:44:30 PM -07'00'

Consider truck re-route around study area.

4.5 Cultural Resources

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	☒	☐	☐	☐
B) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	☒	☐	☐	☐
C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
D) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

A) Potentially Significant Impact. Historical resources typical become of concern when a structure is 50 years or older. Considering the age of development within the Planning Area, many structures are 50 years or older. Although the City of Tustin has a register of significant historic structures, few structures have been designated as historic. Potentially significant impacts could occur if a structure meeting the definition of a *historical resource* pursuant to CEQA is damaged or destroyed during redevelopment of the Planning Area. Potential impacts to historical resources will be evaluated in an EIR.

B) Potentially Significant Impact. Archaeological resources are buried cultural resources from historic or pre-historic eras. Surficial and near-surface archaeological resources in the Planning Area would have been destroyed or recovered as a result of past development and redevelopment; therefore, it is unlikely that archaeological resources are located in these locations under existing development. However, some archaeological resources may have been left in place which is the preferred treatment pursuant to CEQA. Furthermore, the proposed Specific Plan supports high-intensity development that could include multiple-story subsurface parking, resulting in the disturbance of soils at depths not previously disturbed by existing or past development. Future development could result in impacts to such archaeological resources if not treated properly. Potential impacts to archaeological resources will be evaluated in an EIR and reasonable mitigation measures will be identified, if necessary.

C) Less than Significant Impact. Paleontological resources are buried fossil remains. Surficial and near-surface paleontological resources in the Planning Area would have been destroyed or recovered as a result of past development and redevelopment; therefore, discovery of substantial deposits of paleontological resources will not occur. Impacts will be less than significant.

D) Less than Significant Impact. There are no cemeteries within the Planning Area. Considering that the Planning Area is developed, surficial and near-surface human remains would have been destroyed or recovered as a result of past development and redevelopment; therefore, it is unlikely that human remains are located under existing development. In the unlikely event that human remains are uncovered, future proponents of development within the Planning Area and the City will be required to comply with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code, including halting construction activities until a County Coroner can evaluate the discovery and potentially consult with a Native American Representative if the remains are of Native American Origin. Potential impacts to buried human remains will be less than significant with implementation of existing regulations.

Page: 49

Number: 1 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:47:57 PM -07'00'

As expressed is initially confusing. Needs distinguishing "significant historic" from "historical resource"

Number: 2 Author: Tony7 Subject: Highlight Date: 8/14/2016 3:46:01 PM -07'00'

Number: 3 Author: Tony7 Subject: Highlight Date: 8/14/2016 3:46:16 PM -07'00'

Number: 4 Author: Tony7 Subject: Highlight Date: 8/14/2016 3:48:49 PM -07'00'

Number: 5 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:50:17 PM -07'00'

Good.

4.12 NOISE

Would the project result in:

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

A-D) Potentially Significant Impact. Construction activities and operation of development within the Planning Area will generate temporary, periodic, and permanent sources of noise and vibration. Temporary noise and vibration will be generated by construction activities. Periodic noise will be generated from common urban sources such as delivery loading and unloading, landscape maintenance, and special events. Permanent increases in ambient noise will result from incremental increase in traffic volumes as the redevelopment of the Planning Area result in more intense development. Increases in noise levels could est 1 n exceedance of General Plan and/or Tustin City Code noise standards. Potential impacts will be evaluated further in an EIR.

E-F) No Impact. The Planning Area is not within the noise contours of any public airport or private airstrip.[25] No impact could occur and analysis of impacts related to airport noise will not be required for future development within the Planning Area.

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Number: 1 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 3:55:55 PM -07'00'

Again, routing heavy trucks around the study area would diminish noise and pollution factors and benefit merchants and their customers.

4.16 Transportation and Traffic

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
A) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
B) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
C) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
D) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
E) Result in inadequate emergency access?	☐	☐	☒	☐
F) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☒	☐	☐	☐

A-B) Potentially Significant Impact. Long-term growth within the Specific Plan area will accommodate increased trip generation that exceeds that contemplated in the General Plan and thus in the Regional Transportation Plan. This effect in the local and regional roadway system could result in potentially significant impacts if local and regional roadways are not sized sufficiently to accommodate the necessary throughput of vehicle volumes to maintain and acceptable level of service. A traffic impact analysis is currently being prepared to evaluate potential impacts to local and regional roadways and freeways that may result from implementation of the proposed Specific Plan. Potential impacts will be evaluated in an EIR.

C) No Impact. The project is not located within the imaginary surfaces or influence area of any airport where height restrictions are in place to avoid obstruction of air traffic routes.[30] The project will accommodate growth in the Planning Area and a portion of that growth will utilize air travel in the future. Air travel trip generation is a regional, nation, and international concern and cannot be significantly impacted by local plans for growth and development management. No impact to air traffic patterns [1]cur and analysis of potential impacts related to air traffic will not be required for future development within the Planning Area.

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Number: 1 Author: Tony7 Subject: Sticky Note Date: 8/14/2016 4:00:43 PM -07'00'

Better prepare for even more complaints from the influx of new residents in the study area about Concerts- and Broadway- in the Park events interruptions.

1919 S. State College Blvd.
Anaheim, CA 92806-6114

September 8, 2016

City of Tustin
300 Centennial Way
Tustin, CA 92780

Attn: Dana Ogdon

Subject: Environmental Impact Report in Tustin Downtown Commercial Core Specific Plan; Tustin

Thank you for providing the opportunity to respond to this Environmental Document. This letter is not to be interpreted as a contractual commitment to serve the proposed project but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas facilities within the service area of the project could be installed, altered or abandoned as necessary without any significant impact on the environment.

The availability of natural gas service is based upon conditions of gas supply and regulatory agencies. As a Public Utility, Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. Our ability to serve can also be affected by actions of federal regulatory agencies. Should these agencies take any action, which affect gas supply or the conditions under which service is available, gas service will be provided in accordance with the revised conditions.

This letter is also provided without considering any conditions or non-utility laws and regulations (such as environmental regulations), which could affect construction of a main and/or service line extension (i.e., if hazardous wastes were encountered in the process of installing the line). The regulations can only be determined around the time contractual arrangements are made and construction has begun.

Information regarding construction particulars and any costs associated with initiating service may be obtained by contacting our area Service Center at 800-427-2200.

Sincerely,

Katrina Regan
Planning Supervisor
SouthEast Region - Anaheim Planning & Engineering

KR/rl
EIR.doc

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

RECEIVED

AUG 03 2016

BUILDING DIVISION

Notice of Preparation

August 1, 2016

To: Reviewing Agencies

Re: Tustin Downtown Commercial Core Specific Plan (DCCSP)
SCH# 2016081004

Attached for your review and comment is the Notice of Preparation (NOP) for the Tustin Downtown Commercial Core Specific Plan (DCCSP) draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Dan Ogdon
City of Tustin
300 Centennial Way
Tustin, CA 92680

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2016081004
Project Title Tustin Downtown Commercial Core Specific Plan (DCCSP)
Lead Agency Tustin, City of

Type NOP Notice of Preparation

Description The DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 max floor area ratio and introduces the option to include residential intensity as a part of mixed use projects that meet the requirements set by the specific plan. The DCCSP will rezone the parcels within the planning area to a new zoning designation, DCCSP. The specific plan establishes 6 development areas that identify development parameters including permitted land uses, development standards, and design guidelines. The City of Tustin has established an 887-unit residential bank that is available on a first come basis. The DCCSP also establishes the ability to transfer of intensity from one DA to another DA, excepting DA-5.

Lead Agency Contact

Name Dan Ogdon
Agency City of Tustin
Phone (714) 573-3109 **Fax**
email
Address 300 Centennial Way
City Tustin **State** CA **Zip** 92680

Project Location

County Orange
City Tustin
Region
Cross Streets Northeast of I-5, East of Costa Mesa Freeway (highway 55)
Lat / Long 33° 44' 31.7" N / 117° 49' 24.8" W
Parcel No. multiple
Township 5W **Range** 9W **Section** 16 **Base** SBM

Proximity to:

Highways I 5, Hwy 55
Airports
Railways
Waterways
Schools
Land Use Z: C1, C2, CG, MGP, PC COM, PC-RES, P&I, PR, PM, SP10; LU: CC, I, MHP, OTC, PI PCCB, PO

Project Issues Air Quality; Archaeologic-Historic; Noise; Population/Housing Balance; Sewer Capacity; Solid Waste; Traffic/Circulation; Water Quality; Water Supply; Growth Inducing; Landuse; Cumulative Effects

---

Reviewing Agencies Resources Agency; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 5; Native American Heritage Commission; California Highway Patrol; Caltrans, District 12; Regional Water Quality Control Board, Region 8

Date Received 08/01/2016 **Start of Review** 08/01/2016 **End of Review** 08/30/2016

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

2016081004

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # N/A

Project Title: Tustin Downtown Commercial Core Specific Plan (DCCSP)

Lead Agency: City of Tustin, Community Development Department
Contact Person: Dana Ogdon
Mailing Address: 300 Centennial Way
Phone: (714) 573-3109
City: Tustin
Zip: 92780
County: Orange

Project Location: County: Orange
City/Nearest Community: Tustin
Cross Streets: Northeast of I-5 and East of Costa Mesa Freeway (Highway 55)
Zip Code: 92780
Longitude/Latitude (degrees, minutes and seconds): 33 ° 44 ' 31.7 " N / 117 ° 49 ' 24.8 " W
Total Acres: 220
Assessor's Parcel No.: Multiple
Section: 16, Twp.: T5W Range: R9W Base: SBM
Within 2 Miles: State Hwy #: I-5, Highway 55,
Waterways: None
Airports: None
Railways: None
Schools: None

Document Type:

CEQA:
- [x] NOP
- [ ] Early Cons
- [ ] Neg Dec
- [ ] Mit Neg Dec
- [ ] Draft EIR
- [ ] Supplement/Subsequent EIR (Prior SCH No.)
- Other:

NEPA:
- [ ] NOI
- [ ] EA
- [ ] Draft EIS
- [ ] FONSI

Other:
- [ ] Joint Document
- [ ] Final Document
- [ ] Other:

Governor's Office of Planning & Research
AUG 01 2016
STATE CLEARINGHOUSE

Local Action Type:

- [ ] General Plan Update
- [x] General Plan Amendment
- [ ] General Plan Element
- [ ] Community Plan
- [x] Specific Plan
- [ ] Master Plan
- [ ] Planned Unit Development
- [ ] Site Plan
- [x] Rezone
- [ ] Prezone
- [ ] Use Permit
- [ ] Land Division (Subdivision, etc.)
- [ ] Annexation
- [ ] Redevelopment
- [ ] Coastal Permit
- [ ] Other:

Development Type:

- [ ] Residential: Units ____ Acres ____
- [ ] Office: Sq.ft. ____ Acres ____ Employees ____
- [ ] Commercial: Sq.ft. ____ Acres ____ Employees ____
- [ ] Industrial: Sq.ft. ____ Acres ____ Employees ____
- [ ] Educational:
- [ ] Recreational:
- [ ] Water Facilities: Type ____ MGD ____
- [ ] Transportation: Type
- [ ] Mining: Mineral
- [ ] Power: Type ____ MW ____
- [ ] Waste Treatment: Type ____ MGD ____
- [ ] Hazardous Waste: Type
- [x] Other: Specific Plan

Project Issues Discussed in Document:

- [ ] Aesthetic/Visual
- [ ] Agricultural Land
- [x] Air Quality
- [x] Archeological/Historical
- [ ] Biological Resources
- [ ] Coastal Zone
- [ ] Drainage/Absorption
- [ ] Economic/Jobs
- [ ] Fiscal
- [ ] Flood Plain/Flooding
- [ ] Forest Land/Fire Hazard
- [ ] Geologic/Seismic
- [ ] Minerals
- [x] Noise
- [x] Population/Housing Balance
- [ ] Public Services/Facilities
- [ ] Recreation/Parks
- [ ] Schools/Universities
- [ ] Septic Systems
- [x] Sewer Capacity
- [ ] Soil Erosion/Compaction/Grading
- [x] Solid Waste
- [ ] Toxic/Hazardous
- [x] Traffic/Circulation
- [ ] Vegetation
- [x] Water Quality
- [x] Water Supply/Groundwater
- [ ] Wetland/Riparian
- [x] Growth Inducement
- [x] Land Use
- [x] Cumulative Effects
- [ ] Other:

Present Land Use/Zoning/General Plan Designation:

Zoning: C1, C2, CG, MHP, PC COM, PC-RES, P&I, PR, PM, SP10 (1st St. Specific Plan); Land Use: CC, I, MHP, OTC, PI, PCCB, PO

Project Description: *(please use a separate page if necessary)*

The DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 maximum Floor Area Ratio and introduces the option to include residential intensity as a part of mixed-use projects that meet the requirements set by the Specific Plan. The DCCSP will rezone the parcels within the Planning Area to a new zoning designation,DCCSP. The Specific Plan establishes 6 Development Areas (DA) that identify development parameters including permitted land uses, development standards, and design guidelines. The City of Tustin has established an 887-unit residential bank that is available on a first come basis. The DCCSP also establishes the ability to transfer of intensity from one DA to another DA, excepting DA-5.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

NOP Distribution List

County: ORANGE

SCH# 2016081004

sources Agency

Resources Agency
Nadell Gayou

- ☐ **Dept. of Boating & Waterways**
  Denise Peterson
- ☐ **California Coastal Commission**
  Elizabeth A. Fuchs
- ☐ **Colorado River Board**
  Lisa Johansen
- ☐ **Dept. of Conservation**
  Elizabeth Carpenter
- ☐ **California Energy Commission**
  Eric Knight
- ☐ **Cal Fire**
  Dan Foster
- ☐ **Central Valley Flood Protection Board**
  James Herota
- ☐ **Office of Historic Preservation**
  Ron Parsons

Dept of Parks & Recreation
Environmental Stewardship Section

- ☐ **California Department of Resources, Recycling & Recovery**
  Sue O'Leary
- ☐ **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- ■ **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- ☐ **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- ☐ **Fish & Wildlife Region 1**
  Curt Babcock
- ☐ **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- ☐ **Fish & Wildlife Region 2**
  Jeff Drongesen
- ☐ **Fish & Wildlife Region 3**
  Craig Weightman
- ☐ **Fish & Wildlife Region 4**
  Julie Vance
- ■ **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- ☐ **Dept. of Fish & Wildlife M**
  Becky Ota
  Marine Region

Other Departments

- ☐ **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- ☐ **Depart. of General Services**
  Public School Construction
- ☐ **Dept. of General Services**
  Cathy Buck/George Carollo
  Environmental Services Section
- ☐ **Delta Stewardship Council**
  Kevan Samsam
- ☐ **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- ☐ **Delta Protection Commission**
  Michael Machado
- ☐ **OES (Office of Emergency Services)**
  Monique Wilber
- ■ **Native American Heritage Comm.**
  Debbie Treadway
- **Public Utilities Commission**
  Supervisor
- ☐ **Santa Monica Bay Restoration**
  Guangyu Wang
- ☐ **State Lands Commission**
  Jennifer Deleong
- ☐ **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- ☐ **Caltrans - Division of Aeronautics**
  Philip Crimmins
- ☐ **Caltrans – Planning HQ LD-IGR**
  Terri Pencovic
- ■ **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- ☐ **Caltrans, District 1**
  Rex Jackman
- ☐ **Caltrans, District 2**
  Marcelino Gonzalez
- ☐ **Caltrans, District 3**
  Eric Federicks – South
  Susan Zanchi - North
- ☐ **Caltrans, District 4**
  Patricia Maurice
- ☐ **Caltrans, District 5**
  Larry Newland
- ☐ **Caltrans, District 6**
  Michael Navarro
- ☐ **Caltrans, District 7**
  Dianna Watson
- ☐ **Caltrans, District 8**
  Mark Roberts
- ☐ **Caltrans, District 9**
  Gayle Rosander
- ☐ **Caltrans, District 10**
  Tom Dumas
- ☐ **Caltrans, District 11**
  Jacob Armstrong
- ■ **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- ☐ Airport & Freight
  Cathi Slaminski
  - ☐ Transportation Projects
    Nesamani Kalandiyur
  - ☐ Industrial/Energy Projects
    Mike Tollstrup
- ☐ **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- ☐ **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- ☐ **State Water Resources Control Board**
  Div. Drinking Water #_____
- ☐ **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- ☐ **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- ☐ **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- ☐ **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- ☐ **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- ☐ **RWQCB 3**
  Central Coast Region (3)
- ☐ **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- ☐ **RWQCB 5S**
  Central Valley Region (5)
  - ☐ **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - ☐ **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- ☐ **RWQCB 6**
  Lahontan Region (6)
  - ☐ **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- ☐ **RWQCB 7**
  Colorado River Basin Region (7)
- ■ **RWQCB 8**
  Santa Ana Region (8)
- ☐ **RWQCB 9**
  San Diego Region (9)

☐ **Other** _____

☐ _____
Conservancy

Last Updated 4/25/2016

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

August 4, 2016

dogdon@tustinca.org
Dana Ogdon, Assistant Director of Community Development
City of Tustin
300 Centennial Way
Tustin, CA 92780

Notice of Preparation of a CEQA Document for the
Tustin Downtown Commercial Core Specific Plan Project

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft EIR. Please send the SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the Draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). SCAQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD staff requests that the lead agency quantify criteria pollutant emissions and compare the results to the recommended regional significance thresholds found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, the SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a Draft EIR document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Perspective*, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process.

Finally, should the proposed project include equipment that generates or controls air contaminants, a permit may be required and the SCAQMD should be listed as a responsible agency and consulted. The assumptions in the submitted Draft EIR would also be the basis for permit conditions and limits. Permit questions can be directed to the SCAQMD Permit Services staff at (909) 396-3385, who can provide further assistance.

Project Specific Comments – Sensitive Receptors Near Freeways

While the health science behind recommendations against placing sensitive receptors close to high volume urban roads and freeways is clear, SCAQMD staff recognizes the many factors Lead Agencies must consider when siting uses such as new housing. The lead agency should consider the limitations of enhanced filtration (HVAC systems with enhanced Maximum Efficiency Reporting Value – MERV filters) for the project, especially from traffic on high volume urban roadways or a freeway. For example, these filters have no ability to filter out any toxic gasses from vehicle exhaust; have higher long-term costs related to the required regular maintenance of the filters; and it is assumed that the HVAC units and the filters operate 100 percent of the time while residents are indoors. It is critical that any proposed mitigation must be carefully evaluated prior to determining if the health risks would be brought below CEQA significance thresholds. The presumed effectiveness and feasibility of proposed mitigation should therefore be evaluated and the Draft EIR document should also quantitatively demonstrate with substantial evidence the effectiveness of any proposed mitigation on any potentially significant impact.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Mitigation Measure resources are available on the SCAQMD CEQA Air Quality Handbook website: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's webpage (http://www.aqmd.gov).

The SCAQMD staff is available to work with the lead agency to ensure that project emissions are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact Gordon Mize, Air Quality Specialist by e-mail at gmize@aqmd.gov or by phone at (909) 396-3302.

Sincerely,

Jillian Wong

Jillian Wong, Ph.D.
Planning and Rules Manager
Planning, Rule Development & Area Sources

JW:GM

ORC160802-02
Control Number

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August 1, 2016

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AUG 04 2016

BUILDING DIVISION

Dana Ogden
Assistant Director of Community Development
Community Development Department
City of Tustin
300 Centennial Way
Tustin, CA 92780

RE: Tustin Downtown Commercial Core Specific Plan – Notice of Preparation of a Draft Program Environmental Impact Report

Dear Ms. Ogden:

On behalf of the Rancho Santiago Community College District, this letter shall serve as formal correspondence in regards to the above referenced correspondence. The District has facilities located at 15991 Armstrong Boulevard, Tustin, CA 92782. The program at this location is for the Orange County Sheriff's Regional Training Academy and as such is a sensitive program with regards to public safety. We reviewed the map and location of the proposed plan and at this time, the District does not have any comments.

The District would like to be notified on subsequent development steps, including further planning and environment notices and approvals. Please note, any future correspondence should be mailed to the attention of **Darryl Taylor**, Director, Facility Planning, District Construction & Support Services.

Thank you for the opportunity to respond and provide comments. Please feel free to contact my office at (714) 480-7510 if you need further assistance.

Sincerely,

Simone Wolfe
On behalf of
Carri M. Matsumoto
Assistant Vice Chancellor,
Facility Planning, District Construction & Support Services

BOARD OF TRUSTEES
Claudia C. Alvarez • Arianna P. Barrios • John R. Hanna • Lawrence R. "Larry" Labrado • Jose Solorio • Nelida Mendoza Yanez • Phillip E. Yarbrough
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ORANGE COUNTY FIRE AUTHORITY

P.O. Box 57115, Irvine, CA 92619-7115 • 1 Fire Authority Road, Irvine, CA 92602

Jeff Bowman, Fire Chief (714) 573-6000 www.ocfa.org

August 11, 2016

City of Tustin
300 Centennial Way
Tustin, CA92780
Attn: Dana Ogdon

Subject: Draft Program Environmental Impact Report Tustin Downtown Commercial Core Specific Plan

Dear Ms. Ogdon:

Thank you for the opportunity to review the subject document. As stated in the document, The Orange County Fire Authority (OCFA) provides fire protection and emergency medical services response to the project area. We have no comments regarding the subject document:

Sincerely,

Tamera Rivers
Management Analyst
(714) 573-6199

STATE OF CALIFORNIA Edmund G. Brown Jr., Governor
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Fax (916) 373-5471
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

August 4, 2016

Dana Ogdon
City of Tustin
300 Centennial Way
Tustin, CA 92680

sent via e-mail:
dogdon@tustinca.org

RE: SCH# 2016081004; Tustin Downtown Commercial Core Specific Plan (DCCSP) Project, Notice of Preparation for Draft Environmental Impact Report, Orange County, California

Dear Mr. Ogdon:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a **separate category of cultural resources**, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends **lead agencies consult with all California Native American tribes** that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    - **a.** A brief description of the project.
    - **b.** The lead agency contact information.
    - **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
    - **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
    a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    a. Alternatives to the project.
    b. Recommended mitigation measures.
    c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    a. Type of environmental review necessary.
    b. Significance of the tribal cultural resources.
    c. Significance of the project's impacts on tribal cultural resources.
    d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
    b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        1. Planning and construction to avoid the resources and protect the cultural and natural context.

II. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
   I. Protecting the cultural character and integrity of the resource.
   II. Protecting the traditional use of the resource.
   III. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
   a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
   b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
   c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

   This process should be documented in the Cultural Resources section of your environmental document.

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires **local governments** to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
   a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
   b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    - **a.** If part or all of the APE has been previously surveyed for cultural resources.
    - **b.** If any known cultural resources have been already been recorded on or adjacent to the APE.
    - **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
    - **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    - **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    - **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    - **a.** A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    - **b.** A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
    - **a.** Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
    - **b.** Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
    - **c.** Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

Please contact me if you need any additional information at gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

cc: State Clearinghouse

DEPARTMENT OF TRANSPORTATION
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August 23, 2016

Dana Ogdon,
Assistant Director of Community Development
City of Tustin
Community Development Department
300 Centennial Way
Tustin, California 92780

File: IGR/CEQA
SCH#: 2016081004
Log #: 2016-00102
I-5, I-22, SR-55

Dear Mr. Ogdon:

Thank you for the opportunity to review and comment on the Notice of Preparation for the Tustin Downtown Commercial Core Specific Plan (DCCSP). The project "Planning Area" is generally located immediately northeast of the Interstate 5 and east of the Costa Mesa Freeway (Highway 55). The two highways limit the "Downtown" of Tustin and create a physical barrier to adjacent areas. The Planning Area is generally defined on the north side by First Street and on the east side by Newport Ave. The Planning Area includes parcels immediately on the north side of First Street and includes parcels immediately along the east side of Newport Avenue. The Planning Area is comprised of 220 acres located wholly within in the City of Tustin, Orange County, California at the intersection of El Camino Real at Third Street is the approximate center of the Planning Area.

The DCCSP allows for all previously allowed commercial and office intensity, up to 1.5: 1 maximum Floor Area Ratio (FAR) and introduces the option to include residential intensity as a part of mixed use projects that meet the high quality design criteria and requirements set by the Specific Plan. DCCSP will rezone the parcels within the Planning Area to a new zoning designation, SPDCCSP. The Specific Plan establishes six Development Areas (DA) that identify development parameters including permitted land uses, development standards, and design guidelines. Each development area identifies specific characteristics in support of ensuring the vitality of Downtown. Hence, the land uses allowed, the development standards and design guidelines respond to that specific character. All development and future projects are subject to each DA's development standards and design guidelines and the requirements of the Specific Plan. The City of Tustin has established an 887-unit residential bank that is available on a first come basis. Through the Specific Plan, the City of Tustin also establishes the ability to transfer of intensity from one DA to another DA except DA-5.

Caltrans Local Development-Intergovernmental Review program reviews impacts of local development to the transportation system, including the State Highway System. The Department works to ensure that local land use planning and development decisions include the provision of transportation choices, including transit, intercity rail passenger service, air service, walking and biking, when appropriate. The Department advocates community design (e.g. urban infill, mixed use, transit oriented development) that promotes an efficient transportation system and healthy communities.

The Department of Transportation (Caltrans) is a commenting agency on this project and has and has the following comments for your consideration.

1. A traffic impact study (TIS) is necessary to determine this proposed project's near-term and long-term impacts to the State facilities – existing and proposed – and to propose appropriate mitigation measures. The study should use as a guideline the *Caltrans Guide for the Preparation of Traffic Impact Studies*. Minimum contents of the traffic impact study are listed in Appendix "A" of the TIS guide. www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf

2. All intersection capacity analysis should be conducted by the Highway Capacity Manual (HCM) 2010 methodology.

3. Caltrans supports Specific Plans that foster a more efficient land use pattern that (a) supports improved mobility and reduced dependency on single-occupant vehicle trips, (b) accommodates an adequate supply of housing for all incomes, (c) reduces impacts on valuable habitat, productive farmland, and air quality, (d) increases resource use efficiency, and (e) results in safe and vibrant neighborhoods. Caltrans recognizes that non-motorized travel is a vital element of the transportation system and therefore, encourages communities make pedestrian and bicycle activity possible, thus expanding transportation options, and creating a streetscape that better serves a range of users – pedestrians, bicyclists, transit riders, and automobiles.

4. An encroachment permit must be obtained for all proposed activities related to the placement of encroachments within, under, or over the State highway rights of way. Some examples of work requiring an encroachment permit are: utilities, excavations, encroachment renewals, advertisements (when allowed by statute), vegetation planting or trimming, surveys, mail boxes, driveways, installation or removal of tire chains for compensation, special events, and commercial filming activities. Please see http://www.dot.ca.gov/trafficops/ep/manual.html.

Please continue to keep us informed of this project and any future developments that could potentially impact State transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Aileen Kennedy at (949) 724-2239.

Sincerely,

Maureen El Harake

MAUREEN EL HARAKE
Branch Chief, Regional-Community-Transit Planning
District 12

c: Lee Haber, Traffic Operations Northeast
Scott Morgan, Office of Planning and Research

OC PublicWorks
Integrity, Accountability, Service, Trust
Shane L. Silsby, Director

August 31, 2016 NCL-16-032

Ms. Dana Ogdon, Assistant Director
City of Tustin, Community Development Department
300 Centennial Way
Tustin, California 92780

Subject: Notice of Preparation of a Draft Program Environmental Impact Report in Compliance with Title 14, Section 15082(a) of the California Code of Regulations for the Tustin Downtown Commercial Core Specific Plan Project

Dear Ms. Ogdon:

The County of Orange has reviewed the Notice of Preparation Environmental Impact Report for the Tustin Downtown Commercial Core Specific Plan Project and offers the following comments:

Flood Programs:

1. The proposed Specific Plan has the potential to impact existing Orange County Flood Control District (OCFCD) facilities including but not limited to the El Modena Irvine Channel (F07), East Tustin Storm Drain (F07P01), Bryan Avenue Storm Drain (F07P23), and Tustin-Newport Storm Drain (F10P02). The DEIR should identify and indicate on a map/exhibit all OCFCD facilities that will likely be impacted by the proposed project. Drainage facility basemaps that depict existing drainage facilities within Orange County are available on our website http://ocflood.com/docs/drawings#maps.

2. The DEIR should identify impacts (if any) to OCFCD facilities and proposed mitigation measures in consultation with OC Public Works/Infrastructure Programs/Flood Program Support when development occurs.

3. F07P01, F07P23 and F10P02 were all constructed prior to the 1986 Orange County Hydrology Manual (OCHM) and may not be capable of conveying design discharges based on the OCHM's current criteria. The City should ensure that new developments will not contribute more runoff than what the above-mentioned OCFCD storm drain facilities are designed for.

4. Page 9 of the Initial Study, 1st paragraph states that "the Specific Plan also includes the ability to transfer residential intensity between Development Areas." Intensification of land uses are likely to result in higher than previously planned discharges being delivered to receiving storm

drains. The City should analyze and mitigate the impacts resulting from such action. Please see comment item 3 above.

5. Page 9, 3rd paragraph states that "Since the Specific Plan is already developed and mostly impervious, it is anticipated that current storm drain system will accommodate the Specific Plan build-out. Please see comment item 3 above.

6. Page 56, item E states that "Future redevelopment of the Planning Area will result in mixed use development that could increase impervious surfaces and result in additional stormwater runoff to local and regional storm drain and flood control facilities." The City should ensure that any increase in storm water runoff from future redevelopments is mitigated. Mitigation measures shall not worsen existing conditions upstream or downstream of the Planning Area.

7. The 1989 Flood Control Master Plan for San Diego Creek (FCMPSDC) established proposed improvements and design discharges for facilities within the San Diego Creek watershed, which includes the El Modena Irvine Channel where F07P01 and F07P23 ultimately drain into. The city should ensure that new land uses would not result in discharges that exceed committed and/o as-built discharges (based on FCMPSDC) fir El Modena Irvine Channel.

8. Since the City of Tustin (City) is responsible for land use planning and development within City limits, the City should review and approve all local hydrology and hydraulic analyses including proposed mitigation measures for proposed developments. Proposed mitigation measures should not worsen existing conditions.

9. Hydrology and hydraulic analyses should be performed based on the current criteria of the OCHM, Addendum No. 1 to the OCHM, and the Orange County Flood Control Design Manual.

10. Any work within OCFCD's right-of-way will require an encroachment permit from the County's Public Property Permits Section. Information regarding permit application is available on our website – http://www.ocplanning.net.

If you have any questions or need clarification please do not hesitate to contact Robert McLean (714) 647-3951 or Editha Llanes at (714) 647-3985.

OC Infrastructure Programs:

1. Discuss project related impacts on the paved, off-road bikeway located along Newport Ave. between El Camino Real and Irvine Boulevard. Include mitigation as necessary.

2. The Traffic Impact Study should include analysis for the following intersections:
   - Red Hill Ave and Old Irvine Blvd.
   - Newport Ave and La Colina Dr.
   - Holt Ave and 17th St.
   - Newport Ave and 17th St.

If you have any questions or need clarification please do not hesitate to contact Jamie Reyes at (714) 647-3903.

Sincerely,

Laree Alonso, Manager, Planning Division
OC Public Works Service Area/OC Development Services
300 North Flower Street
Santa Ana, California 92702-4048
Laree.alonso@ocpw.ocgov.com

cc: Mehdi Sobhani, Manager, OC Public Works/Flood Programs
Jamie Reyes, Civil Engineer, OC Public Works/OC Infrastructure Programs

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APPENDIX B: AIR QUALITY AND GREENHOUSE GAS ANALYSIS

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urbanxroads.com

June 16,2017

Ms. Konnie Dobreva
EPD Solutions, Inc.
2030 Main St., Ste. 1200
Irvine, CA 92614

SUBJECT: TUSTIN DOWNTOWN COMMERCIAL CORE SPECIFIC PLAN (DCCSP) FOCUSED AIR QUALITY AND GREENHOUSE GAS ANALYSIS

Dear Ms. Konnie Dobreva:

Urban Crossroads, Inc. is pleased to submit this proposal agreement to EPD Solutions, Inc. (Client) to provide a Focused Air Quality and Greenhouse Gas Analysis for the proposed Tustin Downtown Commercial Core Specific Plan (DCCSP) development ("Project") which is located in the City of Tustin.

INTRODUCTION

This program-level air quality and greenhouse gas analysis has been completed to determine impacts associated with the development of the Tustin Downtown Commercial Core Specific Plan (DCCSP) ("Project"). This study briefly describes the proposed Project and includes an analysis of the potential Project-related long-term operational and short-term construction air quality and greenhouse gas impacts.

PROJECT LOCATION

The Project is generally located northeast of Interstate 5 (I-5) and east of State Route 55 (SR-55), and is bound on the north side by First Street and on the east side by Newport Avenue. The Project consists of 220 acres located entirely within the City of Tustin with parcels located on the north side of First Street and on the east side of Newport Avenue, as shown on Exhibit A.

PROJECT DESCRIPTION

The Tustin DCCSP vision focuses on continuing to ensure an economically vital, walkable, bikeable, mixed-use center with a focus on active ground floor retail and office environments. (1) The Tustin DCCSP includes all previously allowed commercial and office intensity (i.e., no increase in the allowed nonresidential intensity or development), and introduces the option to include residential intensity (up to 887 residential units) as a part of mixed-use and standalone residential projects within six Development Areas (DAs). Through the Tustin DCCSP, the City of Tustin also establishes the ability to transfer residential intensity from one DA to another DA. The transfer of intensity allows for the City of Tustin to increase residential intensity for projects that meet design and development standards, and provide a defined public benefit. The transfer of intensity is solely at the discretion of the City of Tustin

during the project entitlement process. Table 1 shows the additional dwelling units by Development Area (DA), and Exhibit B shows the Project land uses by DA. As indicated on Table 1, no dwelling units are allocated for DA 5.

Additionally, the Project includes re-development and new retail development. For analytical purposes, it is estimated that approximately 146,000 square feet (SF) of retail will occur due to re-development and natural growth within the Specific Plan. The Project also proposes to include up to an additional 300,000 SF of retail development within the Specific Plan. As such, this analysis evaluates the development of up to 887 residential dwelling units and an additional 300,000 of retail development within the Specific Plan (or a total of 446,000 SF by 2035 with ambient growth).

TABLE 1: PROJECT DEVELOPMENT AREAS

Development Area	Additional Dwelling Units	Maximum Allowable Increase (Transfer)[1]
DA 1	45	11
DA 2	92	23
DA 3	200	50
DA 4	150	38
DA 5	0	0
DA 6	400	100
Total	887	No Change

[1] Allowable increase of up to 25% by transferring from other DAs. The maximum total number of additional dwelling units in DCCSP area does not exceed 887 units.

EXHIBIT A: LOCATION MAP

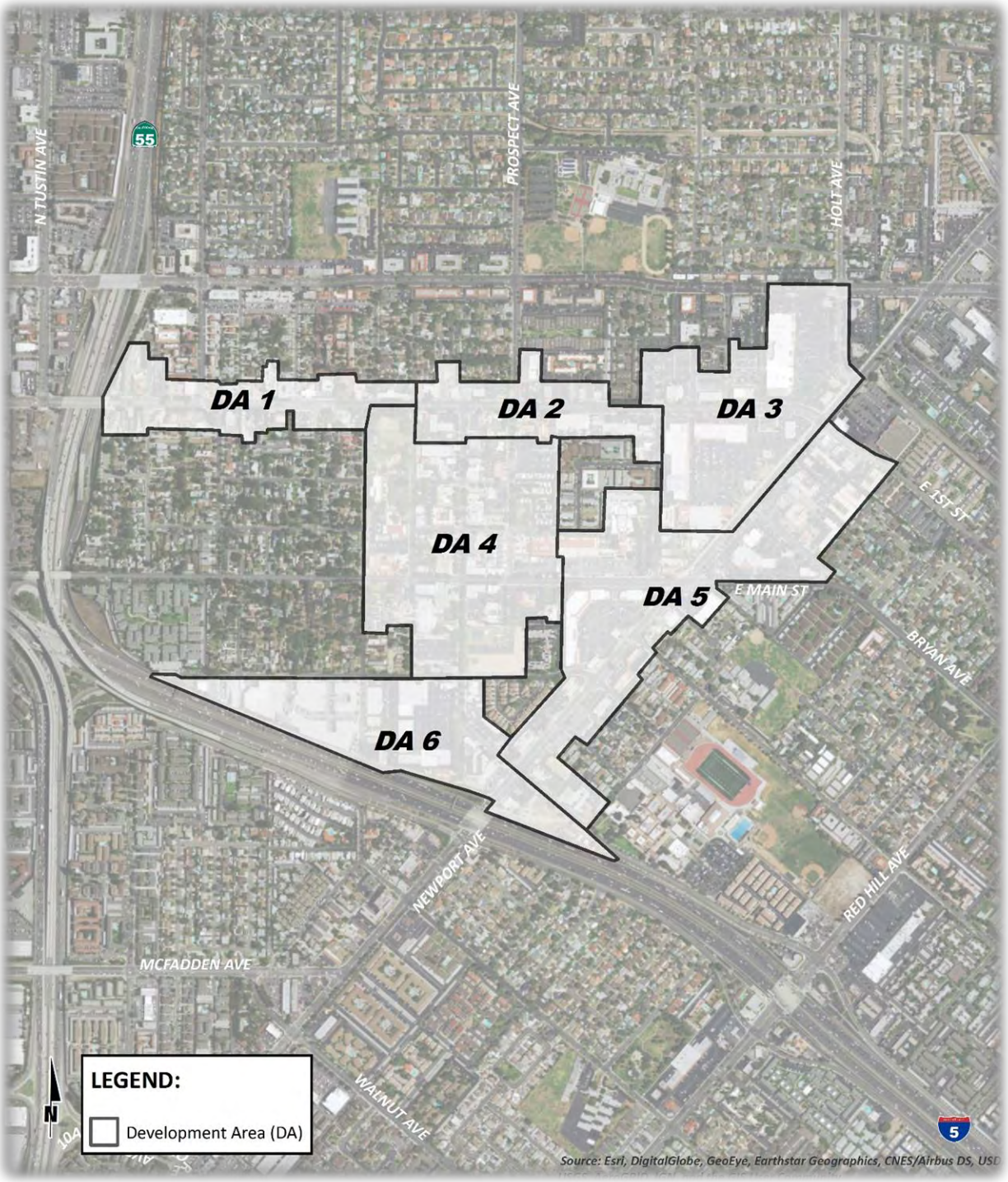
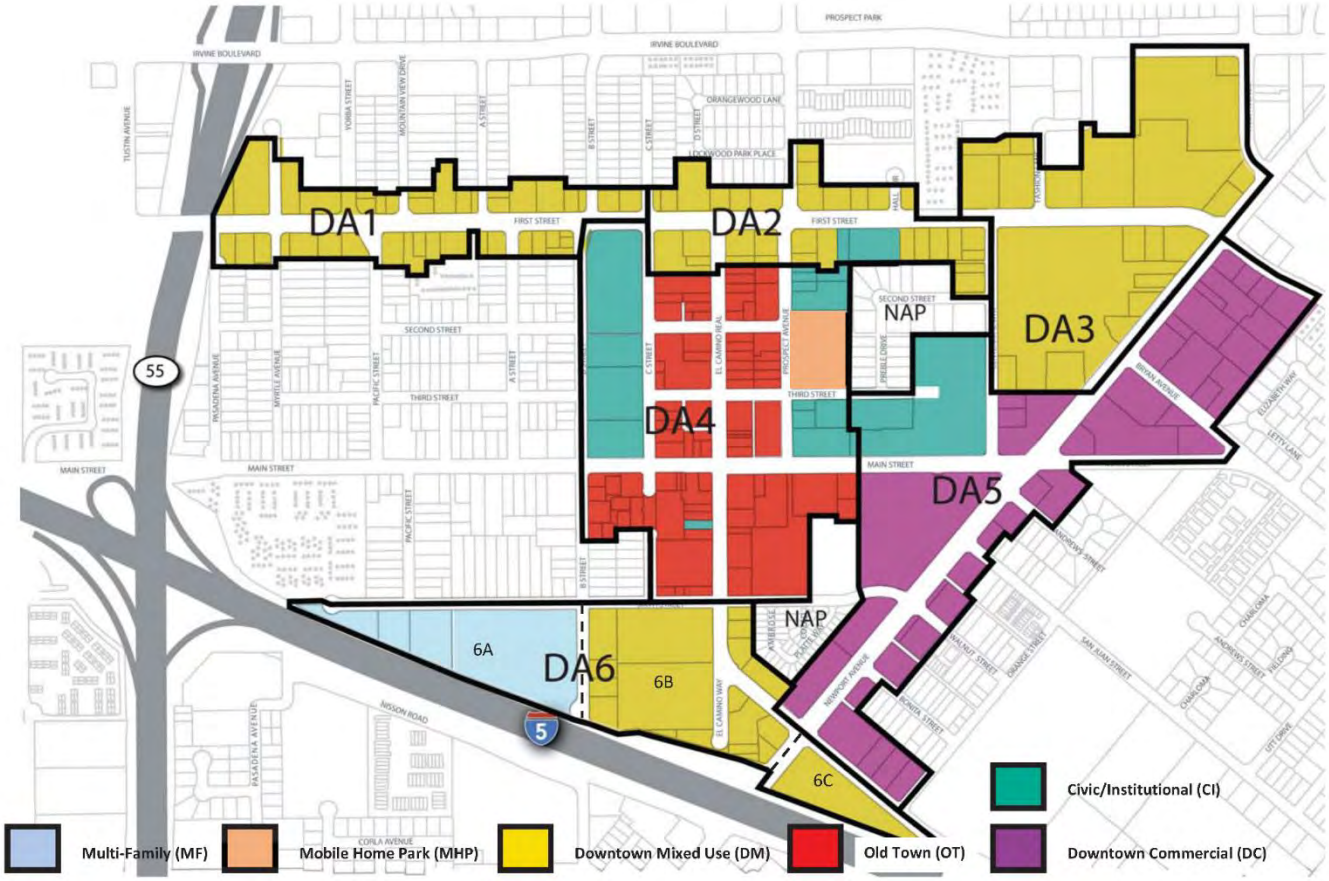


EXHIBIT B: SITE PLAN



PROJECT-RELATED AIR QUALITY AND GREENHOUSE GASES

On October 14, 2016, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.1. The purpose of this model is to more accurately calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (2). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational impacts. Air Quality outputs from the model runs are provided in Attachment "A" and greenhouse gas outputs from the model runs are provided in Attachment "B". Emissions associated with development of the Specific Plan have been estimated using the latest version of CalEEMod.

AIR QUALITY

REGIONAL SIGNIFICANCE THRESHOLDS

The SCAQMD has developed regional significance thresholds for regulated pollutants, shown below in Table 2. The SCAQMD's CEQA Air Quality Significance Thresholds (March 2015) indicate that any projects in the SCAB with daily regional emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact (3).

TABLE 2: MAXIMUM REGIONAL DAILY EMISSIONS THRESHOLDS

Regional Significance Thresholds[A]		
Pollutant	**Construction**	**Operations**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

[A:] Based on SCAQMD Air Quality Significance Thresholds, March 2015

CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of CO, VOCs, NOx, SOx, PM10, and PM2.5. Construction related emissions are expected from the following construction activities: site preparation, grading, building construction, paving, architectural coating, and construction workers commuting.

Specific construction durations for implementation of the Project are unknown at this time. The analysis herein conservatively estimates that multiple phases of construction for various individual development applications could occur concurrently. Construction emissions resulting from demolition, site preparation, grading, building construction, paving, and painting activities would occur with implementation of the Specific Plan as summarized on Table 3. Table 4 summarizes the anticipated construction equipment list that may be utilized. The site-specific construction fleet may vary due to specific project needs at the time of construction. The duration of construction activity and associated equipment both represent a reasonable approximation of the expected construction fleet as required per CEQA guidelines.

TABLE 3: CONSTRUCTION ACTIVITIES

Phase Name
Site Preparation
Grading
Building Construction
Paving
Architectural Coating

South Coast Air Quality Management District (SCAQMD) Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1403 (Asbestos); Rule 1113 (Architectural Coatings) (4); Rule 431.2 (Low Sulfur Fuel) (5); Rule 403 (Fugitive Dust) (6); and Rule 1186 / 1186.1 (Street Sweepers).

TABLE 4: ESTIMATED CONSTRUCTION EQUIPMENT PER INDIVIDUAL DEVELOPMENT

Activity	Equipment	Number	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Site Preparation	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Grading	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
	Tractors/Loaders/Backhoes	2	8
Building Construction	Cranes	1	7
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	7
	Welders	1	8
	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	6

The estimated maximum daily construction emissions for the proposed Specific Plan Project are summarized on Table 5. Detailed construction model outputs are presented in Attachment "A". As shown, the proposed Specific Plan Project would exceed the applicable SCAQMD thresholds for emissions of ROGs and NOx. As such, a potentially significant impact would occur during construction activities due to the potential overlap of concurrent projects within the Specific Plan.

TABLE 5: PROPOSED PROJECT CONSTRUCTION EMISSIONS SUMMARY

	ROG	NOX	CO	SOx	PM10	PM2.5
Phase	**lb/day**					
Demolition	4.19	42.80	23.67	0.04	2.36	2.09
Site Preparation	5.06	52.34	24.25	0.04	21.15	12.63
Grading	5.86	68.02	39.67	0.06	11.97	6.48
Grading	5.19	59.59	35.88	0.06	11.53	6.08
Building Construction	7.33	46.08	53.64	0.16	11.51	4.23
Building Construction	6.65	42.48	50.07	0.16	11.28	4.02
Building Construction	6.07	38.76	47.03	0.15	11.07	3.82
Building Construction	5.56	35.03	44.57	0.15	10.85	3.61
Building Construction	5.17	32.18	42.63	0.15	10.70	3.46
Paving	1.16	11.16	15.01	0.02	0.74	0.57
Architectural Coating	129.94	1.75	6.24	0.02	1.84	0.55
Peak Daily Potential	182.18	430.19	382.66	1.01	105.00	47.54
SCAQMD Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Exceed Significance?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

The following measures are recommended to reduce potential impacts to the extent feasible.

Regulatory Requirements

RR-AQ-1: SCAQMD Rule 401 – Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any 1 hour that is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the U. S. Bureau of Mines.

RR-AQ-2: SCAQMD Rule 402 – Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any such persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

RR-AQ-3: SCAQMD Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by

requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust. Applicable dust suppression requirements from Rule 403 are summarized below.

- Nontoxic chemical soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Active sites shall be watered at least twice daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered, or at least 0.6 m (2 ft) of freeboard (vertical space between the top of the load and top of the trailer) maintained in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
- Construction access roads shall be paved at least 30 m (100 ft) onto the site from the main road.
- Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.

RR-AQ-4: SCAQMD Rule 1113 – Architectural Coatings. No person shall apply or solicit the application of any architectural coating within the SCAQMD with VOC content in excess of the values specified in a table incorporated in the Rule. A list of low/no-VOC paints is provided at the following SCAQMD website: www.aqmd.gov/prdas/brochures/paintguide.html. All paints will be applied using either high volume low-pressure spray equipment or by hand application.

RR-AQ-5: Rule 1301 – General. This rule is intended to provide that pre-construction review requirements to ensure that new or relocated facilities do not interfere with progress in attainment of the NAAQS, while future economic growth within SCAQMD is not unnecessarily restricted. The specific air quality goal is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. Rule 1301 also limits emission increases of ammonia, and Ozone Depleting Compounds (ODCs) from new, modified or relocated facilities by requiring the use of Best Available Control Technology (BACT).

RR-AQ-6: Title 24 – Building Energy Conservation. The proposed project is required to comply with Title 24 of the CCR established by the California Energy Commission regarding energy conservation standards.

CONSTRUCTION-SOURCE AIR POLLUTANT EMISSIONS MITIGATION MEASURES

MM AQ-1

Consistent with SCAQMD Rule 403, the Construction Contractor will ensure that the following dust suppression measures in the SCAQMD CEQA Air Quality Handbook will be implemented to reduce the project's emissions:

- Revegetate disturbed areas.

- Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph.
- Sweep all streets once per day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water).
- Install "shaker plates" prior to construction activity where vehicles enter and exit unpaved roads onto paved roads, or wash trucks and any equipment prior to leaving the site.
- Pave, water, or chemically stabilize all on-site roads.
- Minimize at all times the area disturbed by clearing, grading, earthmoving, or excavation operations.

MM AQ-2

For construction equipment greater than 150 horsepower (>150 HP), the Construction Contractor shall use off-road diesel construction equipment that complies with EPA/CARB Tier 3 emissions standards during all construction phases and will ensure that all construction equipment be tuned and maintained in accordance with the manufacturer's specifications.

MM AQ-3

The Project shall utilize "Super-Compliant" low VOC paints which have been reformulated to exceed the regulatory VOC limits put forth by SCAQMD's Rule 1113 (BACM AQ-2). Super-Compliant low VOC paints shall be no more than 10g/L of VOC. Alternatively, the applicant may utilize tilt-up concrete buildings that do not require the use of architectural coatings.

MM AQ-4

The Construction Contractor shall require by contract specifications that construction operations rely on the electricity infrastructure surrounding the construction site, if available rather than electrical generators powered by internal combustion engines.

MM AQ-5

The Construction Contractor shall require the use of alternative fueled, engine retrofit technology, after-treatment products (e.g., diesel oxidation catalysts, diesel particulate filters), and/or other options as they become available, including all off-road and portable diesel-powered equipment.

MM AQ-6

The Construction Contractor shall require that construction equipment be maintained in good operation condition to reduce emissions. The Construction Contractor shall ensure that all construction equipment is being properly serviced and maintained as per the manufacturer's specification. Maintenance records shall be available at the construction site for City verification.

MM AQ-7

For projects requiring construction vehicles, construction plans and specifications shall state that the applicant/developer and/or building operators shall prepare and maintain a construction vehicle management plan, to be made available upon request to the City of Tustin Building Division, denoting the proposed schedule and projected equipment use. The construction vehicle management plan shall include, as a minimum: idling time requirements; requiring hour meters on equipment; documenting the serial number, horsepower, age, emissions ratings, and fuel of all onsite equipment. The plan shall state that California state law requires equipment fleets to limit idling to no more than 5 minutes, and that low emission vehicles will be used. If low emission mobile construction equipment is not used, construction contractor shall provide evidence in the construction vehicle management plan that their use was investigated and found to be infeasible... Contractors shall also conform to any construction measures imposed by the South Coast Air Quality Management District as well as the City of Tustin.

OPERATIONAL EMISSIONS

Operational activities associated with the Project will result in emissions of CO, VOCs, NOx, SOx, PM10, and PM2.5. Operational related emissions are expected from the following primary sources: area source emissions, energy source emissions, and mobile source emissions.

Project mobile source emissions impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project.

The estimated operational-source emissions for the proposed Project are summarized on Table 6. Detailed operational model outputs are presented in Attachment "A". As shown, the proposed Project will exceed the applicable SCAQMD thresholds for ROGs, NOx, CO, PM10, and PM2.5. As such, a potentially significant impact would occur.

TABLE 6: OPERATIONAL EMISSIONS SUMMARY

		ROG	NOX	CO	SOx	PM10	PM2.5
Operational Activity		**lb/day**					
On-Site	Area	263.66	19.25	524.05	1.15	68.16	68.16
On-Site	Energy	0.57	4.91	2.19	0.03	0.40	0.40
Off-Site	Mobile	30.92	140.18	341.97	1.67	129.51	36.68
Peak Daily Total		**295.15**	**164.34**	**868.22**	**2.85**	**198.07**	**105.24**

SCAQMD Threshold	**55**	**55**	**550**	**150**	**150**	**55**
Exceed Significance?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

The following measures are recommended to reduce potential impacts to the extent feasible.

MM AQ-8

Prior to the issuance of building permits, the Project applicant shall submit energy usage calculations to the Planning Division showing that the Project is designed to achieve 5% efficiency beyond the 2016 California Building Code Title 24 requirements. Example of measures that reduce energy consumption include, but are not limited to, the following (it being understood that the items listed below are not all required and merely present examples; the list is not all-inclusive and other features that reduce energy consumption also are acceptable):

- Increase in insulation such that heat transfer and thermal bridging is minimized;
- Limit air leakage through the structure and/or within the heating and cooling distribution system;
- Use of energy-efficient space heating and cooling equipment;
- Installation of electrical hook-ups at loading dock areas;
- Installation of dual-paned or other energy efficient windows;
- Use of interior and exterior energy efficient lighting that exceeds the2016 California Title 24 Energy Efficiency performance standards;
- Installation of automatic devices to turn off lights where they are not needed;
- Application of a paint and surface color palette that emphasizes light and off-white colors that reflect heat away from buildings;
- Design of buildings with “cool roofs” using products certified by the Cool Roof Rating Council, and/or exposed roof surfaces using light and off-white colors;
- Design of buildings to accommodate photo-voltaic solar electricity systems or the installation of photo-voltaic solar electricity systems;
- Installation of ENERGY STAR-qualified energy-efficient appliances, heating and cooling systems, office equipment, and/or lighting products;

MM AQ-9

Enhanced Water Conservation Required: To reduce water demands and associated energy use, subsequent development proposals within the Project site incorporate a Water Conservation Strategy

and demonstrate a minimum 30% reduction in outdoor water usage when compared to baseline water demand (total expected water demand without implementation of the Water Conservation Strategy)[1].

Development proposals within the Project site shall also implement the following:

- Landscaping palette emphasizing drought tolerant plants;
- Use of water-efficient irrigation techniques;
- U.S. Environmental Protection Agency (EPA) Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.

LOCALIZED IMPACTS

The SCAQMD established Localized Significance Thresholds (LSTs) in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

SCAQMD developed LSTs to determine if emissions of NO2, CO, PM10, and PM2.5 generated at a project site (offsite mobile-source emissions are not included in the LST analysis) would expose sensitive receptors to substantial concentrations of criteria air pollutants. Table 7 shows the localized significance thresholds for projects in SCAQMD's jurisdiction.

TABLE 7: SCAQMD LOCALIZED SIGNIFICANCE THRESHOLD [2]

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
Annual Average NO_2 Standard (CAAQS)	0.03 ppm
24-Hour PM_{10} Standard – Construction (SCAQMD)[1]	10.4 µg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (SCAQMD)[1]	10.4 µg/m^3
24-Hour PM_{10} Standard – Operation (SCAQMD)[1]	2.5 µg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (SCAQMD)[1]	2.5 µg/m^3
Annual Average PM_{10} Standard (SCAQMD)[1]	1.0 µg/m^3

1 The analysis includes a reduction of 20% indoor water usage consistent with the current CalGreen Code (11) for residential and non-residential land uses. Per CalGreen, the reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code.

2 Threshold is based on SCAQMD Rule 403. Since SCAB is in nonattainment for PM10 and PM2.5, the threshold is established as an allowable change in concentration. Therefore, background concentration is not relevant.

To assist lead agencies, SCAQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated onsite that would trigger the hourly levels shown in Table 5 for projects under five acres. LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS. LSTs are based on the ambient concentrations of that pollutant within the project SRA and the distance to the nearest sensitive receptor. However, consistent with SCAQMD guidance an LST analysis can only be conducted at a *project level*, and quantification of LSTs is not applicable for this specific plan-level environmental analysis.

The following measures are recommended to reduce potential impacts to the extent feasible.

MM AQ-10

During the City's review process for applications under the Specific Plan, the applicant shall conduct or shall have conducted modeling of the regional and the localized emissions (NOx, CO, PM10, and PM2.5) associated with the maximum daily grading activities estimated for the proposed individual developments one acre or larger. If the modeling shows that emissions would exceed the SCAQMD's significance thresholds for those emissions, the maximum daily grading activities of the proposed development shall be limited to the extent that could occur without resulting in emissions in excess of SCAQMD's significance thresholds for those emissions. For implementing projects within the Specific Plan, the applicant shall be responsible for submitting a focused project-level air quality assessment that includes the modeling of localized on-site emissions associated with daily grading activities anticipated for the proposed development.

AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as, explore new and innovative

methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (7).

Like the 2012 AQMP, the 2016 AQMP was based on assumptions provided by both CARB and SCAG in the latest available EMFAC model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2016 AQMP are based on several assumptions. For example, the 2016 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2016 RTP. The 2016 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development.

Criteria for determining consistency with the 2016 AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (8). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Construction Impacts

The analysis above demonstrates that, Project construction-source emissions have the potential to exceed the applicable regional significance thresholds for criteria pollutants. Therefore, the Project would have the potential to result in or cause violations of the CAAQS and NAAQS.

Operational Impacts

The analysis above demonstrates that, Project operational-source emissions would exceed the applicable regional significance thresholds for criteria pollutant. Therefore, the Project would have the potential to result in or cause violations of the CAAQS and NAAQS.

On the basis of the preceding discussion, the Project would have the potential to conflict with the first criterion.

- Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

Overview

The 2016 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by

cities in the district are provided to the Southern California Association of Governments (SCAG), which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in the City's General Plan is considered to be consistent with the AQMP.

Construction Impacts

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities. Thus, construction emissions from the Project would be consistent with the 2016 AQMP assumptions for construction activities throughout the SCAB.

Operational Impacts

The Project is intensifying existing land use designations and will also exceed applicable thresholds.

On the basis of the preceding discussion, the Project has the potential to conflict with the second criterion.

AQMP Consistency Conclusion

The Project has the potential to result in or cause NAAQS or CAAQS violations. The Project's development intensity is not consistent with than the development intensities allowed within the adopted General Plan. The Project therefore has the potential to be inconsistent with the AQMP and a potential conflict would occur.

TOXIC AIR CONTAMINANTS

To assist the project applicant in the analysis of health risks associated with exposure to toxic air contaminants (TACs)—specifically diesel particulate matter (DPM) an evaluation of health risks consistent with guidance provided by the California Air Resources Board (CARB) in their Diesel Risk Reduction Plan is utilized.

The findings of this analysis indicate that the cancer risks resulting from vehicle operation (both for proposed project land uses and freeways) will decline in future years, but the impacts at maximum exposed residences will likely remain in excess of the maximum accepted risk level of ten in one million increased lifetime cancer risk as identified by the South Coast Air Quality Management District (SCAQMD) in the CEQA Air Quality Handbook (1993).

It should be noted that CARB has issued advisory recommendations for siting new sensitive land uses in proximity to sources associated with Toxic Air Contaminants (TACs) (see Table 8). CARB recommends performing site specific environmental evaluations when possible; however, it should be noted that a

more detailed evaluation of health risks associated with specific land uses for this project would be speculative at this time since specific information regarding building locations, loading docks, etc. is not currently available. It is recommended however that when such information is available, a more detailed environmental assessment should be prepared to determine the precise buffer zones necessary. Therefore, for the purposes of this analysis, the point of maximum impact (PMI) has not been calculated as it is not feasible to do so at this time. However, it should be noted that the risks identified in Exhibit C are conservatively based on a distance of 20 meters to the nearest receptors, and risk is reduced by approximately 85% when receptors are located at a distance of 500 feet. Thus, the evaluation presented herein is a conservative assessment of what the "range of risk" will likely be—consistent with CARB guidance, it is recommended that site specific evaluation be conducted prior to the siting of any sensitive land use in proximity to a land use that has the potential to emit TACs.

Since future year emissions will exceed the established health risk thresholds, the following summarizes recommendations for site design that will reduce health impacts to the extent possible. It should be noted that subsequent environmental reports shall be prepared prior to specific development of land uses that generate or attract heavy duty truck traffic or land uses that place sensitive receptors in close proximity to the I-5 or SR-55 Freeways. If such analyses deem the risk levels acceptable the advisory recommendations presented below may not necessarily be applicable to those specific projects.

The following summarizes CARB's advisory recommendations on siting new sensitive land uses such as residences, schools, daycare centers, playgrounds, or medical facilities adjacent to land uses known to emit TACs.

TABLE 8: CARB ADVISORY RECOMMENDATIONS

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). • Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloro-ethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

Notes:
These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

Table modified from CARB's *Air Quality Land Use Handbook: A Community Health Perspective*

The primary source of TAC emissions related to the proposed project is likely DPM resulting from freeway traffic. It should be noted that future sensitive receptors that are part of the proposed project may be exposed to DPM as a result of truck traffic along the Interstate 5 (I-5) and State Route 55 (SR-55) due to proximity.

The vehicle mix on Interstate 5 (I-5) and State Route 55 (SR-55) are based on traffic volumes provided by the *2015 Annual Average Daily Truck Traffic (AADT) on the California Highway System*, prepared by the

Caltrans Traffic Data Branch, and are summarized on Table 9. (7) The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 9: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
I-5[1]	94.50%	2.43%	3.07%	100.00%
SR-55[1]	92.30%	4.27%	3.43%	100.00%

[1] Source: Caltrans Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2015.

Table 10 shows the future traffic conditions on I-5 and SR-55 which are based on an assumed growth of 10-percent above the existing traffic volumes collected from the *Annual Average Daily Truck Traffic (AADT) on the California Highway System*, prepared by the Caltrans Traffic Data Branch. (7)

TABLE 10: FREEWAY TRAFFIC

Roadway	Lanes	Average Daily Traffic Volume[1]	Speed Limit (mph)[2]
I-5 Freeway	12	307,500	70
SR-55 Freeway	10	262,500	70

[1] Future volumes based on a 10-percent increase in existing traffic volumes (Source: Caltrans Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2015).
[2] Posted speed limits.

To provide a perspective on the contribution that diesel PM has on the overall statewide average ambient air toxics potential cancer risk, ARB staff evaluated risks from other compounds using data from ARB's ambient monitoring network. ARB maintains a network of 21 air toxics monitoring sites which measure outdoor ambient concentration levels for approximately 60 air toxics.

Table 11 shows the potential cancer risk from the top ten inhalation risk contributors that the State of California has identified as TACs and routinely monitors. The risk values for the other compounds are based on the annual average concentration (determined from ambient monitoring) multiplied by the unit risk factor for each compound. Table 11 also shows that for the top ten risk contributors, diesel PM contributes over 70 percent of the state estimated potential cancer risk levels.

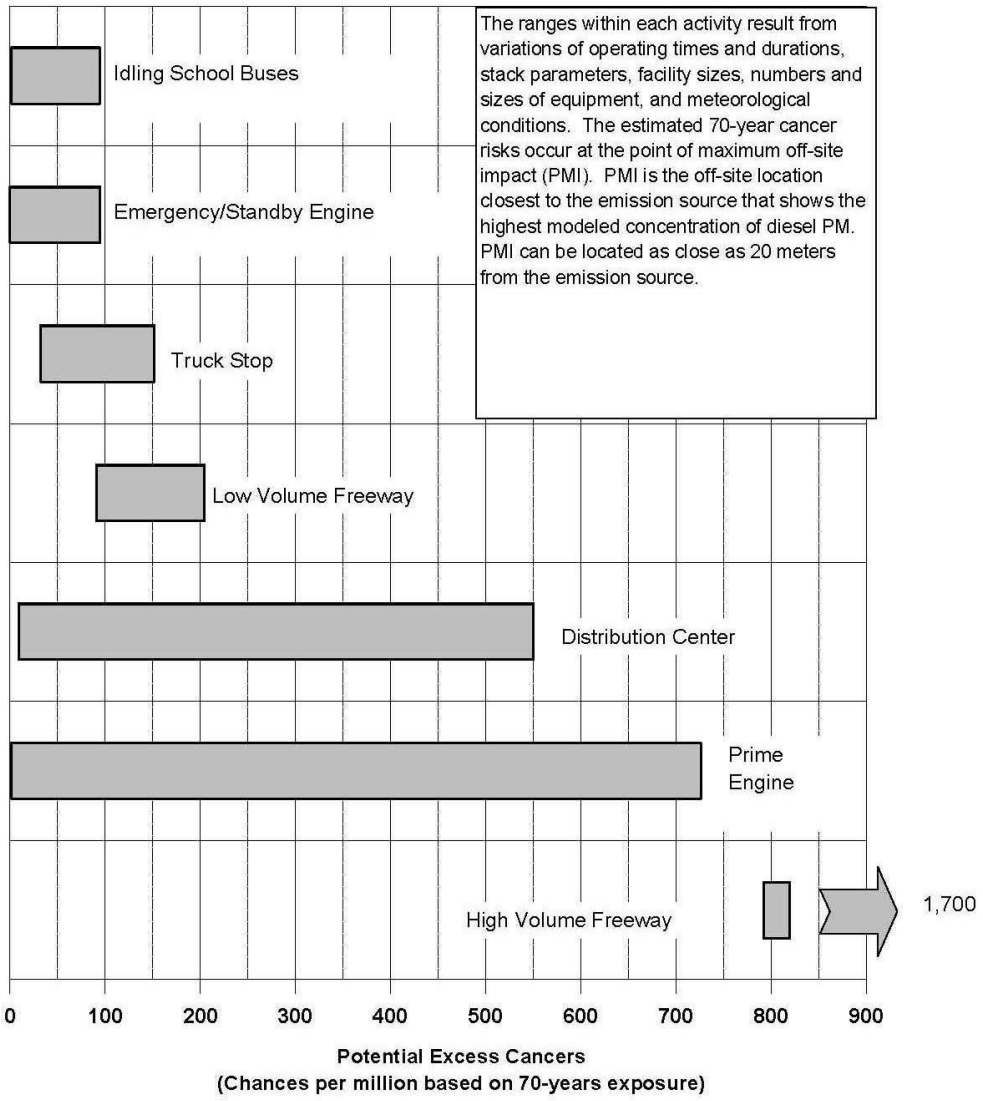
TABLE 11: ESTIMATED STATEWIDE AVERAGE POTENTIAL CANCER RISK

Compound	Potential Cancer Risk[1,2] Excess Cancers/Million	Percent Contribution to Total Risk
Diesel Exhaust PM_{10}	540	71.2
1,3-Butadiene	74	9.8
Benzene	57	7.5
Carbon Tetrachloride	30	4.0
Formaldehyde	19	2.5
Hexavalent Chromium	17	2.2
para-Dichlorobenzene	9	1.2
Acetaldehyde	5	0.7
Perchloroethylene	5	0.7
Methylene Chloride	2	0.3
TOTAL	**758**	**100**

1. Diesel exhaust PM_{10} potential cancer risk based on 2000 emission inventory estimates presented in Table 5. All other potential cancer risks based on air toxics network data. Used 1997 data for para-Dichlorobenzene. Used 1998 monitoring data for all others.
2. Assumes measured concentrations are equivalent to annual average concentrations and duration of exposure is 70 years, inhalation pathway only.

CARB staff estimated the range of potential cancer risks from seven common activities or situations to determine if the concentrated operation of diesel-fueled engines could expose nearby individuals to locally elevated DPM concentrations that are higher than average regional concentrations. The specific situations investigated included idling school buses, truck stops, freeways, emergency and standby diesel engine operations, prime engine operations, and warehouse distribution center operations. Exhibit C shows the range of potential cancer risk, above background levels, estimated for each type of activity. The risk estimate for each activity does not account for the risk from any other diesel-fueled engines or vehicles and assumes a 70-year, or lifetime, exposure. For more detailed information regarding each activity and the methodology used to derive the estimates, see Attachment A for details on CARB's Diesel Risk Reduction Plan (Appendix VII).

EXHIBIT C: POTENTIAL CANCER RISK RANGE OF ACTIVITIES



It should be noted that in order to estimate the risk resulting from a low volume and high volume freeway, CARB analyzed a scenario in which 2,000 and 20,000 daily trucks were assumed (respectively). As shown in Tables 10, daily truck freeway volumes are expected to be greater than the low volume scenario, and consistent with the high volume scenario. Therefore, it is estimated that the risk resulting from freeway diesel truck activity in the project vicinity has the potential to fall within the 200 in one million to 800 in one million range of risk, as shown on Exhibit C.

The evaluation summarized existing data and reiterates that unit cancer risk from DPM tends to overwhelm risk from several toxic organic species emitted from gasoline-powered vehicles. Even modest fractions of DPM-powered vehicles on a given roadway can significantly increase the composite health risk of the entire fleet. It should be noted however that most heavy-duty truck travel occurs on freeways. Freeways also tend to carry the largest volumes of total vehicular traffic. Therefore, the risk levels previously presented are conservative in nature as risk levels occurring on most local roadways would be much less.

It should also be noted that this risk assessment is based on CARB guidelines to produce conservative estimates of risk posed by exposure to DPM. The conservative nature of this analysis is due primarily to the following factors:

- The ARB-adopted diesel exhaust unit risk factor (URF) of 300 per million per $\mu g/m^3$ is based upon the upper 95 percentile of estimated risk for each of the epidemiological studies utilized to develop the URF. Therefore the risk factor is already representative of the conservative risk posed by DPM.
- It should be noted that risk estimates assume sensitive receptors will be subject to diesel particulate matter for 24 hours a day, 365 days a year. As a conservative measure, CARB did not recognize indoor adjustments for residents. However, the typical person spends the majority of their time indoors versus remaining outdoors for 24 hours a day, 365 days a year.

The findings of this analysis indicate that the cancer risks resulting from vehicle operation (on freeways) will decline in future years, but the impacts at maximum exposed residences have the potential to remain in excess of the maximum accepted risk level of ten in one million increased lifetime cancer risk as identified by the South Coast Air Quality Management District (SCAQMD) in the CEQA Air Quality Handbook (1993).

It should be noted that the CARB issued advisory recommendations for siting new sensitive land uses in proximity to sources associated with Toxic Air Contaminants (TACs) (see Table 8 presented previously in this report). CARB recommends performing site specific environmental evaluations when possible; however, it should be noted that a more detailed evaluation of health risks associated with specific land uses for this project would be speculative at this time since specific information regarding building locations is not currently available. It is recommended however that when such information is available, a more detailed environmental assessment should be prepared to determine the precise buffer zones necessary. Therefore, for the purposes of this analysis, the point of maximum impact (PMI) has not been calculated as it is not feasible to do so at this time. However, it should be noted that the risks identified in Exhibit C are conservatively based on a distance of 20 meters to the nearest receptors, and risk is reduced by approximately 85% when receptors are located at a distance of 500 feet. Thus, the evaluation presented herein is a conservative assessment of what the “range of risk” will likely be—consistent with

CARB guidance, it is recommended that site specific evaluation be conducted prior to the siting of any sensitive land use in proximity to a land use that has the potential to emit TACs. As such, the following mitigation measure is recommended to reduce impacts to the maximum extent feasible.

MM AQ-11

Applicants for residential and other sensitive land use projects (e.g., hospitals, nursing homes, day care centers) in the Specific Plan within 500 feet of a major sources of toxic air contaminants (TACs) (e.g., warehouses, industrial areas, freeways, and roadways with traffic volumes over 100,000 vehicle per day), as measured from the property line of the project to the property line of the source/edge of the nearest travel lane, shall submit a health risk assessment (HRA) to the City of Tustin prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of CEQA and the SCAQMD. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), PM_{10} concentrations exceed 2.5 $\mu g/m^3$, $PM_{2.5}$ concentrations exceed 2.5 $\mu g/m^3$, or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e., below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms. Measures to reduce risk may include but are not limited to:

- Air intakes located away from high volume roadways and/or truck loading zones.
- Heating, ventilation, and air conditioning systems of the buildings provided with appropriately sized maximum efficiency rating value (MERV) filters (e.g., MERV 12 or better).

GREENHOUSE GAS

CONSTRUCTION AND OPERATIONAL EMISSIONS

Construction activities associated with the proposed Project will result in emissions of CO2 and CH4 from construction activities. For the construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

Operational activities associated with the proposed Project will result in emissions of CO2, CH4, and N2O from the following primary sources: area source emissions, energy source emissions, mobile source emissions, solid waste, and water supply, treatment, and distribution.

Detailed construction and operational model outputs are presented in Attachment “B”.

GREENHOUSE GAS EMISSIONS SUMMARY

The City of Tustin has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions. A screening threshold of 3,000 MTCO2e per year to determine if additional analysis is required. This approach is a widely accepted screening threshold used by the County of Riverside (1) and numerous cities in the South Coast Air Basin and is based on the South Coast Air Quality Management District (SCAQMD) staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* ("SCAQMD Interim GHG Threshold"). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required (9).

The annual GHG emissions associated with the construction and operation of the proposed Project are estimated to be 31,127.6 MTCO2e per year as summarized in Table 12. Detailed construction and operational model outputs are presented in Attachment "B". As shown, the proposed Project would exceed the 3,000 MTCO2e threshold. As such, the proposed Project would result in a potentially significant impact with respect to GHG emissions.

TABLE 12: PROJECT GREENHOUSE GAS EMISSIONS SUMMARY (ANNUAL)

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Construction Emissions (amortized)	61.49	0.006	--	61.61
Operational Emissions	30,655.32	14.91	0.13	31,065.98
Total CO_2E (All Sources)	**31,127.6**			
SCAQMD Threshold (CO_2E)	**3,000**			
Threshold Exceeded?	**YES**			

Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.
Table results include scientific notation. *e* is used to represent *times ten raised to the power of* (which would be written as x 10^{b}") and is followed by the value of the exponent

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Senior Associate

4 REFERENCES

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2. **California Air Pollution Control Officers Association (CAPCOA).** California Emissions Estimator Model (CalEEMod). [Online] September 2016. www.caleemod.com.
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8. —. *CEQA Air Quality Handbook (1993).* 1993.
9. —. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. [Online] http://www.aqmd.gov/hb/2008/December/081231a.htm.

ATTACHMENT "A"

Tustin DCCSP

Orange, Summary Report

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	887.00	Dwelling Unit	55.44	887,000.00	2537
Strip Mall	146.00	1000sqft	3.35	146,000.00	0
Strip Mall	300.00	1000sqft	6.89	300,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2035
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments

Only CalEEMod defaults were used.

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips -

Mobile Land Use Mitigation -

Water Mitigation -

Waste Mitigation -

2.0 Peak Daily Emissions

Peak Daily Construction Emissions

Peak Daily Construction Emissions

		Unmitigated						Mitigated					
		ROG	NOX	CO	SO2	PM10	PM2.5	ROG	NOX	CO	SO2	PM10	PM2.5
Year	Phase	lb/day											
2017	Demolition	4.1868 W	42.8047 W	23.6740 S	0.0406 S	2.3622 S	2.0880 S	4.1868 W	42.8047 W	23.6740 S	0.0406 S	2.3622 S	2.0880 S
2017	Site Preparation	5.0613 W	52.3441 W	24.2496 S	0.0402 S	21.1474 S	12.6336 S	5.0613 W	52.3441 W	24.2496 S	0.0402 S	21.1474 S	12.6336 S
2017	Grading	5.8600 W	68.0160 W	39.6650 S	0.0644 S	11.9711 S	6.4841 S	5.8600 W	68.0160 W	39.6650 S	0.0644 S	11.9711 S	6.4841 S
2018	Grading	5.1910 W	59.5887 W	35.8750 S	0.0644 S	11.5321 S	6.0802 S	5.1910 W	59.5887 W	35.8750 S	0.0644 S	11.5321 S	6.0802 S
2018	Building Construction	7.3291 W	46.0767 W	53.6356 S	0.1601 S	11.5118 W	4.2316 W	7.3291 W	46.0767 W	53.6356 S	0.1601 S	11.5118 W	4.2316 W
2019	Building Construction	6.6492 W	42.4833 W	50.0650 S	0.1574 S	11.2826 W	4.0160 W	6.6492 W	42.4833 W	50.0650 S	0.1574 S	11.2826 W	4.0160 W
2020	Building Construction	6.0720 W	38.7601 W	47.0321 S	0.1542 S	11.0708 W	3.8164 W	6.0720 W	38.7601 W	47.0321 S	0.1542 S	11.0708 W	3.8164 W
2021	Building Construction	5.5630 W	35.0300 W	44.5708 S	0.1508 S	10.8522 W	3.6099 W	5.5630 W	35.0300 W	44.5708 S	0.1508 S	10.8522 W	3.6099 W
2022	Building Construction	5.1728 W	32.1789 W	42.6303 S	0.1472 S	10.6971 W	3.4645 W	5.1728 W	32.1789 W	42.6303 S	0.1472 S	10.6971 W	3.4645 W
2022	Paving	1.1609 W	11.1575 W	15.0057 S	0.0243 S	0.7366 S	0.5679 S	1.1609 W	11.1575 W	15.0057 S	0.0243 S	0.7366 S	0.5679 S
2022	Architectural Coating	129.9366 W	1.7476 W	6.2358 S	0.0188 S	1.8365 S	0.5544 S	129.9366 W	1.7476 W	6.2358 S	0.0188 S	1.8365 S	0.5544 S
	Peak Daily Total	129.9366 W	68.0160 W	53.6356 S	0.1601 S	21.1474 S	12.6336 S	129.9366 W	68.0160 W	53.6356 S	0.1601 S	21.1474 S	12.6336 S
	Air District Threshold												
	Exceed Significance?												

Peak Daily Operational Emissions

Peak Daily Operational Emissions

		Unmitigated						Mitigated					
		ROG	NOX	CO	SO2	PM10	PM2.5	ROG	NOX	CO	SO2	PM10	PM2.5
	Operational Activity	lb/day											
On-Site	Area	263.6571 S	19.2455 S	524.0522 S	1.1546 S	68.1624 S	68.1624 S	263.6571 S	19.2455 S	524.0522 S	1.1546 S	68.1624 S	68.1624 S
On-Site	Energy	0.5734 S	4.9147 S	2.1912 S	0.0313 S	0.3962 S	0.3962 S	0.5734 S	4.9147 S	2.1912 S	0.0313 S	0.3962 S	0.3962 S
Off-Site	Mobile	30.9159 S	140.1776 W	341.9724 S	1.6666 S	129.5122 W	36.6781 W	28.9055 S	132.2536 W	291.7564 S	1.3798 S	105.5660 W	29.9131 W
	Peak Daily Total	295.1464 S	164.3378 W	868.2157 S	2.8526 S	198.0708 W	105.2367 W	293.1361 S	156.4137 W	817.9997 S	2.5657 S	174.1246 W	98.4717 W
	Air District Threshold												
	Exceed Significance?												

3.0 Annual GHG Emissions

Annual GHG

Annual GHG

Tustin DCCSP - Orange County, Summary Report

		Unmitigated				Mitigated			
		CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
GHG Activity	Year	MT/yr							
Construction	2017	398.2827	0.1135	0.0000	401.1204	398.2823	0.1135	0.0000	401.1199
Construction	2018	1,686.2518	0.1655	0.0000	1,690.3881	1,686.2514	0.1655	0.0000	1,690.3877
Construction	2019	1,844.6679	0.1463	0.0000	1,848.3253	1,844.6676	0.1463	0.0000	1,848.3249
Construction	2020	1,811.2583	0.1410	0.0000	1,814.7823	1,811.2580	0.1410	0.0000	1,814.7819
Construction	2021	1,766.1793	0.1358	0.0000	1,769.5738	1,766.1789	0.1358	0.0000	1,769.5734
Construction	2022	868.9459	0.0817	0.0000	870.9889	868.9457	0.0817	0.0000	870.9887
Operational	2035	30,655.3232	14.9098	0.1272	31,065.9835	26,128.5695	8.9105	0.1126	26,384.8891
	Total								
	Significance Threshold								
	Exceed Significance?								

ATTACHMENT "B"

Tustin DCCSP

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	887.00	Dwelling Unit	55.44	887,000.00	2537
Strip Mall	146.00	1000sqft	3.35	146,000.00	0
Strip Mall	300.00	1000sqft	6.89	300,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2035
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips -

Mobile Land Use Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	OperationalYear	2018	2035

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.4374	4.7557	2.5995	4.3100e-003	0.8552	0.2343	1.0895	0.4009	0.2164	0.6173	0.0000	398.2827	398.2827	0.1135	0.0000	401.1203
2018	0.8636	6.3657	6.4634	0.0183	1.5222	0.2436	1.7658	0.4780	0.2280	0.7060	0.0000	1,686.2518	1,686.2518	0.1655	0.0000	1,690.3881
2019	0.8177	5.5987	6.3780	0.0200	1.2569	0.1929	1.4498	0.3369	0.1815	0.5184	0.0000	1,844.6679	1,844.6679	0.1463	0.0000	1,848.3253
2020	0.7482	5.1268	6.0135	0.0197	1.2617	0.1659	1.4277	0.3382	0.1561	0.4943	0.0000	1,811.2583	1,811.2583	0.1410	0.0000	1,814.7823
2021	0.6813	4.6147	5.6765	0.0192	1.2569	0.1368	1.3937	0.3369	0.1286	0.4655	0.0000	1,766.1793	1,766.1793	0.1358	0.0000	1,769.5737
2022	5.1800	2.2710	3.0749	9.5000e-003	0.6001	0.0740	0.6741	0.1607	0.0693	0.2300	0.0000	868.9459	868.9459	0.0817	0.0000	870.9888
Maximum	**5.1800**	**6.3657**	**6.4634**	**0.0200**	**1.5222**	**0.2436**	**1.7658**	**0.4780**	**0.2280**	**0.7060**	**0.0000**	**1,844.6679**	**1,844.6679**	**0.1655**	**0.0000**	**1,848.3253**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.4374	4.7557	2.5995	4.3100e-003	0.8552	0.2343	1.0895	0.4009	0.2164	0.6173	0.0000	398.2823	398.2823	0.1135	0.0000	401.1199
2018	0.8636	6.3657	6.4634	0.0183	1.5222	0.2436	1.7658	0.4780	0.2280	0.7060	0.0000	1,686.2514	1,686.2514	0.1655	0.0000	1,690.3876
2019	0.8177	5.5987	6.3780	0.0200	1.2569	0.1929	1.4498	0.3369	0.1815	0.5184	0.0000	1,844.6676	1,844.6676	0.1463	0.0000	1,848.3250
2020	0.7482	5.1268	6.0135	0.0197	1.2617	0.1659	1.4277	0.3382	0.1561	0.4943	0.0000	1,811.2580	1,811.2580	0.1410	0.0000	1,814.7820
2021	0.6813	4.6147	5.6765	0.0192	1.2569	0.1368	1.3937	0.3369	0.1286	0.4655	0.0000	1,766.1789	1,766.1789	0.1358	0.0000	1,769.5733
2022	5.1800	2.2710	3.0749	9.5000e-003	0.6001	0.0740	0.6741	0.1607	0.0693	0.2300	0.0000	868.9457	868.9457	0.0817	0.0000	870.9886
Maximum	**5.1800**	**6.3657**	**6.4634**	**0.0200**	**1.5222**	**0.2436**	**1.7658**	**0.4780**	**0.2280**	**0.7060**	**0.0000**	**1,844.6676**	**1,844.6676**	**0.1655**	**0.0000**	**1,848.3250**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-30-2017**	**7-29-2017**	1.5268	1.5268
2	**7-30-2017**	**10-29-2017**	2.0399	2.0399
3	**10-30-2017**	**1-29-2018**	2.3331	2.3331
4	**1-30-2018**	**4-29-2018**	1.8389	1.8389
5	**4-30-2018**	**7-29-2018**	1.7116	1.7116

6	**7-30-2018**	**10-29-2018**	1.7381	1.7381
7	**10-30-2018**	**1-29-2019**	1.7105	1.7105
8	**1-30-2019**	**4-29-2019**	1.5723	1.5723
9	**4-30-2019**	**7-29-2019**	1.5751	1.5751
10	**7-30-2019**	**10-29-2019**	1.5993	1.5993
11	**10-30-2019**	**1-29-2020**	1.5698	1.5698
12	**1-30-2020**	**4-29-2020**	1.4509	1.4509
13	**4-30-2020**	**7-29-2020**	1.4377	1.4377
14	**7-30-2020**	**10-29-2020**	1.4597	1.4597
15	**10-30-2020**	**1-29-2021**	1.4291	1.4291
16	**1-30-2021**	**4-29-2021**	1.2993	1.2993
17	**4-30-2021**	**7-29-2021**	1.3022	1.3022
18	**7-30-2021**	**10-29-2021**	1.3219	1.3219
19	**10-30-2021**	**1-29-2022**	1.3002	1.3002
20	**1-30-2022**	**4-29-2022**	1.1955	1.1955
21	**4-30-2022**	**7-29-2022**	0.7070	0.7070
22	**7-30-2022**	**9-30-2022**	0.8733	0.8733
		Highest	2.3331	2.3331

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4794	0.3353	14.7594	0.0149		0.8977	0.8977		0.8977	0.8977	94.2163	196.0045	290.2208	0.2952	6.3900e-003	299.5070
Energy	0.1047	0.8969	0.3999	5.7100e-003		0.0723	0.0723		0.0723	0.0723	0.0000	4,200.7161	4,200.7161	0.1505	0.0460	4,218.1936
Mobile	4.9115	23.8557	56.3945	0.2723	21.4838	0.1382	21.6219	6.0030	0.1282	6.1312	0.0000	25,380.2141	25,380.2141	0.9679	0.0000	25,404.4113
Waste						0.0000	0.0000		0.0000	0.0000	177.8850	0.0000	177.8850	10.5127	0.0000	440.7027
Water						0.0000	0.0000		0.0000	0.0000	28.8155	577.4718	606.2873	2.9835	0.0748	703.1692
Total	**13.4955**	**25.0879**	**71.5538**	**0.2928**	**21.4838**	**1.1082**	**22.5919**	**6.0030**	**1.0982**	**7.1012**	**300.9169**	**30,354.4063**	**30,655.3232**	**14.9098**	**0.1272**	**31,065.9837**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4794	0.3353	14.7594	0.0149		0.8977	0.8977		0.8977	0.8977	94.2163	196.0045	290.2208	0.2952	6.3900e-003	299.5070
Energy	0.1047	0.8969	0.3999	5.7100e-003		0.0723	0.0723		0.0723	0.0723	0.0000	4,200.7161	4,200.7161	0.1505	0.0460	4,218.1936
Mobile	4.5733	22.4908	48.4051	0.2254	17.5072	0.1169	17.6241	4.8919	0.1084	5.0003	0.0000	21,023.5308	21,023.5308	0.8200	0.0000	21,044.0295
Waste						0.0000	0.0000		0.0000	0.0000	88.9425	0.0000	88.9425	5.2564	0.0000	220.3513
Water						0.0000	0.0000		0.0000	0.0000	23.0524	502.1069	525.1593	2.3884	0.0602	602.8084
Total	**13.1574**	**23.7229**	**63.5644**	**0.2460**	**17.5072**	**1.0869**	**18.5941**	**4.8919**	**1.0784**	**5.9703**	**206.2113**	**25,922.3582**	**26,128.5695**	**8.9105**	**0.1126**	**26,384.8899**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**2.51**	**5.44**	**11.17**	**16.01**	**18.51**	**1.92**	**17.70**	**18.51**	**1.80**	**15.93**	**31.47**	**14.60**	**14.77**	**40.24**	**11.49**	**15.07**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/30/2017	8/4/2017	5	70	
2	Site Preparation	Site Preparation	8/5/2017	9/29/2017	5	40	
3	Grading	Grading	9/30/2017	3/2/2018	5	110	
4	Building Construction	Building Construction	3/3/2018	6/3/2022	5	1110	
5	Paving	Paving	6/4/2022	9/16/2022	5	75	
6	Architectural Coating	Architectural Coating	9/17/2022	12/30/2022	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 1,796,175; Residential Outdoor: 598,725; Non-Residential Indoor: 669,000; Non-Residential Outdoor: 223,000; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	781.00	168.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	156.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1436	1.4962	0.8054	1.3600e-003		0.0768	0.0768		0.0715	0.0715	0.0000	124.6018	124.6018	0.0341	0.0000	125.4534
Total	**0.1436**	**1.4962**	**0.8054**	**1.3600e-003**		**0.0768**	**0.0768**		**0.0715**	**0.0715**	**0.0000**	**124.6018**	**124.6018**	**0.0341**	**0.0000**	**125.4534**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6400e-003	2.0600e-003	0.0221	6.0000e-005	5.7600e-003	4.0000e-005	5.8000e-003	1.5300e-003	4.0000e-005	1.5700e-003	0.0000	5.4527	5.4527	1.6000e-004	0.0000	5.4567
Total	**2.6400e-003**	**2.0600e-003**	**0.0221**	**6.0000e-005**	**5.7600e-003**	**4.0000e-005**	**5.8000e-003**	**1.5300e-003**	**4.0000e-005**	**1.5700e-003**	**0.0000**	**5.4527**	**5.4527**	**1.6000e-004**	**0.0000**	**5.4567**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1436	1.4962	0.8054	1.3600e-003		0.0768	0.0768		0.0715	0.0715	0.0000	124.6016	124.6016	0.0341	0.0000	125.4533
Total	**0.1436**	**1.4962**	**0.8054**	**1.3600e-003**		**0.0768**	**0.0768**		**0.0715**	**0.0715**	**0.0000**	**124.6016**	**124.6016**	**0.0341**	**0.0000**	**125.4533**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6400e-003	2.0600e-003	0.0221	6.0000e-005	5.7600e-003	4.0000e-005	5.8000e-003	1.5300e-003	4.0000e-005	1.5700e-003	0.0000	5.4527	5.4527	1.6000e-004	0.0000	5.4567
Total	**2.6400e-003**	**2.0600e-003**	**0.0221**	**6.0000e-005**	**5.7600e-003**	**4.0000e-005**	**5.8000e-003**	**1.5300e-003**	**4.0000e-005**	**1.5700e-003**	**0.0000**	**5.4527**	**5.4527**	**1.6000e-004**	**0.0000**	**5.4567**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0992	1.0455	0.4691	7.6000e-004		0.0576	0.0576		0.0530	0.0530	0.0000	70.6688	70.6688	0.0217	0.0000	71.2101
Total	**0.0992**	**1.0455**	**0.4691**	**7.6000e-004**	**0.3613**	**0.0576**	**0.4189**	**0.1986**	**0.0530**	**0.2516**	**0.0000**	**70.6688**	**70.6688**	**0.0217**	**0.0000**	**71.2101**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8100e-003	1.4100e-003	0.0151	4.0000e-005	3.9500e-003	3.0000e-005	3.9800e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.7390	3.7390	1.1000e-004	0.0000	3.7417
Total	**1.8100e-003**	**1.4100e-003**	**0.0151**	**4.0000e-005**	**3.9500e-003**	**3.0000e-005**	**3.9800e-003**	**1.0500e-003**	**2.0000e-005**	**1.0700e-003**	**0.0000**	**3.7390**	**3.7390**	**1.1000e-004**	**0.0000**	**3.7417**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0992	1.0455	0.4691	7.6000e-004		0.0576	0.0576		0.0530	0.0530	0.0000	70.6687	70.6687	0.0217	0.0000	71.2100
Total	**0.0992**	**1.0455**	**0.4691**	**7.6000e-004**	**0.3613**	**0.0576**	**0.4189**	**0.1986**	**0.0530**	**0.2516**	**0.0000**	**70.6687**	**70.6687**	**0.0217**	**0.0000**	**71.2100**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8100e-003	1.4100e-003	0.0151	4.0000e-005	3.9500e-003	3.0000e-005	3.9800e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.7390	3.7390	1.1000e-004	0.0000	3.7417
Total	**1.8100e-003**	**1.4100e-003**	**0.0151**	**4.0000e-005**	**3.9500e-003**	**3.0000e-005**	**3.9800e-003**	**1.0500e-003**	**2.0000e-005**	**1.0700e-003**	**0.0000**	**3.7390**	**3.7390**	**1.1000e-004**	**0.0000**	**3.7417**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4770	0.0000	0.4770	0.1978	0.0000	0.1978	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1868	2.2080	1.2604	2.0200e-003		0.0999	0.0999		0.0919	0.0919	0.0000	187.0695	187.0695	0.0573	0.0000	188.5024
Total	**0.1868**	**2.2080**	**1.2604**	**2.0200e-003**	**0.4770**	**0.0999**	**0.5769**	**0.1978**	**0.0919**	**0.2897**	**0.0000**	**187.0695**	**187.0695**	**0.0573**	**0.0000**	**188.5024**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2700e-003	2.5400e-003	0.0273	7.0000e-005	7.1400e-003	5.0000e-005	7.1800e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.7510	6.7510	2.0000e-004	0.0000	6.7559
Total	**3.2700e-003**	**2.5400e-003**	**0.0273**	**7.0000e-005**	**7.1400e-003**	**5.0000e-005**	**7.1800e-003**	**1.8900e-003**	**4.0000e-005**	**1.9400e-003**	**0.0000**	**6.7510**	**6.7510**	**2.0000e-004**	**0.0000**	**6.7559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4770	0.0000	0.4770	0.1978	0.0000	0.1978	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1868	2.2080	1.2604	2.0200e-003		0.0999	0.0999		0.0919	0.0919	0.0000	187.0693	187.0693	0.0573	0.0000	188.5022
Total	**0.1868**	**2.2080**	**1.2604**	**2.0200e-003**	**0.4770**	**0.0999**	**0.5769**	**0.1978**	**0.0919**	**0.2897**	**0.0000**	**187.0693**	**187.0693**	**0.0573**	**0.0000**	**188.5022**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2700e-003	2.5400e-003	0.0273	7.0000e-005	7.1400e-003	5.0000e-005	7.1800e-003	1.8900e-003	4.0000e-005	1.9400e-003	0.0000	6.7510	6.7510	2.0000e-004	0.0000	6.7559
Total	**3.2700e-003**	**2.5400e-003**	**0.0273**	**7.0000e-005**	**7.1400e-003**	**5.0000e-005**	**7.1800e-003**	**1.8900e-003**	**4.0000e-005**	**1.9400e-003**	**0.0000**	**6.7510**	**6.7510**	**2.0000e-004**	**0.0000**	**6.7559**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4770	0.0000	0.4770	0.1978	0.0000	0.1978	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1145	1.3392	0.7895	1.4000e-003		0.0593	0.0593		0.0545	0.0545	0.0000	127.4591	127.4591	0.0397	0.0000	128.4511
Total	**0.1145**	**1.3392**	**0.7895**	**1.4000e-003**	**0.4770**	**0.0593**	**0.5363**	**0.1978**	**0.0545**	**0.2523**	**0.0000**	**127.4591**	**127.4591**	**0.0397**	**0.0000**	**128.4511**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0400e-003	1.5400e-003	0.0168	5.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.5374	4.5374	1.2000e-004	0.0000	4.5404
Total	**2.0400e-003**	**1.5400e-003**	**0.0168**	**5.0000e-005**	**4.9400e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**3.0000e-005**	**1.3400e-003**	**0.0000**	**4.5374**	**4.5374**	**1.2000e-004**	**0.0000**	**4.5404**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4770	0.0000	0.4770	0.1978	0.0000	0.1978	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1145	1.3392	0.7895	1.4000e-003		0.0593	0.0593		0.0545	0.0545	0.0000	127.4590	127.4590	0.0397	0.0000	128.4510
Total	**0.1145**	**1.3392**	**0.7895**	**1.4000e-003**	**0.4770**	**0.0593**	**0.5363**	**0.1978**	**0.0545**	**0.2523**	**0.0000**	**127.4590**	**127.4590**	**0.0397**	**0.0000**	**128.4510**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0400e-003	1.5400e-003	0.0168	5.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.5374	4.5374	1.2000e-004	0.0000	4.5404
Total	**2.0400e-003**	**1.5400e-003**	**0.0168**	**5.0000e-005**	**4.9400e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**3.0000e-005**	**1.3400e-003**	**0.0000**	**4.5374**	**4.5374**	**1.2000e-004**	**0.0000**	**4.5404**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2894	2.5261	1.8987	2.9100e-003		0.1620	0.1620		0.1523	0.1523	0.0000	256.7886	256.7886	0.0629	0.0000	258.3614
Total	**0.2894**	**2.5261**	**1.8987**	**2.9100e-003**		**0.1620**	**0.1620**		**0.1523**	**0.1523**	**0.0000**	**256.7886**	**256.7886**	**0.0629**	**0.0000**	**258.3614**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0749	2.2092	0.6097	4.5400e-003	0.1142	0.0161	0.1304	0.0330	0.0154	0.0484	0.0000	446.9714	446.9714	0.0401	0.0000	447.9749
Worker	0.3828	0.2896	3.1488	9.4100e-003	0.9260	6.2300e-003	0.9322	0.2459	5.7400e-003	0.2516	0.0000	850.4953	850.4953	0.0226	0.0000	851.0602
Total	**0.4577**	**2.4988**	**3.7584**	**0.0140**	**1.0402**	**0.0224**	**1.0626**	**0.2789**	**0.0212**	**0.3000**	**0.0000**	**1,297.4667**	**1,297.4667**	**0.0627**	**0.0000**	**1,299.0351**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2894	2.5261	1.8987	2.9100e-003		0.1620	0.1620		0.1523	0.1523	0.0000	256.7883	256.7883	0.0629	0.0000	258.3611
Total	**0.2894**	**2.5261**	**1.8987**	**2.9100e-003**		**0.1620**	**0.1620**		**0.1523**	**0.1523**	**0.0000**	**256.7883**	**256.7883**	**0.0629**	**0.0000**	**258.3611**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0749	2.2092	0.6097	4.5400e-003	0.1142	0.0161	0.1304	0.0330	0.0154	0.0484	0.0000	446.9714	446.9714	0.0401	0.0000	447.9749
Worker	0.3828	0.2896	3.1488	9.4100e-003	0.9260	6.2300e-003	0.9322	0.2459	5.7400e-003	0.2516	0.0000	850.4953	850.4953	0.0226	0.0000	851.0602
Total	**0.4577**	**2.4988**	**3.7584**	**0.0140**	**1.0402**	**0.0224**	**1.0626**	**0.2789**	**0.0212**	**0.3000**	**0.0000**	**1,297.4667**	**1,297.4667**	**0.0627**	**0.0000**	**1,299.0351**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3081	2.7508	2.2399	3.5100e-003		0.1683	0.1683		0.1583	0.1583	0.0000	306.8110	306.8110	0.0747	0.0000	308.6795
Total	**0.3081**	**2.7508**	**2.2399**	**3.5100e-003**		**0.1683**	**0.1683**		**0.1583**	**0.1583**	**0.0000**	**306.8110**	**306.8110**	**0.0747**	**0.0000**	**308.6795**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0837	2.5373	0.6904	5.4500e-003	0.1380	0.0169	0.1550	0.0398	0.0162	0.0560	0.0000	537.3864	537.3864	0.0469	0.0000	538.5592
Worker	0.4258	0.3106	3.4478	0.0111	1.1189	7.6100e-003	1.1265	0.2971	7.0100e-003	0.3041	0.0000	1,000.4705	1,000.4705	0.0246	0.0000	1,001.0866
Total	**0.5095**	**2.8479**	**4.1381**	**0.0165**	**1.2569**	**0.0246**	**1.2815**	**0.3369**	**0.0232**	**0.3602**	**0.0000**	**1,537.8570**	**1,537.8570**	**0.0716**	**0.0000**	**1,539.6458**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3081	2.7508	2.2399	3.5100e-003		0.1683	0.1683		0.1583	0.1583	0.0000	306.8106	306.8106	0.0747	0.0000	308.6792
Total	**0.3081**	**2.7508**	**2.2399**	**3.5100e-003**		**0.1683**	**0.1683**		**0.1583**	**0.1583**	**0.0000**	**306.8106**	**306.8106**	**0.0747**	**0.0000**	**308.6792**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0837	2.5373	0.6904	5.4500e-003	0.1380	0.0169	0.1550	0.0398	0.0162	0.0560	0.0000	537.3864	537.3864	0.0469	0.0000	538.5592
Worker	0.4258	0.3106	3.4478	0.0111	1.1189	7.6100e-003	1.1265	0.2971	7.0100e-003	0.3041	0.0000	1,000.4705	1,000.4705	0.0246	0.0000	1,001.0866
Total	**0.5095**	**2.8479**	**4.1381**	**0.0165**	**1.2569**	**0.0246**	**1.2815**	**0.3369**	**0.0232**	**0.3602**	**0.0000**	**1,537.8570**	**1,537.8570**	**0.0716**	**0.0000**	**1,539.6458**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4091	303.4091	0.0740	0.0000	305.2596
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4091**	**303.4091**	**0.0740**	**0.0000**	**305.2596**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0717	2.3341	0.6348	5.4300e-003	0.1386	0.0121	0.1506	0.0400	0.0115	0.0515	0.0000	535.7307	535.7307	0.0448	0.0000	536.8497
Worker	0.3988	0.2794	3.1715	0.0108	1.1232	7.5600e-003	1.1307	0.2983	6.9600e-003	0.3052	0.0000	972.1186	972.1186	0.0222	0.0000	972.6731
Total	**0.4705**	**2.6135**	**3.8063**	**0.0162**	**1.2617**	**0.0196**	**1.2813**	**0.3382**	**0.0185**	**0.3567**	**0.0000**	**1,507.8493**	**1,507.8493**	**0.0669**	**0.0000**	**1,509.5227**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4087	303.4087	0.0740	0.0000	305.2592
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4087**	**303.4087**	**0.0740**	**0.0000**	**305.2592**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0717	2.3341	0.6348	5.4300e-003	0.1386	0.0121	0.1506	0.0400	0.0115	0.0515	0.0000	535.7307	535.7307	0.0448	0.0000	536.8497
Worker	0.3988	0.2794	3.1715	0.0108	1.1232	7.5600e-003	1.1307	0.2983	6.9600e-003	0.3052	0.0000	972.1186	972.1186	0.0222	0.0000	972.6731
Total	**0.4705**	**2.6135**	**3.8063**	**0.0162**	**1.2617**	**0.0196**	**1.2813**	**0.3382**	**0.0185**	**0.3567**	**0.0000**	**1,507.8493**	**1,507.8493**	**0.0669**	**0.0000**	**1,509.5227**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0598	2.0887	0.5855	5.3500e-003	0.1380	4.3400e-003	0.1424	0.0398	4.1500e-003	0.0440	0.0000	529.0885	529.0885	0.0428	0.0000	530.1592
Worker	0.3734	0.2510	2.9280	0.0103	1.1189	7.3700e-003	1.1263	0.2971	6.7900e-003	0.3039	0.0000	934.8041	934.8041	0.0200	0.0000	935.3046
Total	**0.4332**	**2.3398**	**3.5135**	**0.0157**	**1.2569**	**0.0117**	**1.2686**	**0.3369**	**0.0109**	**0.3479**	**0.0000**	**1,463.8927**	**1,463.8927**	**0.0629**	**0.0000**	**1,465.4638**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0598	2.0887	0.5855	5.3500e-003	0.1380	4.3400e-003	0.1424	0.0398	4.1500e-003	0.0440	0.0000	529.0885	529.0885	0.0428	0.0000	530.1592
Worker	0.3734	0.2510	2.9280	0.0103	1.1189	7.3700e-003	1.1263	0.2971	6.7900e-003	0.3039	0.0000	934.8041	934.8041	0.0200	0.0000	935.3046
Total	**0.4332**	**2.3398**	**3.5135**	**0.0157**	**1.2569**	**0.0117**	**1.2686**	**0.3369**	**0.0109**	**0.3479**	**0.0000**	**1,463.8927**	**1,463.8927**	**0.0629**	**0.0000**	**1,465.4638**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0938	0.8589	0.9000	1.4800e-003		0.0445	0.0445		0.0419	0.0419	0.0000	127.4489	127.4489	0.0305	0.0000	128.2122
Total	**0.0938**	**0.8589**	**0.9000**	**1.4800e-003**		**0.0445**	**0.0445**		**0.0419**	**0.0419**	**0.0000**	**127.4489**	**127.4489**	**0.0305**	**0.0000**	**128.2122**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0237	0.8320	0.2381	2.2300e-003	0.0582	1.5900e-003	0.0598	0.0168	1.5200e-003	0.0183	0.0000	220.7888	220.7888	0.0175	0.0000	221.2255
Worker	0.1489	0.0959	1.1504	4.1900e-003	0.4716	3.0500e-003	0.4746	0.1252	2.8100e-003	0.1280	0.0000	379.3929	379.3929	7.6600e-003	0.0000	379.5843
Total	**0.1726**	**0.9278**	**1.3884**	**6.4200e-003**	**0.5297**	**4.6400e-003**	**0.5344**	**0.1420**	**4.3300e-003**	**0.1463**	**0.0000**	**600.1817**	**600.1817**	**0.0251**	**0.0000**	**600.8098**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0938	0.8589	0.9000	1.4800e-003		0.0445	0.0445		0.0419	0.0419	0.0000	127.4487	127.4487	0.0305	0.0000	128.2121
Total	**0.0938**	**0.8589**	**0.9000**	**1.4800e-003**		**0.0445**	**0.0445**		**0.0419**	**0.0419**	**0.0000**	**127.4487**	**127.4487**	**0.0305**	**0.0000**	**128.2121**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0237	0.8320	0.2381	2.2300e-003	0.0582	1.5900e-003	0.0598	0.0168	1.5200e-003	0.0183	0.0000	220.7888	220.7888	0.0175	0.0000	221.2255
Worker	0.1489	0.0959	1.1504	4.1900e-003	0.4716	3.0500e-003	0.4746	0.1252	2.8100e-003	0.1280	0.0000	379.3929	379.3929	7.6600e-003	0.0000	379.5843
Total	**0.1726**	**0.9278**	**1.3884**	**6.4200e-003**	**0.5297**	**4.6400e-003**	**0.5344**	**0.1420**	**4.3300e-003**	**0.1463**	**0.0000**	**600.1817**	**600.1817**	**0.0251**	**0.0000**	**600.8098**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0414	0.4172	0.5468	8.6000e-004		0.0213	0.0213		0.0196	0.0196	0.0000	75.1033	75.1033	0.0243	0.0000	75.7106
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0414**	**0.4172**	**0.5468**	**8.6000e-004**		**0.0213**	**0.0213**		**0.0196**	**0.0196**	**0.0000**	**75.1033**	**75.1033**	**0.0243**	**0.0000**	**75.7106**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9500e-003	1.2600e-003	0.0151	5.0000e-005	6.1800e-003	4.0000e-005	6.2200e-003	1.6400e-003	4.0000e-005	1.6800e-003	0.0000	4.9682	4.9682	1.0000e-004	0.0000	4.9707
Total	**1.9500e-003**	**1.2600e-003**	**0.0151**	**5.0000e-005**	**6.1800e-003**	**4.0000e-005**	**6.2200e-003**	**1.6400e-003**	**4.0000e-005**	**1.6800e-003**	**0.0000**	**4.9682**	**4.9682**	**1.0000e-004**	**0.0000**	**4.9707**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0414	0.4172	0.5468	8.6000e-004		0.0213	0.0213		0.0196	0.0196	0.0000	75.1033	75.1033	0.0243	0.0000	75.7105
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0414**	**0.4172**	**0.5468**	**8.6000e-004**		**0.0213**	**0.0213**		**0.0196**	**0.0196**	**0.0000**	**75.1033**	**75.1033**	**0.0243**	**0.0000**	**75.7105**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9500e-003	1.2600e-003	0.0151	5.0000e-005	6.1800e-003	4.0000e-005	6.2200e-003	1.6400e-003	4.0000e-005	1.6800e-003	0.0000	4.9682	4.9682	1.0000e-004	0.0000	4.9707
Total	**1.9500e-003**	**1.2600e-003**	**0.0151**	**5.0000e-005**	**6.1800e-003**	**4.0000e-005**	**6.2200e-003**	**1.6400e-003**	**4.0000e-005**	**1.6800e-003**	**0.0000**	**4.9682**	**4.9682**	**1.0000e-004**	**0.0000**	**4.9707**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.8423					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6700e-003	0.0528	0.0680	1.1000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	9.5747	9.5747	6.2000e-004	0.0000	9.5903
Total	**4.8500**	**0.0528**	**0.0680**	**1.1000e-004**		**3.0600e-003**	**3.0600e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**9.5747**	**9.5747**	**6.2000e-004**	**0.0000**	**9.5903**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0203	0.0131	0.1567	5.7000e-004	0.0642	4.2000e-004	0.0646	0.0171	3.8000e-004	0.0174	0.0000	51.6692	51.6692	1.0400e-003	0.0000	51.6952
Total	**0.0203**	**0.0131**	**0.1567**	**5.7000e-004**	**0.0642**	**4.2000e-004**	**0.0646**	**0.0171**	**3.8000e-004**	**0.0174**	**0.0000**	**51.6692**	**51.6692**	**1.0400e-003**	**0.0000**	**51.6952**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.8423					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6700e-003	0.0528	0.0680	1.1000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	9.5747	9.5747	6.2000e-004	0.0000	9.5903
Total	**4.8500**	**0.0528**	**0.0680**	**1.1000e-004**		**3.0600e-003**	**3.0600e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**9.5747**	**9.5747**	**6.2000e-004**	**0.0000**	**9.5903**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0203	0.0131	0.1567	5.7000e-004	0.0642	4.2000e-004	0.0646	0.0171	3.8000e-004	0.0174	0.0000	51.6692	51.6692	1.0400e-003	0.0000	51.6952
Total	**0.0203**	**0.0131**	**0.1567**	**5.7000e-004**	**0.0642**	**4.2000e-004**	**0.0646**	**0.0171**	**3.8000e-004**	**0.0174**	**0.0000**	**51.6692**	**51.6692**	**1.0400e-003**	**0.0000**	**51.6952**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.5733	22.4908	48.4051	0.2254	17.5072	0.1169	17.6241	4.8919	0.1084	5.0003	0.0000	21,023.5308	21,023.5308	0.8200	0.0000	21,044.0295
Unmitigated	4.9115	23.8557	56.3945	0.2723	21.4838	0.1382	21.6219	6.0030	0.1282	6.1312	0.0000	25,380.2141	25,380.2141	0.9679	0.0000	25,404.4113

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	5,153.47	5,029.29	4293.08	17,129,558	13,958,941
Strip Mall	6,470.72	6,137.84	2982.78	11,272,665	9,186,137
Strip Mall	13,296.00	12,612.00	6129.00	23,163,010	18,875,624
Total	24,920.19	23,779.13	13,404.86	51,565,232	42,020,702

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.570257	0.042258	0.208917	0.102527	0.012284	0.005810	0.027501	0.020703	0.001922	0.001419	0.005012	0.000641	0.000749
Strip Mall	0.570257	0.042258	0.208917	0.102527	0.012284	0.005810	0.027501	0.020703	0.001922	0.001419	0.005012	0.000641	0.000749
Strip Mall	0.570257	0.042258	0.208917	0.102527	0.012284	0.005810	0.027501	0.020703	0.001922	0.001419	0.005012	0.000641	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3,165.0252	3,165.0252	0.1307	0.0270	3,176.3481
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3,165.0252	3,165.0252	0.1307	0.0270	3,176.3481
NaturalGas Mitigated	0.1047	0.8969	0.3999	5.7100e-003		0.0723	0.0723		0.0723	0.0723	0.0000	1,035.6909	1,035.6909	0.0199	0.0190	1,041.8455
NaturalGas Unmitigated	0.1047	0.8969	0.3999	5.7100e-003		0.0723	0.0723		0.0723	0.0723	0.0000	1,035.6909	1,035.6909	0.0199	0.0190	1,041.8455

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Condo/Townhouse	1.85117e+007	0.0998	0.8530	0.3630	5.4400e-003		0.0690	0.0690		0.0690	0.0690	0.0000	987.8524	987.8524	0.0189	0.0181	993.7227
Strip Mall	293460	1.5800e-003	0.0144	0.0121	9.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	15.6601	15.6601	3.0000e-004	2.9000e-004	15.7532
Strip Mall	603000	3.2500e-003	0.0296	0.0248	1.8000e-004		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	32.1784	32.1784	6.2000e-004	5.9000e-004	32.3696
Total		**0.1047**	**0.8969**	**0.3999**	**5.7100e-003**		**0.0723**	**0.0723**		**0.0723**	**0.0723**	**0.0000**	**1,035.6909**	**1,035.6909**	**0.0199**	**0.0190**	**1,041.8455**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Condo/Townhouse	1.85117e+007	0.0998	0.8530	0.3630	5.4400e-003		0.0690	0.0690		0.0690	0.0690	0.0000	987.8524	987.8524	0.0189	0.0181	993.7227
Strip Mall	293460	1.5800e-003	0.0144	0.0121	9.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	15.6601	15.6601	3.0000e-004	2.9000e-004	15.7532
Strip Mall	603000	3.2500e-003	0.0296	0.0248	1.8000e-004		2.2500e-003	2.2500e-003		2.2500e-003	2.2500e-003	0.0000	32.1784	32.1784	6.2000e-004	5.9000e-004	32.3696
Total		**0.1047**	**0.8969**	**0.3999**	**5.7100e-003**		**0.0723**	**0.0723**		**0.0723**	**0.0723**	**0.0000**	**1,035.6909**	**1,035.6909**	**0.0199**	**0.0190**	**1,041.8455**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	4.70638e+006	1,499.5528	0.0619	0.0128	1,504.9175
Strip Mall	1.71112e+006	545.1995	0.0225	4.6600e-003	547.1500
Strip Mall	3.516e+006	1,120.2729	0.0463	9.5700e-003	1,124.2807
Total		**3,165.0252**	**0.1307**	**0.0270**	**3,176.3482**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	4.70638e+006	1,499.5528	0.0619	0.0128	1,504.9175
Strip Mall	1.71112e+006	545.1995	0.0225	4.6600e-003	547.1500
Strip Mall	3.516e+006	1,120.2729	0.0463	9.5700e-003	1,124.2807
Total		**3,165.0252**	**0.1307**	**0.0270**	**3,176.3482**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.4794	0.3353	14.7594	0.0149		0.8977	0.8977		0.8977	0.8977	94.2163	196.0045	290.2208	0.2952	6.3900e-003	299.5070
Unmitigated	8.4794	0.3353	14.7594	0.0149		0.8977	0.8977		0.8977	0.8977	94.2163	196.0045	290.2208	0.2952	6.3900e-003	299.5070

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4842					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.8168					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.9053	0.2301	5.6386	0.0144		0.8470	0.8470		0.8470	0.8470	94.2163	181.0514	275.2677	0.2810	6.3900e-003	284.1976
Landscaping	0.2731	0.1052	9.1208	4.8000e-004		0.0508	0.0508		0.0508	0.0508	0.0000	14.9531	14.9531	0.0143	0.0000	15.3094
Total	**8.4794**	**0.3353**	**14.7594**	**0.0149**		**0.8977**	**0.8977**		**0.8977**	**0.8977**	**94.2163**	**196.0045**	**290.2208**	**0.2952**	**6.3900e-003**	**299.5070**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4842					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.8168					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.9053	0.2301	5.6386	0.0144		0.8470	0.8470		0.8470	0.8470	94.2163	181.0514	275.2677	0.2810	6.3900e-003	284.1976
Landscaping	0.2731	0.1052	9.1208	4.8000e-004		0.0508	0.0508		0.0508	0.0508	0.0000	14.9531	14.9531	0.0143	0.0000	15.3094
Total	**8.4794**	**0.3353**	**14.7594**	**0.0149**		**0.8977**	**0.8977**		**0.8977**	**0.8977**	**94.2163**	**196.0045**	**290.2208**	**0.2952**	**6.3900e-003**	**299.5070**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	525.1593	2.3884	0.0602	602.8084
Unmitigated	606.2873	2.9835	0.0748	703.1692

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	57.7916 / 36.4338	387.0703	1.8984	0.0476	448.7186
Strip Mall	33.0363 / 20.2481	219.2170	1.0851	0.0272	254.4506
Total		**606.2873**	**2.9835**	**0.0748**	**703.1692**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	46.2333 / 36.4338	335.4506	1.5198	0.0383	384.8615
Strip Mall	26.4291 / 20.2481	189.7087	0.8687	0.0219	217.9469
Total		**525.1593**	**2.3884**	**0.0602**	**602.8084**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	88.9425	5.2564	0.0000	220.3513
Unmitigated	177.8850	10.5127	0.0000	440.7027

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	408.02	82.8244	4.8948	0.0000	205.1939
Strip Mall	468.3	95.0607	5.6179	0.0000	235.5088
Total		**177.8850**	**10.5127**	**0.0000**	**440.7027**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	204.01	41.4122	2.4474	0.0000	102.5969
Strip Mall	234.15	47.5303	2.8090	0.0000	117.7544
Total		**88.9425**	**5.2564**	**0.0000**	**220.3513**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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APPENDIX C: CULTURAL RESOURCES ASSESSMENT

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cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

CULTURAL RESOURCE ASSESSMENT FOR THE TUSTIN DOWNTOWN COMMERCIAL CORE SPECIFIC PLAN, CITY OF TUSTIN, ORANGE COUNTY, CALIFORNIA

Prepared for:
City of Tustin

Under Contract to:
EPD Solutions
2030 Main Street, Suite 1200
Irvine, CA 92614

Authors:
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Principal Investigator:
Sherri Gust
Registered Professional Archaeologist

May 2017

Project Number: 3190-10
Type of Study: Cultural Resources Assessment
USGS 7.5' Quadrangles: Tustin, Orange
Area: 220 acres
Key Word: Tongva, historic residences, historic commercial buildings

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MANAGEMENT SUMMARY

The proposed Specific Plan applies to a 220 acre portion of the City of Tustin and is generally bounded by First Street in the north, the 5 Freeway in the south, B Street to the west, and Newport Avenue to the east. Six development areas have been defined for consideration. The City proposes to permit limited residential development guided by the City's development standards and design guidelines.

No archaeological resources are known within the Project Area. The City requested a Sacred Lands File search from the Native American Heritage Commission and the results were negative. The City conducted tribal consultation under AB 52 and SB18 and the results will be reported in the environmental document.

The Project area has 274 properties with 236 buildings. Seventy two percent (72%) are commercial buildings, eleven percent (11%) are residences and the remainder include community facilities and transportation related uses. Only two of Tustin's historic buildings have complete formal historic resource records and are listed on the California Register of Historical Resources and the National Register of Historic Places. These are the Artz Building and the Sherman Stevens House.

The Specific Plan proposes to permit a total of 887 dwelling units, most in conjunction with mixed-use development, as well as continuing to permit commercial uses. The potential for archaeological resources is considered low. Buildings more than 50 years old are considered historic but in rare cases a younger building may meet the criteria. Buildings that are not associated with historically important people or events and are not associated with an important architect or mastercraftmanship are unlikely to be considered significant under CEQA. Should any of these criteria be positive, evaluation of whether those buildings still convey the characteristics of their period of significance (possess integrity) requires expertise.

Three mitigation measures are proposed. The first requires utilization of the existing Historic Residential and/or Commercial Design Guidelines for all projects within the Specific Plan area. The second requires a standard evaluation process for build environment resources more than 45 years old that might be impacted by proposed development. The third requires a standard unanticipated discoveries clause in the event archaeological resources are encountered during excavations.

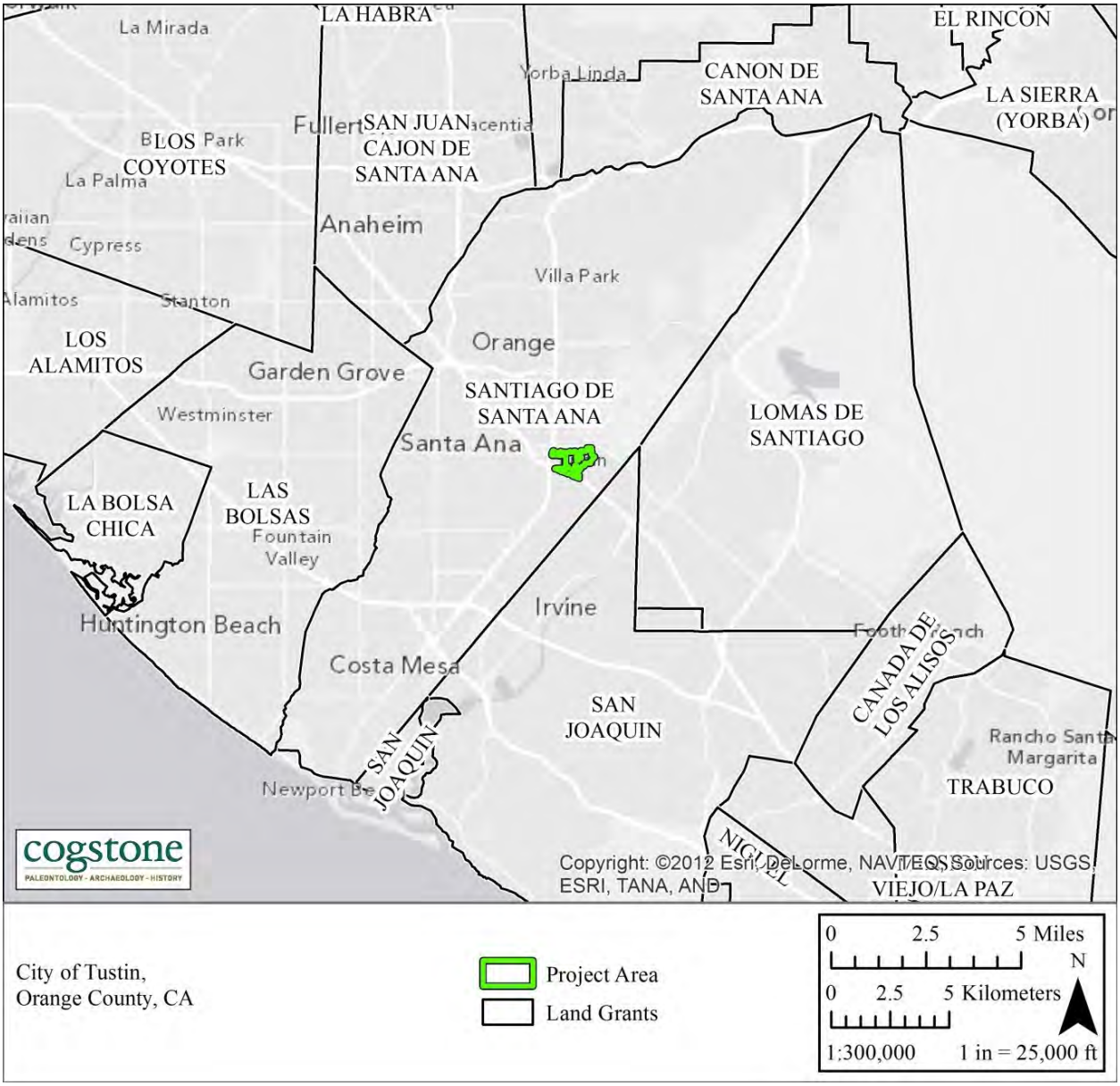
INTRODUCTION

PURPOSE OF STUDY

This study was conducted to provide available information on cultural resources within the Tustin Downtown Commercial Core in the City of Tustin to support a Specific Plan consisting of six Development Areas. The Project Area (PA) consists of 220 acres in the City of Tustin, Orange County, California (Figure 1).

Figure 1. Project Vicinity Map

Figure 2. Project Location Map



PROJECT DESCRIPTION

The Tustin Downtown Commercial Core Specific Plan (DCCSP) establishes the long-term vision and objectives for land use development and public improvements within Tustin's downtown. The DCCSP would establish a comprehensive plan for the area that will include a mix of land uses including residential and commercial that will capitalize on the area's current land use, transportation, and infrastructure opportunities. The DCCSP area is approximately 220 acres and divided into 6 Development Areas (DAs). The DCCSP would provide the potential for approximately 887 new residential units (primarily integrated mixed use) within five of the DAs, with one remaining exclusively for commercial uses (DA5).

DEVELOPMENT AREAS

The DCCSP establishes six development areas designed to accommodate categories of uses with specialized development standards. Each development area identifies complementary activities and building forms in support of a cohesive character and recognizable identity.

Development Areas 1 and 2: DA's 1 and 2 consist of the northwestern portion of the Planning Area and include the First Street roadway corridor. The boundaries of DA-1 stretch along First Street from the 55 Freeway to C Street and DA-2 extends along First Street from C Street to Centennial Way. DA's 1 and 2 provide an entrance into Old Town, fostering a smooth transition with DA-4. The DCCSP vision for DA-1 and DA-2 is to provide an eclectic mix of retail, services, offices, restaurants, medical services, and hospitality. Auto services are prohibited in DA-1 but allowed in DA-2.

Residential mixed use approved through a discretionary permit are allowed in a vertical format on upper floors of two and three-story buildings, with commercial use provided on the ground floor. Because most parcels within the western portion of First Street are small, the Specific Plan establishes a maximum building or tenant size of 10,000 square feet in DA-1 to encourage pedestrian orientation.

The proposed Specific Plan also includes a more pedestrian street transformation with improvements planned to First Street that would reduce the number of traffic lanes and lane widths, add street parking, a bike lane, and expanded pedestrian sidewalk, detailed in the Circulation Section below.

Development Area 3: DA-3 is located along the eastern portion of First Street approximately between Centennial Way to Newport Avenue. DA-3 includes large parcels, which could be used for mixed-use, shopping emphasis, gathering, and entertainment uses. The urban design vision for DA-3 adjacent to Newport Avenue includes commercial buildings with active ground floor uses or mixed use buildings with commercial uses on the ground floor with residential uses above. Vertical and/or horizontal residential mixed use is allowed up to four stories high.

Development Area 4: DA-4 consists of Old Town, located between B Street on the west extending east of Prospect Avenue, from south of the First Street frontage to Sixth Street. Old

Town formed the heart of founder Columbus Tustin's original city. Many historic buildings remain, concentrated primarily at the intersection of Main Street and El Camino Real. DA-4 is part of the Cultural Resources District and properties within this district, as well as identified historic resources in other parts of the City, are subject to the Cultural Resources District Commercial Design Guidelines and Residential Design Guidelines. DA-4 contains vacant parcels that provide opportunity for revitalization with expanded range of businesses in new commercial and mixed use development, with a maximum height of three stories. DA-4 allows new development consistent with the historic pedestrian-oriented pattern of the Old Town area to encourage and provide extended walkability. As with DA-1, the Specific Plan establishes a maximum building or tenant size of 10,000 square feet in DA-4 to encourage pedestrian orientation.

The proposed Specific Plan includes improvements to Main Street (spanning DA-4 and DA-5) that involve: reducing the number of traffic lanes and lane widths, adding parking, a bike lane, an expanded pedestrian sidewalk, and installing an entry arch spanning the street. The vision also includes creating parklets on El Camino Real to encourage gathering.

Development Area 5: DA-5 includes clusters of large parcels along the east and west side of Newport Avenue from First Street to El Camino Real. DA-5 also includes Main Street from Newport Avenue to east of Prospect Avenue. The proposed Specific Plan also includes improvements to Main Street (spanning DA-4 and DA-5) that involve: reducing the number of traffic lanes and lane widths, adding parking, a bike lane, an expanded pedestrian sidewalk, and installing an entry arch spanning the street. A maximum building height of four stories is proposed. The Specific Plan vision for DA-5 is to provide enhanced pedestrian amenities such as outdoor dining, gathering areas, and walkways while maintaining its commercial focus. In addition, a small parklet would be provided at the northern entrance to Tustin Plaza.

Development Area 6A: DA-6A encompasses the blocks on the south side of Sixth Street from I-5 to B Street. This DA includes an approved 140-unit residential development, called Vintage, a self-storage facility, the Tustin Boys and Girls Club, and a small church building. The urban design within this DA is to be sensitive to the existing single-family residences on the north side of Sixth Street within the Cultural Resources District by implementing historic architectural styles, articulated building mass, designing buildings adjacent to Sixth Street to two stories adjacent to public streets, and allowing up to four stories maximum for interior parcels away from the street, as well as adjacent to the I-5 freeway. The vision for this DA is to transition to entirely residential development.

Development Area 6B: The boundaries of DA-6B include B Street on the west, Sixth Street on the north, both frontages of El Camino Real, I-5 on the south, and Newport Avenue on the southeast. This DA provides an entrance into Old Town, fostering a smooth transition with DA-4. DA-6B is intended to serve as a mixed-use residential, shopping, gathering, and entertainment destination.

The urban design vision for DA-6B includes active ground floor buildings up to four stories high adjacent to Newport Avenue and El Camino Real and up to three stories on Sixth Street; and higher density near freeway and interior parcels (up to five stories) In addition, development of

the parcels clustered on the west side of El Camino Real would emphasis providing large public gathering area(s). Open space within the mixed-use development on the west side of El Camino Real would be provided by private open space (e.g. balconies) and common open space, such as roof-top gardens and courtyard areas.

Development Area 6C: DA-6C is bordered on the northeast by El Camino Real, on the northwest by Newport Avenue, and on the south by I-5. This DA is envisioned for mixed use (likely horizontal, with commercial clustered in the northwestern portion of the DA to keep the commercial focus along Newport Avenue and residential in the remainder. Buildings along Newport Avenue and immediately adjacent to El Camino Real would be four stories or less, and up to five story buildings would be allowed adjacent to I-5.

PROJECT PERSONNEL

Cogstone Resource Management Inc. performed the studies reported here. Sherri Gust served as Principal Investigator for the project. In addition she wrote the regulatory environment, prehistoric and historic setting, impact analysis and mitigation. Gust is a Qualified Principal Paleontologist and Registered Professional Archaeologist with a M.S. in Anatomy (Evolutionary Morphology) from the University of Southern California, a B.S. in Anthropology from the University of California at Davis, and over 35 years of experience in California.

Holly Duke prepared the report tables and other sections of the report. She has a B.A. in Archaeology and History from Simon Fraser University (Canada) and has four and a half years of experience in the archaeology of southern California.

André Simmons prepared the GIS report maps. Simmons has a M.A. in Anthropology from California State University, Fullerton, cross-training in paleontology, and five years of GIS experience. Further qualifications of key Cogstone staff are available online at www.cogstone.com.

REGULATORY ENVIRONMENT

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA states that: It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed project and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

CEQA declares that it is state policy to: "take all action necessary to provide the people of this

state with...historic environmental qualities." It further states that public or private projects financed or approved by the state are subject to environmental review by the state. All such projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed project. In the event that a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered.

TRIBAL CULTURAL RESOURCES

As of 2015, CEQA established that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (Pub. Resources Code, § 21084.2). In order to be considered a "tribal cultural resource," a resource must be either:

(1) listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or

(2) a resource that the lead agency chooses, in its discretion, to treat as a tribal cultural resource.

To help determine whether a project may have such an effect, the lead agency must consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. If a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact. Public Resources Code §20184.3 (b)(2) provides examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources.

PUBLIC RESOURCES CODE

Section 5097.5: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands (lands under state, county, city, district or public authority jurisdiction, or the jurisdiction of a public corporation), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The California Register of Historical Resources (CRHR) is a listing of all properties considered to be significant historical resources in the state. The California Register includes all properties listed or determined eligible for listing on the National Register, including properties evaluated under Section 106, and State Historical Landmarks number No. 770 and above. The California Register statute specifically provides that historical resources listed, determined eligible for listing on the California Register by the State Historical Resources Commission, or resources that meet the California Register criteria are resources which must be given consideration under CEQA (see above). Other resources, such as resources listed on local registers of historic registers or in local surveys, may be listed if they are determined by the State Historic Resources Commission to be significant in accordance with criteria and procedures to be adopted by the Commission and are nominated; their listing in the California Register, is not automatic.

Resources eligible for listing include buildings, sites, structures, objects, or historic districts that retain historical integrity and are historically significant at the local, state or national level under one or more of the following four criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2) It is associated with the lives of persons important to local, California, or national history;
3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance.

Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

NATIVE AMERICAN HUMAN REMAINS

Sites that may contain human remains important to Native Americans must be identified and treated in a sensitive manner, consistent with state law (i.e., Health and Safety Code §7050.5 and Public Resources Code §5097.98), as reviewed below:

> In the event that human remains are encountered during project development and in accordance with the Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods.

CALIFORNIA ADMINISTRATIVE CODE, TITLE 14, SECTION 4307

This section states that “No person shall remove, injure, deface or destroy any object of paleontological, archeological or historical interest or value.”

BACKGROUND

PALEONTOLOGICAL SETTING

All of Orange County consists of Miocene (22-5 million year old) marine sediments overlain by a relatively thin veneer of Pleistocene (2.4 million to 11 thousand year old) sediments and recent (11 thousand year old to present) alluvial sediments. Downtown Tustin is a flat plain across which streams flowed to the ocean depositing alluvium. Due to the flat nature and the lack of high rise development, most past excavations have not been deep enough to impact fossils. Just east of the City of Tustin, Pleistocene fossils were recovered eight feet below the surface. Development that does not extend deeper than six feet has limited potential to impact fossils.

PREHISTORIC CULTURAL SETTING

Review of archaeological data has resulted in a revised synthesis of cultural change as evidenced by material culture and archaeologically visible cultural practices. A large part of what was previously referred to as the Millingstone Period is now called the Topanga pattern of the Encinitas Tradition (Sutton and Gardner 2010; Table 1). This pattern is replaced in the Project Area by the Angeles pattern of the Del Rey Tradition later in time (Sutton 2010; Table 1).

Topanga Pattern groups were relatively small and highly mobile. Sites tend to be along the coast in wetlands, bays, coastal plains, near-coastal valleys, marine terraces and mountains. The Topanga toolkit is dominated by manos and metates with projectile points scarce (Sutton and Gardner 2010:9).

In Topanga Phase I other typical characteristics were a few mortars and pestles, abundant core tools (scraper planes, choppers and hammerstones), relatively few large, leaf-shaped projectile points, cogged stones, and early discoidals (Table 2). Secondary inhumation under cairns was the common mortuary practice. In Orange County as many as 600 flexed burials were present at one site and dated 6, 435 calibrated radiocarbon years before present. [Sutton and Gardner 2010:9, 13]

In Topanga Phase II, flexed burials and secondary burial under cairns continued. Adoption of the mortar and pestle is a marker of this phase. Other typical artifacts include manos, mutates, scrapers, core tools, discoidals, charmstones, cogged stones and an increase in the number of projectile points. In Orange County stabilization of sea level during this time period resulted in increased use of estuary, near shore and local terrestrial food sources. [Sutton and Gardner 2010:14-16]

The Angeles pattern generally is restricted to the mainland and appears to have been less technologically conservative and more ecologically diverse, with a largely terrestrial focus and greater emphases on hunting and nearshore fishing. In Angeles Phase I Elko points for atlatls or

Table 1. Culture Change Chronology

Mason & Peterson 2014 Time Periods	Pattern	Phase	Dates (BP)	Material Traits	Other Traits
Millingstone 1	Encinitas	Topanga I	8,500 to 5,000	Abundant manos and metates, many core tools and scraper s, few but large points, charmstones, cogged stones, early discoidals, bone gorge fishhooks, faunal remains rare; Olivella spire/end lopped beads appear	Estuary/lagoon shellfish and sharks/rays common, hunting important, secondary burials under metate cairns (some with long bones only), some extended inhumations, no cremations
Millingstone 2		Topanga II	5,000 to 3,500	Abundant but decreasing manos and metates, adoption of mortars and pestles, smaller points, cogged stones, late discoidals, fewer scraper planes and core tools, some stone balls and charmstones; inhumations common; Olivella Grooved Rectangular beads introduced	Estuary/lagoon shellfish and sharks/rays common,, addition of acorns, reburial of long bones only, addition of flexed inhumations (some beneath metate cairns), cremations rare
Millingstone 3	Angeles	Angeles I	3,500 to 2,600	Appearance of Elko dart points and an increase in the overall number of projectile points from Encinitas components; beginning of large-scale trade in small steatite artifacts (effigies, pipes, and beads) and *Olivella* shell beads; appearance of single-piece shell fishhooks and bone harpoon points; Coso obsidian becomes important; appearance of donut stones; appearance of Mytilus beads	apparent population increase; fewer and larger sites along the coast; collector strategy; less overall dependence on shellfish but fishing and terrestrial hunting more important; appearance of flexed and extended inhumations without cairns, cremations uncommon
Intermediate		Angeles II	2,600 to 1,600	Continuation of basic Angeles I material culture with the addition of mortuary features containing broken tools and fragmented cremated human bone; fishhooks become more common	Shellfish change to mudflat species, more emphasis on fish, birds and mammals, continuation of basic Angeles I settlement and subsistence systems; appearance of a new funerary complex

Mason & Peterson 2014 Time Periods	Pattern	Phase	Dates (BP)	Material Traits	Other Traits
		Angeles III	1,600 to 1,250	Appearance of bow and arrow technology (e.g., Marymount or Rose Spring points); changes in *Olivella* beads; asphaltum becomes important; reduction in obsidian use; Obsidian Butte obsidian largely replaces Coso	larger seasonal villages; flexed primary inhumations but no extended inhumations and an increase in cremations; appearance of obsidian grave goods
Late Prehistoric		Angeles IV	1,250 to 800	Cottonwood points appear; some imported pottery appears; birdstone effigies at the beginning of the phase and "spike" effigies dropped by the end of the phase; possible appearance of ceramic pipes, *Mytilus* shell disks	change in settlement pattern to fewer but larger permanent villages; flexed primary inhumations continue, cremations uncommon
		Angeles V	800 to 450	Trade of steatite artifacts from the southern Channel Islands becomes more intensive and extensive, with the addition or increase in more and larger artifacts, such as vessels and comals; larger and more elaborate effigies; portable mortars and pestles	strengthening of ties, especially trade, with southern Channel Islands; expansion into the northern Santa Ana Mountains and San Joaquin Hills
		Angeles VI	450 to 150	Addition of Euroamerican material culture (e.g., glass beads and metal tools), locally made pottery, metal needle-drilled *Olivella* beads	change of settlement pattern, movement close to missions and ranches; use of domesticated species obtained from Euroamericans; flexed primary inhumations continue; apparent adoption of Chingichngish religion

darts appear, small steatite objects such as pipes and effigies are found, shell beads and ornaments increase, fishing technologies increase including bone harpoons/fishhooks and shell fishhooks, donut stones appear, and hafted micro blades for cutting/graving wood or stone appear. In addition, several Encinitas traits, such as discoidals, cogged stones, plummet-like charm stones and cairn burials virtually disappear from the record. Mortuary practices changed to consist of primarily flexed primary inhumations, with extended inhumations becoming less common. Settlement patterns made a shift from general use sites being common to habitation areas separate from functional work areas. Subsistence shifted from mostly collecting to increased hunting and fishing (Sutton 2010).

The Angeles Phase II is identified primarily by the appearance of a new funerary complex, with other characteristics similar to Angeles I. The complex features killed (broken) artifacts plus highly fragmented cremated human bones and a variety of faunal remains (Sutton 2010).

The Angeles III Phase is the beginning of what has been known as the Late Period and is marked by several changes from Angeles I and II. These include the appearance of small projectile points, steatite shaft straighteners and increased use of asphaltum all reflecting adoption of bow and arrow technology, obsidian sources changed from mostly Coso to Obsidian Butte and shell beads from Gulf of California species began to appear. Subsistence practices continued as before and the geographic extent of the Angeles Pattern increased (Sutton 2010).

Angeles Phase IV is marked by new material items including Cottonwood points for arrows, *Olivella* cupped beads and *Mytilus* shell disks, birdstones (zoomorphic effigies with magico-religious properties) and trade items from the Southwest including pottery. It appears that populations increased and that there was a change in the settlement pattern to fewer but larger permanent villages. Presence and utility of steatite vessels may have impeded the diffusion of pottery into the Los Angeles Basin. The settlement pattern altered to one of fewer and larger permanent villages. Smaller special-purpose sites continued to be used (Sutton 2010).

Angeles V components contain more and larger steatite artifacts, including larger vessels, more elaborate effigies and comals. Settlement locations shifted from woodland to open grasslands. The exploitation of marine resources seems to have declined and use of small seeds increased. Inhumations contained grave goods while cremations did not. [Sutton 2010]

The Angeles VI phase reflects the post-contact (i.e., post-A.D. 1542) period. One of the first changes after contact was undoubtedly population loss due to disease, coupled with resulting social and political disruption. Angeles VI material culture is essentially Angeles V augmented by a number of Euroamerican tools and materials, including glass beads and metal tools such as knives and needles (used in bead manufacture). The frequency of Euroamerican material culture increased through time until it constituted the vast majority of materials used. Locally produced brownware pottery appears along with metal needle-drilled *Olivella* disk beads. [Sutton 2010]

The subsistence system was based primarily on terrestrial hunting and gathering, although nearshore fish and shellfish played important roles. Sea mammals, especially whales (likely from beached carcasses), were prized. In addition, a number of European plant and animal domesticates were obtained and exploited. [Sutton 2010]

ETHNOGRAPHY

In ethnographic times the city of Tustin and much of the area surrounding the city was populated by the Tongva, later known as the Gabrielino (derived from association with the San Gabriel Mission). The Tongva speak a language that is part of the Takic branch of the Uto-Aztecan language family.

Their territory encompassed a vast area stretching from Topanga Canyon in the northwest, to the base of Mount Wilson in the north, to San Bernardino in the east, Aliso Creek in the southeast and the Southern Channel Islands (Bean and Smith 1978, McCawley 1996). At European contact, the tribe consisted of more than 5,000 people living in between 50 and 100 settlements throughout the area (McCawley 1996). Some of the villages were considered quite large, with up to 150 people.

The Tongva are considered to have been one of the wealthiest and most populous tribes, second only to the Chumash who occupied territories to the north (Kroeber 1976:621; Moratto 2004). Catalina Island provided valuable deposits of steatite that was used in trade with other tribes, both as raw material and finished vessels and ornaments (Moratto 2004). Many common everyday items were decorated with inlaid shell or carvings reflecting an elaborately developed artisanship (Bean and Smith 1978:542). Houses were domed, circular structures thatched with tule or similar materials (Bean and Smith 1978:542).

The Tongva utilized a hunting and gathering economy (Bean and Smith 1978) and plant foods were, by far, the greatest part of the traditional diet during ethnohistoric times. Acorns were an important food source harvested in the many of the areas and villages were located near the water sources necessary for the leaching of acorns. Grass seeds were also utilized abundantly along with chia. Seeds were parched, ground, and cooked as mush in various combinations according to taste and availability. Prickly pear cactus in the coastal sage-scrub regions was a special treat (McCawley 1996. Greens and fruits were eaten raw or cooked or sometimes dried for storage. Bulbs, roots, and tubers were dug in the spring and summer and usually eaten fresh. Various teas were made from flowers, fruits, stems, and roots for medicinal cures as well as beverages (Bean and Smith 1978:538-540).

The principal game animals were deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, antelope, quail, dove, ducks, and other birds. Most predators were avoided as food, as were tree squirrels and most reptiles. Trout and other fish were caught in the streams, while salmon were available when they ran in the larger creeks. Marine foods were extensively utilized. Sea mammals, fish, and crustaceans were hunted and gathered from both the shoreline and the open

ocean, using reed and dugout canoes. Shellfish were the most common resource, including abalone, turbans, mussels, clams, scallops, bubble shells, and others (Bean and Smith 1978:538-540).

HISTORIC SETTING

SPANISH AND MEXICAN ERA

A Spanish expedition led by Father Junipero Serra named the area surrounding the city of Tustin Vallejo de Santa Ana (The Valley of Saint Anne). Mission San Juan Capistrano opened on November 1, 1776 and became the area's first permanent European settlement in Alta California. In 1821 Mexico won its independence from Spain. The Secularization Act was passed in 1833 and the vast lands of the Mission were distributed by the government to retiring soldiers and other government servants (Bean and Rawls 1993; Robinson 1948).

The present day city of Tustin lies primarily within the boundaries of the Rancho San Antonio land grant, which totaled 62,500 acres and was given to Jose Antonio Yorba in 1801. Eventually smaller ranchos evolved from Rancho San Antonio including the Rancho Santiago de Santa Ana (Figure 3). This rancho was a 63,414 acre Spanish Land concession given to Jose Antonio Yorba and his nephew Pablo Peralta by the Spanish Alta California Governor José Joaquín de Arrillaga on behalf of the Spanish government in 1810. This land grant was the only one given under Spanish Rule in present-day Orange County.

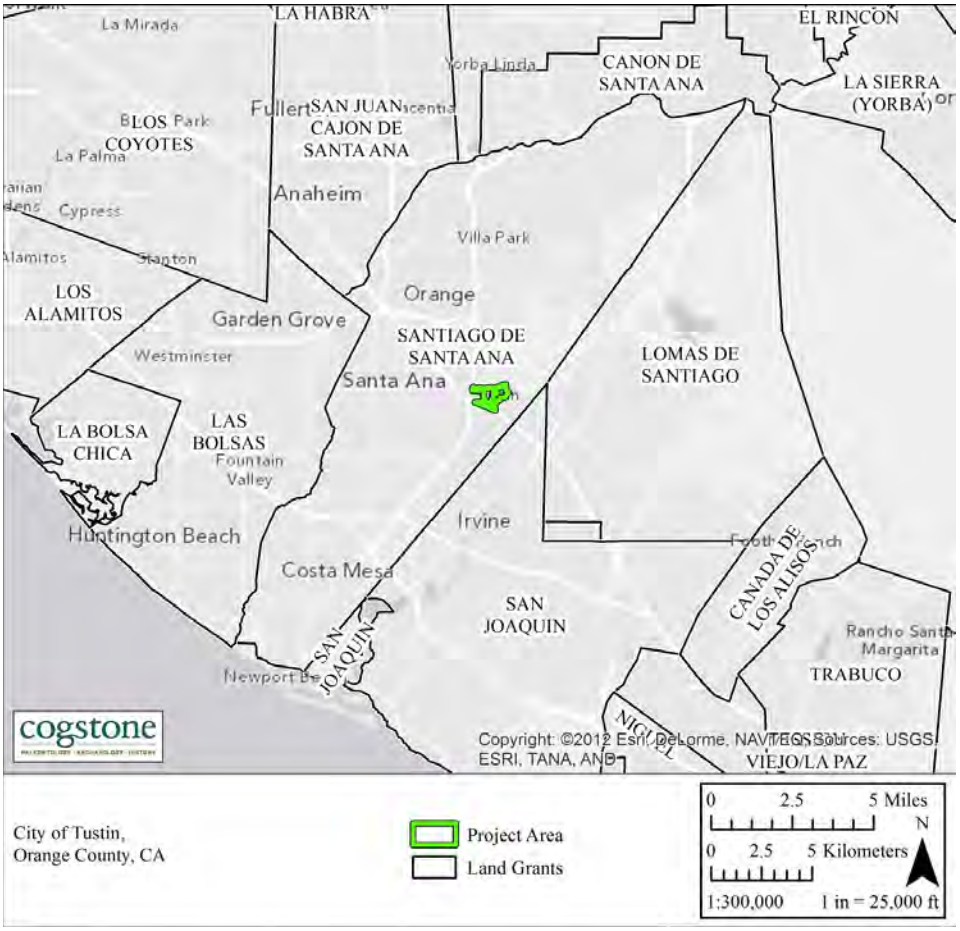
EARLY AMERICAN ERA

After the United States took possession of California in 1848 following the Mexican-American War, the Treaty of Guadalupe Hidalgo ensured that the land grants would be honored. In 1852 a claim for the Rancho Santiago de Santa Ana was filed with the Public Land Commission, which was patented to Bernardo, Teodoro, and Ramón Yorba in 1883.

In the 1870's Columbus Tustin, a northern California carriage maker, and his partner, Nelson Stafford, purchased 1,300 acres of what had been the Rancho Santiago de Santa Ana for of one dollar and fifty cents per acre. Tustin then attempted to create "Tustin City," but the sales of home sites were slow. By the early 1870s, Tustin ended up giving free lots to anyone who would build a home (Tustin Area Historical Society).

In 1877, Tustin lost out to Santa Ana as the Southern terminus of the Southern Pacific Railroad. Despite Columbus Tustin's death in 1883, the community named after him gradually became established as an agricultural center due to a dependable water supply. By the 1880s Tustin had grown to have three churches, a hotel, a bank, and a horse drawn "tallyho" (trolley line) which connected Tustin to Santa Ana. In the 1890s, agriculture continued to develop, with groves of

Figure 3. Land Grant Map



apricots and walnuts being replaced with the more profitable Valencia oranges around the turn of the century (Tustin Area Historical Society).

20TH CENTURY ERA

New technologies came to Tustin early in the century. Within the first ten years, telephones were installed and electricity was introduced. Later, automobiles became popular and California State Highway 101 through town was paved (current day El Camino Real and First Street were part of California State Highway 101).

Population gradually increased and the first Tustin High School was constructed in 1922. A few years later, Tustin became an incorporated city. The 1920's ushered in a new period of growth. Tustin built its own high school in 1922. This lead to establishment of a city police department and a fire department.

The local area hosted three military facilities during World War II; these were the Navy Lighter than Air Base (blimps), the Santa Ana Army Air Base and the El Toro Marine Corps Air Station. Only DA1 had lost all of its groves by this time (Figure 4). Postwar population surged due to freeways, quality schools, and post-war industries. Over time, more and more agricultural lands were sold for land development. By the early 1960s, only DAs 3 and 5 retained any groves (Figure 5). The city core was diverse with housing, retail and some industrial uses. Orange County as a whole had a huge population surge in the 1970s concurrent with development of the airport and other community facilities. In Tustin, population jumped to 32,000 and the last of the groves were developed (Figure 6).

Figure 4. Tustin Downtown in 1946

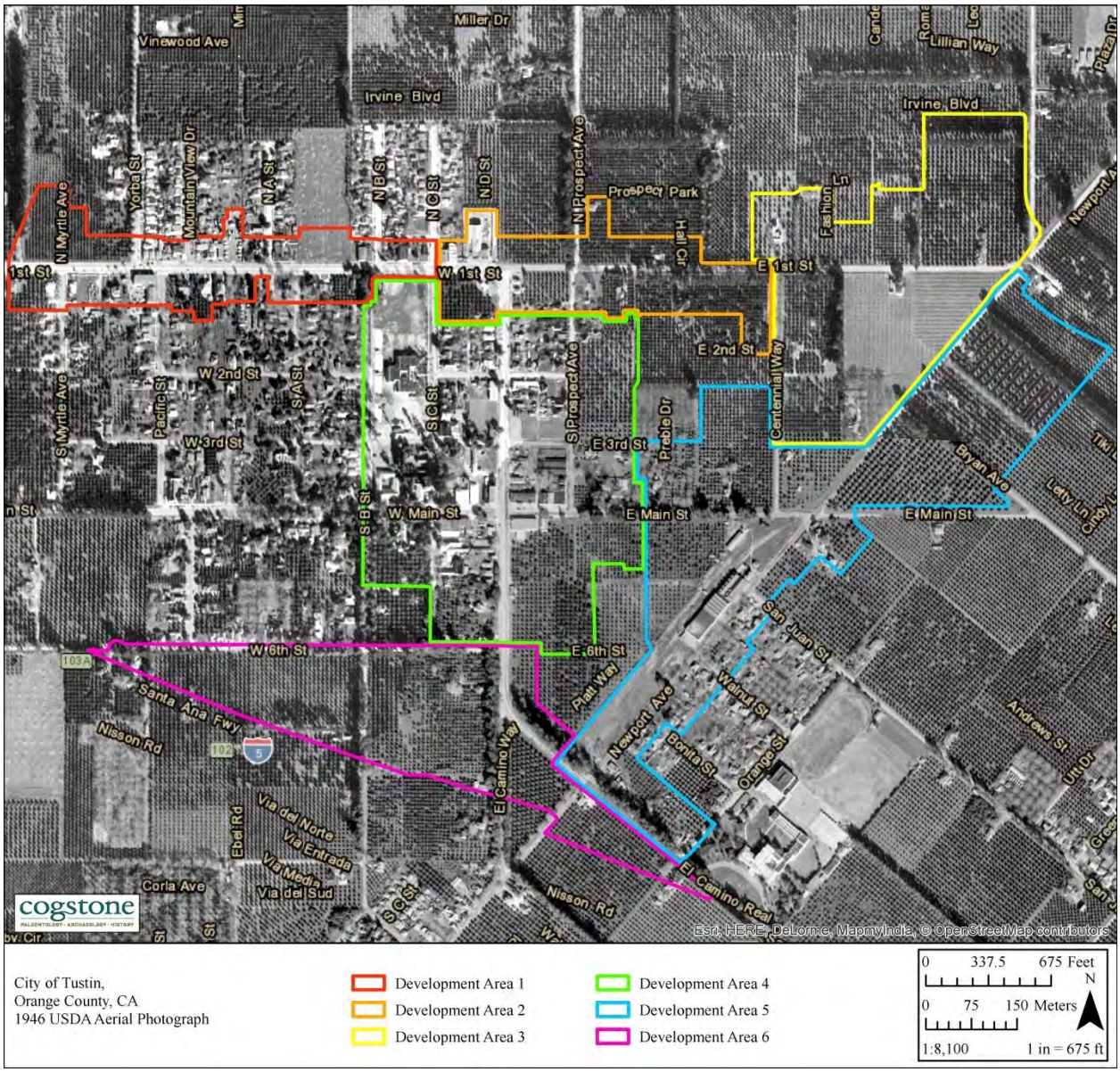


Figure 5. Tustin Downtown in 1963

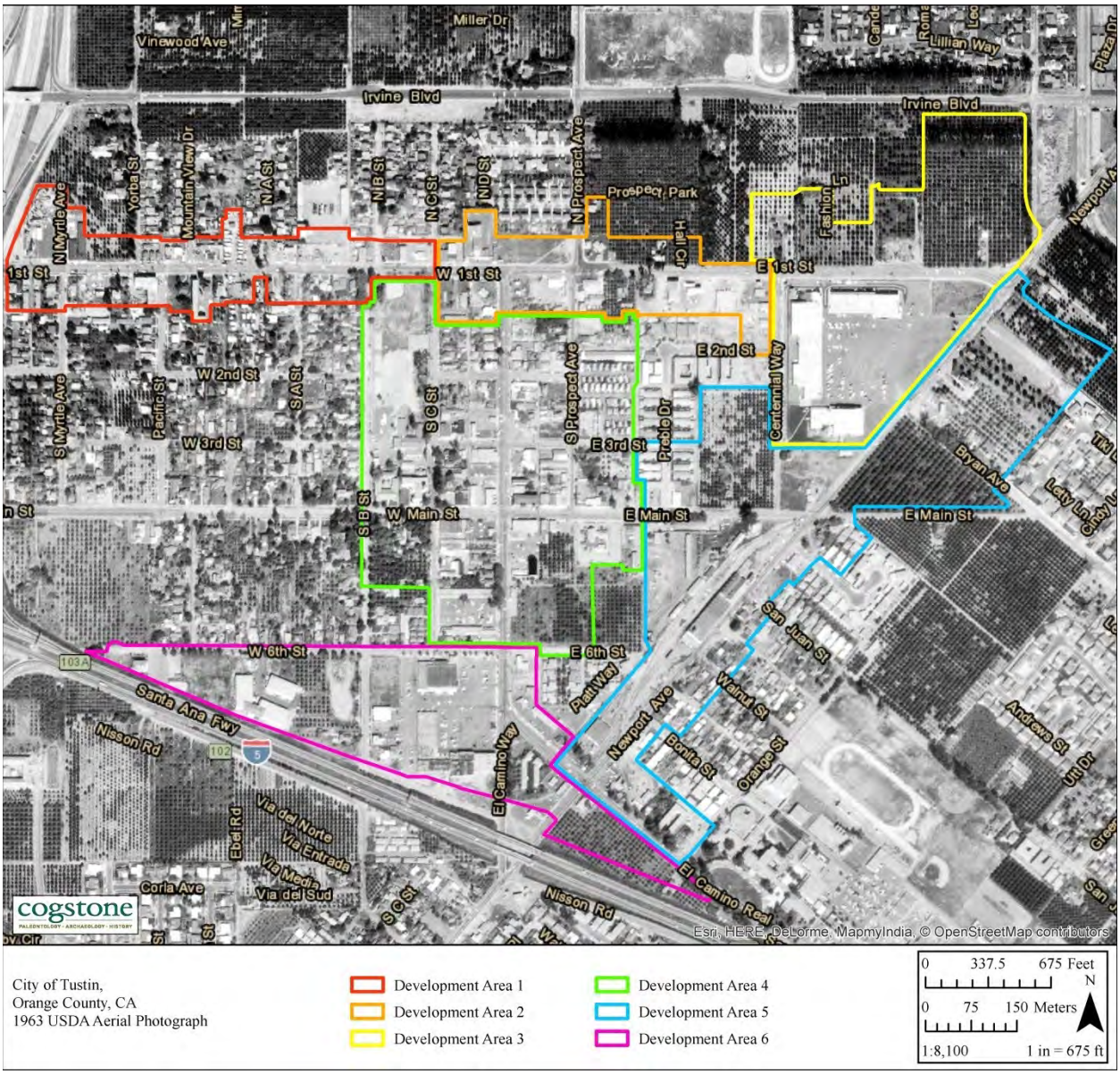
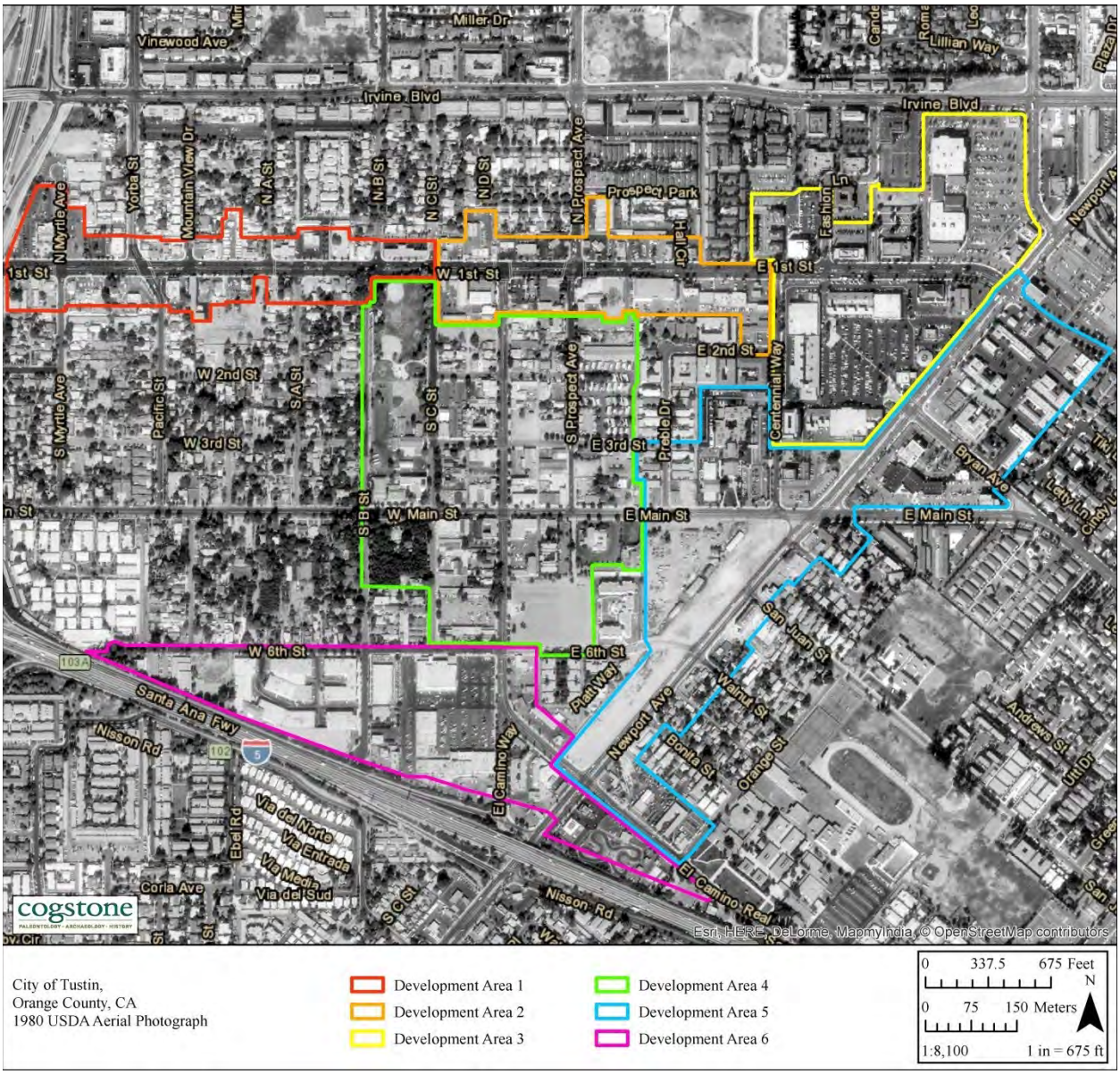


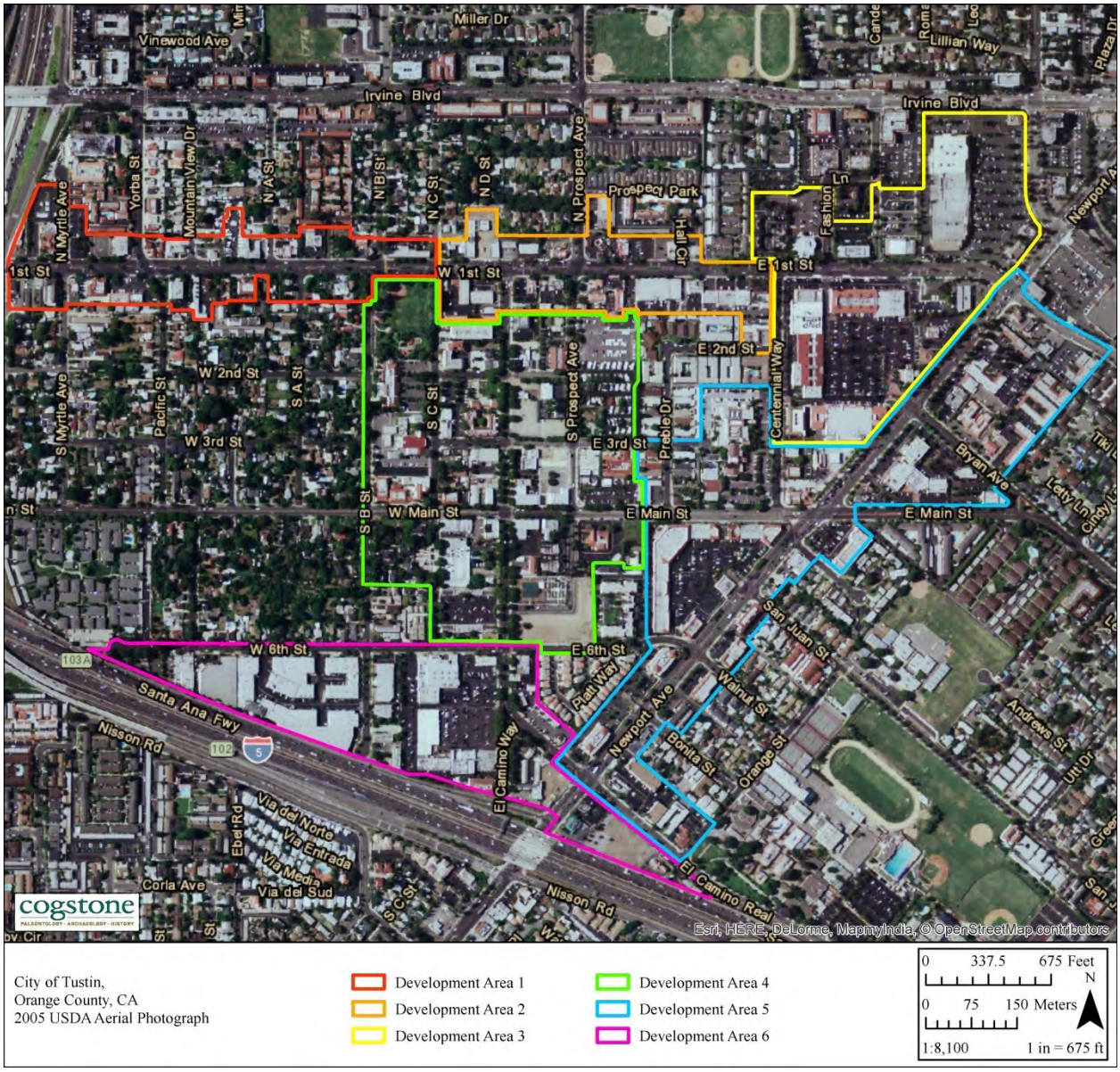
Figure 6. Tustin Downtown in 1980



21ST CENTURY ERA

In the current century the city has continued to develop with its expanded boundaries. The downtown area was built out by the 1990s and new development has occurred through reuse of well-maintained historic buildings or replacement by new buildings (Figure 7).

Figure 7. Tustin Downtown in 2005



KNOWN CULTURAL RESOURCES

RECORDS SEARCHES

PALEONTOLOGICAL RESOURCES

A record search for paleontological resources was requested from the John D. Cooper Center. No fossils are known within the City limits.

CULTURAL RESOURCES

A search for archaeological and historical records within the City was completed by Megan Wilson of Cogstone on January 26, 2017 at the South Central Coast Information Center (SCCIC), California State University at Fullerton. Other sources consulted include the National Register of Historic Places, California Register of Historical Resources, California Inventory of Historic Resources, California Historical Landmarks, and California Points of Historical Interest.

A total of six cultural studies have been performed within the PA and an additional 35 previous cultural studies have been performed within the City boundaries (Appendix A). There are no prehistoric cultural resources known with the PA. Four prehistoric sites are known within a radius of one quarter-mile to one mile (Table 2). These sites are located to the southeast.

Table 2. Recorded Prehistoric Cultural Resources

Primary No. (P-30-000)	Description	Distance from PA (miles)
300	Shell midden with one chalcedony triangular point base, chert, quartz core, basalt flake, one piece of obsidian, one steatite bowl, an incised stone, and pestles. Five burials were present with one additional burial reported nearby.	1
301	Metate and Pestle found at six feet below surface during trenching.	0.25
352	Stone bowl and two pestles found during trenching.	0.50
353	Large stone bowl (stolen), granite pestle, well-used scraper, and pestle fragments.	1

The status of historic buildings in the City is not well reported. Only two of Tustin's historic buildings have complete formal historic resource records and are listed on the California Register of Historical Resources and the National Register of Historic Places (Table 3). These are the Artz Building and the Sherman Stevens House.

Table 3. Recorded Historic Resources

Primary No. (P-30-)	Description
160206	Stevens Mansion, 228 West Main Street, Tustin, CA
162095	Artz Building, 150-158 West Main Street, Tustin, CA
162471	Tustin Old Town Resources District - generally bounded by First Street in the north, Sixth Street in the south, the 55 Freeway to the west and Prospect Avenue to the east

As an alternative source of data we utilized Assessor's Parcel Number listings within the PA to develop a list for the PA. We also obtained information from previous documents (TBA West 2003, MIG 2016) and the City Planning Department. When dates of construction were not readily available, we performed research using historic aerials to determine the approximate date of construction. Maps of the parcels in each DA are provided for reference (Appendix B). The historic age property list has 274 entries (Appendix C); however, some properties, particularly shopping centers, have multiple addresses per parcel and some parcels have parking lots. A summary of the properties show that most have commercial uses (Table 4).

Table 4. Build-Environment Properties within PA

Property Use	Parcel Count
Commercial	197
Residential	28
Residential - Mobile Home Park	2
Community - Educational	4
Community - Green Space	2
Community - Park	2
Community - Religious	3
Transportation - Alley	1
Transportation - Parking Lot	21
Transportation - Street Access	2
Transportation - Utility	1
Vacant Lot	11
Grand Total	**274**

Limiting the analysis to buildings only reveals that there are 236 within the DAs (Table 5). Some of these were originally residences that have been converted. The types of buildings by decade are presented for each DA on the next page.

Table 5. Buildings within the Development Areas

Decade	Count
1880	4
1890	1
1900	2
1910	17
1920	14
1930	9
1940	4
1950	28
1960	54
1970	46
1980	35
1990	6
2000	16
Total	**236**

DA1

Type	1910	1920	1930	1940	1950	1960	1970	1980	1990	Total
Commercial	3	2	3		3	5	5	8	1	30
Residential	1	4	1		3	1				10
Residential - Mobile Homes				1						1
Total	**4**	**6**	**4**	**1**	**6**	**6**	**5**	**8**	**1**	**41**

DA2

Type	1920	1930	1940	1950	1960	1970	1980	1990	Total
Commercial		2		3	17	6	2	1	31
Residential	1		1	1					3
Total	**1**	**2**	**1**	**4**	**17**	**6**	**2**	**1**	**34**

DA3

Type	1960	1970	Total
Commercial	3	15	18
Total	**3**	**15**	**18**

DA4

Type	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	2000	Total
Commercial	3	1		10	6	1	1	6	6	5	12	14	65
Community - Educational								1					1
Community - Religious					1								1
Residential	1		2	2		2		3	2		2		14
Residential - Mobile Homes									1				1
Total	**4**	**1**	**2**	**12**	**7**	**3**	**1**	**10**	**9**	**5**	**14**	**14**	**82**

DA5

Type	1950	1960	1970	1980	1990	2000	Total
Commercial	3	9	11	10	3		36
Community - Educational		1				1	2
Total	**3**	**10**	**11**	**10**	**3**	**1**	**38**

DA6

Type	1940	1950	1960	1970	1980	1990	2000	Total
Commercial	1	2	9	3	1		1	17
Community - Educational						1		1
Community - Religious		1		1				2
Residential		1						1
Total	**1**	**4**	**9**	**4**	**1**	**1**	**1**	**21**

OTHER SOURCES

A variety of additional historical sources and listings were consulted by Holly Duke on March 30, 2017 to obtain information regarding the PA (Table 6). Sources include the NRHP, the CRHR, California Historical Landmarks (CHL) and California Points of Historical Interest (CPHI). The City of Tustin also maintains a Historic Resources Inventory Database (HRID). A review of the HRID revealed that 44 of the 150 historic buildings are listed on the HRID.

The Historic United State Geological Survey Topographic Maps website was accessed on March 30, 2017 in order to assess historic topographic maps. The historic topographic maps for the PA were positive for buildings as old as the first available topo map in 1896. Since other sources consulted have provided more information about these buildings, no new information was present.

Table 6. Additional Sources Consulted

Source	Results
National Register of Historic Places (NRHP; 1979-2002 & supplements)	Positive
Historic United States Department of Agriculture Aerial Photographs	Negative
California Register of Historical Resources (CRHR; 1992-2010)	Positive
California Historical Landmarks (CHL; 1995 & supplements to 2010)	Negative
California Points of Historical Interest (CPHI; 1992 to 2010)	Negative
Local Historical Register Listings	Positive
Historic United States Geological Survey Topographic Maps	Positive
Bureau of Land Management General Land Office Records	Positive

A search of the Bureau of Land Management General Land Office Records (BLM GLO) land patents revealed that there were three patents issued for the land within the PA (Table 7). The first patent granted in the area was to José Sepulveda in 1867. Sepulveda was originally granted the Rancho Cienega de las Ranas by the Mexican Alta California Governor Juan Bautista Alverado in 1837. Rancho La Bolsa de San Joaquín was granted to Sepulveda in 1842 and the combined land formed the Rancho San Joaquín. As required by the Land Act of 1851 following the Mexican-American War, a claim for Rancho San Joaquin was filed with the Public Land Commission in 1852, and the grant was patented to José Sepulveda in 1867. The second land grant patent was given to the United States in 1871. The third land grant was patented to Bernardo Yorba and his sons in 1883. Also named on the patent are Juan Pablo Peralta and Antonio Yorba, who were initially granted the land in 1810 by the Governor José Joaquín de Arrillaga on behalf of the Mexican Government.

Table 7. Land Grant Patents within the PA

Name	Patent Number	Date
Juan Pablo Peralta, Antonio Yorba, Bernardo Yorba, and the heirs of Bernardo Yorba	CACAAA089587	12/21/1883
José Sepulveda	CACAAA084682	9/19/1867
USA	CACAAA006218	11/24/1871

NATIVE AMERICAN CONSULTATION

The City requested a sacred lands record search from the Native American Heritage Commission on February 2, 2017. The Commission responded that there were no known sacred lands within a half mile of the PA boundaries. The City conducted tribal consultation under AB 52 and SB 18 and the results are reported in the environmental document.

HISTORIC RESOURCES CONSULTATION

On March 23, 2017 Cogstone Archaeologist Holly Duke visited the Tustin Area Historical Society. The historical society had a copy of the 2003 City of Tustin Historic Resources Survey Report as well as the 1990 City of Tustin Historical Survey. The society did not have any additional information about the buildings other than these two documents.

HISTORIC THEMES

This history of the city is the basis for the historic themes to guide evaluation of historic resources. These themes reflect that history but emphasize the built environment.

19th Century Theme. During 1870 to 1899, early ranching and agriculture of walnuts, apricots, row crops, and peanuts brought settlers to Tusin. Development of 20-acre subdivided plots characterized Tustin's development with Victorian and Queen Anne homes. The Stevens House is an example of this.

Early 20th Century Theme. The period from 1900-1945 was the reign of the citrus industry locally. Citrus replaced the previously farmed crops. Portions of the downtown area were characterized by lots of differing sizes with smaller homes of Queen Anne to craftsman styles.

Mid to Late 20th Century Theme. From 1945-1980 Tustin saw population increases that lead to complete replacement of the groves. Housing was prominent but this period also saw the development of shopping centers and other retail buildings and light industrial uses. Transportation facilities including roads and parking lots increased. Often the styles of both housing and commercial buildings were functional.

HISTORIC RESIDENTIAL AND COMMERCIAL DESIGN GUIDELINES

The City of Tustin has outlined the Historic Residential and Commercial Design Guidelines, which apply to any improvements or alterations made to commercial buildings located within the Cultural Resources District as well as new infill residential and commercial development in the proposed DAs. These guidelines are suggested to all persons owning commercial buildings of

historical significance outside of the Cultural Resources Districts. In addition, the City has adopted the California Historical Building Code (CHBC), which is intended to protect California's architectural heritage by recognizing unique construction challenges inherent in historic buildings. In doing so, the regulations facilitate the restoration to preserve a historic structure's original or restored architectural elements and features. Along with the CHBC, the City of Tustin encourages the consideration of the *Secretary of Interior's Standards for Rehabilitation* when a proposed project will alter the appearance of a commercial structure in the Cultural Resources District. The Historic Residential and Commercial Design Guidelines are summarized below.

HISTORIC COMMERCIAL DESIGN GUIDELINES

Preservation and Rehabilitation. Intended to maintain and protect the original architectural features of a building that help to identify its individual style or contribution to the overall character of Old Town.

Adaptive Reuse. Intended to preserve the building but adapt the structure for the new use rather than continue its nonconforming use or tear the building down. This is used when the zoning or use of the property has changed such as the use of a historic home being converted to commercial offices.

Building Additions. Intended to ensure that the historically significant streetscape is preserved when additions to historically significant buildings or structures are necessary.

New Infill Development. Intended to have new development within an existing and perhaps aging built environment respect the existing pattern, scale, and character of the commercial area of Tustin's Cultural Resources District.

Incorporating Sustainability. Intended to increase the energy efficiency of a historic commercial building without impairing the historic features of the building.

Parking. The Tustin City Code stipulated the parking requirements for Old Town which help alleviate the increased need for additional parking to be provided.

Landscaping and the Street Environment. Provides guidance for landscaping on private property and in the public right of way as well as for maintaining and improving the overall street environment.

Identification Signs. Provides guidelines for signs in order to preserve and enhance the character of Old Town Tustin.

HISTORIC RESIDENTIAL DESIGN GUIDELINES

Preservation and Rehabilitation Guidelines. Intended to maintain and protect the original architectural features of a building that help to identify its individual style or contribution to the overall character of the District.

Additions and New Accessory Structures. Intended to that the street appearance of a historically significant residence is preserved when additions or accessory structures (garages, carports, patio covers) are added.

New Infill Development. Intended to have new development within an existing and perhaps aging built environment respect the existing pattern, scale, and character of the residential area of Tustin's Cultural Resources District. The scale of new buildings is a major concern as larger new homes next to smaller older homes could have a negative visual impact.

Adaptive Reuse. Intended to preserve the building but adapt the structure for the new use rather than continue its nonconforming use or tear the building down. This is used when the zoning or use of the property has changed such as the use of a historic home being converted to commercial offices.

Landscaping. Provides guidelines as to which landscaping principles may be appropriate for a historical house and to provide an outline of the elements to be considered when landscaping a front yard. The guidelines also provide examples of landscaping designs that were typical at the time the houses were built.

TUSTIN CITY CODE

Cultural Resource District (CR), Article 9, Chapter 2, Section 9252

The Cultural Resources District Code Section 9252(d) states that "any improvement or natural feature may be designated as a cultural resource" and further states, "any area within the City may be designated as a Cultural Resource District" by approval of the City Council, if it meets the following criteria:

- Criterion 1: It exemplifies or reflects special elements of the City's cultural, architectural, aesthetic, social, economic, political, artistic, engineering and or architectural heritage; or
- Criterion 2: It is identified with persons, a business use or events significant in local, state, or national history; or
- Criterion 3: It embodies distinctive characteristics of style, type, period or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship; or

- Criterion 4: It is representative of the notable work of a builder, designer, or architect; or
- Criterion 5: Its unique location or singular physical characteristic represents an established and familiar visual feature of a neighborhood, community of the City; or
- Criterion 6: Its integrity as a natural environment or feature strongly contributes to the well-being of residents of the City or the well-being of a neighborhood within the City; or
- Criterion 7: Its geographically definable area possesses a concentration or continuity of site, buildings, structures or objects as unified by past events or aesthetically by plan or physical development.

An individual may nominate a cultural or historic resource for local listing if it is 50-years old or older, consistent with the NRHP guidelines.

A Certificate of Appropriateness shall be required prior to:

- Alteration of the exterior features of a building or site within a designated Cultural Resource District, or alteration of a Designated Cultural Resource, or construction of improvements within a designated Cultural Resources District requiring a City building permit.
- Demolition or removal of any Designated Cultural Resource or of any improvements in a Cultural Resource District.
- A certificate of appropriateness shall not be required for the following: (1) ordinary maintenance or repairs that do not involve a change in design, exterior material or original appearance of an improvement, nor (2) any construction, reconstruction, alteration or removal of any feature which has been determined by the Building Official to be necessary to protect the public health or safety due to an unsafe or dangerous condition provided the Building Official certifies such action.

Application for a Certificate of Appropriateness shall be made on forms provided by the Community Development Department and shall contain whatever detailed information (plans, drawings, agreements, photographs, etc.) as is determined by the Community Development Department to be necessary for the Department to act on the request. Where the proposed project requires other discretionary approvals such as a tentative tract map, the background information shall also be concurrently submitted to the Department on each of these applications.

IMPACT ANALYSIS AND MITIGATION MEASURES

IMPACTS

The specific plan proposes to permit a total of 887 dwelling uses, most in conjunction with mixed-uses, as well to continue to allow commercial uses. . The potential for both paleontological and archaeological resources is considered low.

Buildings less than fifty years old are generally not protected by law. However, exceptions are known where an important architect, a master craftsman, or persons or events significant to California history are involved.

Demolition or alteration of buildings more than 50 years old and legally considered historic requires careful consideration by planners and applicants. Generally, for specific projects, any buildings more than 45 years old are reviewed, due to the time frame for environmental clearances. Factors for planning review include (1) substantial alteration from the original structure (particularly replacement of windows and doors but also any additions or other modifications), (2) known association with historically important persons or events, and (3) exceptional qualities of design, style, building or engineering (as opposed to typical examples of common types). In the case where any of the factors are unknown or positive, evaluation by a qualified architectural historian is necessary for compliance with CEQA. A building that is a public safety issue may still require recordation as a historic resource prior to demolition.

A list of qualified cultural resources consultants is maintained by the California Office of Historic Preservation at www.chrisinfo.org.

MITIGATION MEASURES

CR1. The existing Historic Residential and/or Commercial Design Guidelines shall apply to all projects within the specific plan area.

CR2. Per the Certificate of Appropriateness process outlined in Tustin City Code Article 9, Chapter 2, Section 9252, Cultural Resource District (CR), the City Planning Department shall have a standard evaluation process for buildings more than 45 years old that might be impacted by proposed development. Prior to issuing a demolition or grading permit, the City shall review the pertinent factors of each structure and determine if evaluation by a qualified architectural historian to determine if the resource meets significance criteria for the California Register of Historical Resources will be required.

CR3. The City shall have a standard unanticipated discoveries clause in applicable grading and excavation permits that requires applicants to halt work in the vicinity upon discovery of archaeological resources until the find can be evaluated by qualified professionals.

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APPENDIX A: PREVIOUS STUDIES

Report Number	Authors	Year	Report Title	Quad
OR-00072	Desautels, Roger J.	1976	Archaeological Survey Report on Portions of Lots 337 & 338 in Block 13, Irvine Subdivision, M.r.m. 1-88, in Unincorporated Territory, County of Orange, California	TUSTIN
OR-00305	Schroth, Adella	1979	The History of Archaeological Research on Irvine Ranch Property: the Evolution of a Company Tradition	ORANGE, TUSTIN
OR-00760	Romani, John F.	1982	Archaeological Survey Report for the Route5/ Route 55 Interchange in the Cities of Tustin and Santa Ana, Orange County, California Pm 29.0/ 31.0; R8.8/ R10.6	SAN JUAN CAPISTRANO
OR-00814	Romani, John F.	1982	Historic Property Survey Route I-5 Santa Ana Transportation Corridor, Route 405 in Orange County to Route 605 in Los Angeles County Pm 21.30/44.38; 0.00/6.85	ORANGE, TUSTIN
OR-00879	Bissell, Ronald M. and Rodney E. Raschke	1987	Cultural Resources and Paleontological Reconnaissance of the Bircher Xerox Centre Property, Santa Ana, Orange County, California	TUSTIN
OR-00896	Padon, Beth	1988	Letter Report of Archaeological Survey of the Colco Project at Walnut Street and Newport Ave.	TUSTIN
OR-00897	Padon, Beth	1988	Letter Report on Archaeological Monitoring for Tract #13094	TUSTIN
OR-00946	Padon, Beth	1989	Archaeological and Paleontological Review for 13911, 13931, and 13951 Carroll Way, Tustin, Ca.	ORANGE
OR-01167	Weber, Carmen A.	1991	Historic Resources Survey for the Tustin Desalter Project	ORANGE
OR-01491	McLean, Deborah K.	1996	Historic Property Survey Report - Negative Findings Newport/ State Route-55 Project, City of Tustin, Orange County, Ca.	TUSTIN
OR-01492	McLean, Deborah K.	1996	Negative Archaeological Survey Report Newport/state Route-55 Project, City of Tustin, Orange County, Ca.	TUSTIN
OR-01527	Demcak, Carol R.	1996	Report of Archaeological Survey for L.A. Cellular Site #475.2, 1001 1/2, Edinger, Tustin, Orange County	TUSTIN
OR-01655	Mason, Roger D.	1997	Cultural Resources Survey Report for a Pacific Bell Mobile Services Telecommunications Facility: Cm 001-15, in the City of Tustin, Ca.	TUSTIN
OR-01720	McLean, Deborah K.	1998	Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility Cm 320-09, 1971 Irvine Boulevard, City of Tustin, County of Orange, California	TUSTIN
OR-01902	Anonymous	1985	Historic Property Survey 07ORA-133	TUSTIN
OR-01940	Webb, Lois M. and Huey,	1979	Historic Property Survey 07-ora 5/55 P.m. 29.0/31.0;	TUSTIN

Report Number	Authors	Year	Report Title	Quad
	Gene		R8.8/r10.6 Tustin and Santa Ana Orange County California 07209 479401	
OR-02225	Strozier, Hardy	1978	The Irvine Company Planning Process and California Archaeology- A Review and Critique	ORANGE, TUSTIN
OR-02256	Demcak, Carol R.	1999	Cultural Resources Assessments for Orange County Sanitation Districts	ORANGE, TUSTIN,
OR-02339	Duke, Curt	2001	Cultural Resource Assessment - Cingular Wireless Facility No. Sc 002-03, Orange County, California	TUSTIN
OR-02375	McKenna, Jeanette A.	2001	Review of Cultural Resource Assessment/evaluation for Cingular Wireless Site Sc-001-01, Orange County, California	ORANGE
OR-02377	McKenna, Jeanette A.	2001	Review of Cultural Resource Assessment / Evaluation for Cingular Wireless Site Sc-009-02, Orange County, California	ORANGE
OR-02463	Duke, Curt	2002	Cultural Resource Assessment Cingular Wireless Facility No. Sc 002-04 Orange County, California	TUSTIN
OR-02479	Lapin, Philippe	2000	Cultural Resource Assessment for Modifications to Pacific Bell Wireless Facility Cm-320-09, County of Orange, California	TUSTIN
OR-02500	Keas, Nicole	2001	Proposed Rio Bravo Cellular Site (Nextell #7068a) Tustin, Ca	TUSTIN
OR-02534	Anonymous	1976	Annual Report to The Irvine Company from Archaeological Research, Inc.	ORANGE, TUSTIN
OR-02704	Harper, Caprice D.	2002	Cultural Resource Assessment Cingular Wireless Facility No. Sc 120-01 Orange County, California	ORANGE
OR-02709	Duke, Curt	2002	Cultural Resource Assessment at & T Wireless Services Facility No. 13089a Orange County, California	ORANGE
OR-03187	Bonner, Wayne H.	2005	Cultural Resources Records Search and Site Visit Results for Nextel Communications Candidate Ca8752a (boelter) 1971 Irvine Boulevard, Tustin, Orange County, California	TUSTIN
OR-03191	Bonner, Wayne H.	2002	Records Search Results for Cingular Wireless Site Sc-002-06 (Makena Capital Building), 1450 El Camino Real, Tustin, Orange County, California	TUSTIN
OR-03277	Casen, George A., Romani, John, and Webb, Lois	1985	The Proposed Project Is the Widening and General Improvement of Interstate Route 5 Between Route 405 and Route 55 in Orange County, California	TUSTIN
OR-03493	Takano, Gerald, T.	2001	Tustin Historical Resources Survey Update	TUSTIN

Report Number	Authors	Year	Report Title	Quad
OR-03555	Wayne H. Bonner	2008	Cultural Resources Records Search and Site Visit Results for Royal Street Communications California, LLC Candidate LA2824A- Public Storage McFadden	TUSTIN
OR-03678	Bonner, Wayne H.	2007	Cultural Resources Records Search and Site Visit Results for Royal Street Communications, LLC Candidate LA2526D (Presbyterian Church), 225 West Main Street, Tustin, Orange County, California	TUSTIN
OR-03714	Bonner, Wayne H.	2004	Cultural Resources Survey and Historic Architectural Assessment Results for Sprint Telecommunications Facility Candidate OG54XC414D (Browning), 1971 Irvine Boulevard, Tustin, Orange County, California	TUSTIN
OR-03900	Billat, Lorna	2010	Collocation Submission Packet - AT&T Building, CA-ORC0505A	TUSTIN
OR-03952	Billat, Lorna	2010	McFadden CA2306 - New Tower Submission Packet	TUSTIN
OR-03986	Underbrink,. Susan	2006	Archaeological Survey Report for the Red Hill Avenue Grade Separation Project, City of Tustin, County of Orange, California Federal Project Number: STPL : 5271(014)	TUSTIN
OR-04000	Strauss, Monica, Ehringer, Candace, and Bray, Madeleine	2010	Irvine Ranch Water District Wells 21 and 22 and Tustin Legacy Well 1 (TL-1) Projects, Phase I Cultural Resources Assessment	TUSTIN
OR-04020	Bonner, Wayne	2011	Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate LAC580 (Edinger and Red Hill/USID #15975), 1421 Edinger Avenue, Tustin, Orange County, California	TUSTIN
OR-04123	Sander, Jay	2010	Cultural Resources Records Search and Site Visit for T-Mobile USA Inc. LA33840B/Pine Tree Park, 1402 Bryan Avenue, Tustin, Orange County, California 92870	TUSTIN
OR-04229	Wallace, James and Dietler, Sara	2012	Archaeological Survey Report the I-5 (SR-55 to SR57) HOV Lanes Improvement Project County of Orange, California	ORANGE, TUSTIN
OR-04292	Meiser, M.K., Wallace, James, and Deitler, Sara	2012	Historic Property Survey Report, improvements to Interstate 5 (I-5) between State Route 55 and State Route 57	ORANGE, TUSTIN
OR-04295	McKenna, Jeanette	2013	Tustin High School, Tustin, Archaeological Records Search	TUSTIN
OR-04302	Bonner, Wayne and Crawford, Kathleen	2013	Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate CLU3653 (Irvine Blvd/Browning) 1971 Irvine Boulevard, Tustin, California, FA No 1010272 PTN No 3551015548 (LTE 1C) PTN No 3551455548 (LTE 2C)	TUSTIN

APPENDIX B. DEVELOPMENT AREA MAPS

Tustin DT SP

City of Tustin,
Orange County, CA

Development Area 1
Development Area 2
Development Area 3
Development Area 4
Development Area 5
Development Area 6

0 200 400 Feet
0 50 100 Meters
1:7,200
1 in = 600 ft
N

Tustin DT SP

City of Tustin,
Orange County, CA

Parcels
Development Area 1
Development Area 2
Development Area 4

0 200 400 Feet
0 50 100 Meters
1:1,900

N
1 in = 158 ft

Tustin DT SP

City of Tustin,
Orange County, CA

Parcels
Development Area 1
Development Area 2
Development Area 3
Development Area 4

0 200 400 Feet
0 50 100 Meters
1:1,490
N
1 in = 124 ft

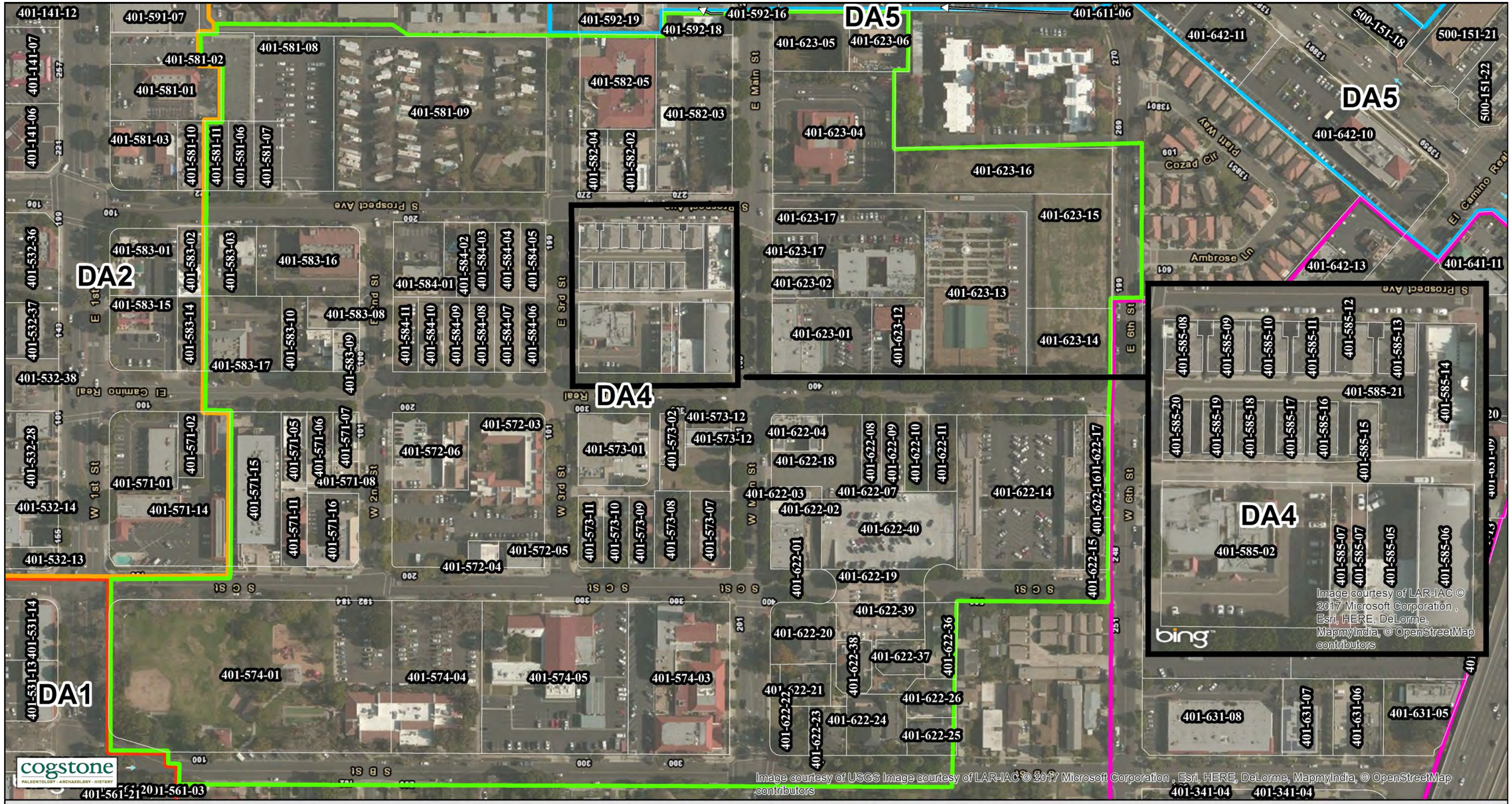
Tustin DT SP

City of Tustin,
Orange County, CA

Parcels
Development Area 2
Development Area 3
Development Area 5

0 200 400 Feet
0 50 100 Meters
1:2,440

N
1 in = 203 ft



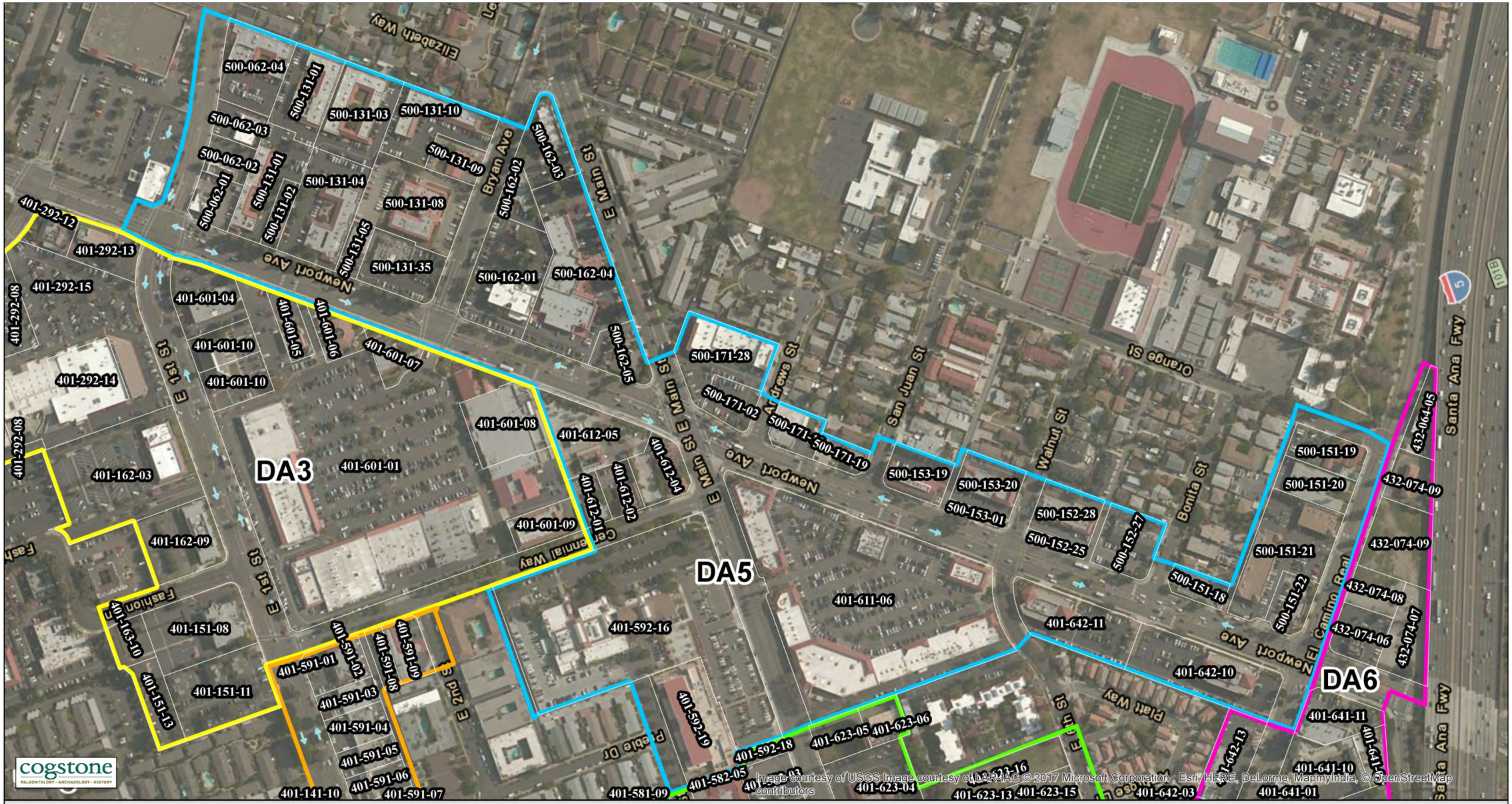
Tustin DT SP

City of Tustin,
Orange County, CA

Parcels
Development Area 1
Development Area 2
Development Area 4
Development Area 5
Development Area 6

0 200 400 Feet
0 50 100 Meters
1:2,381

N
1 in = 198 ft



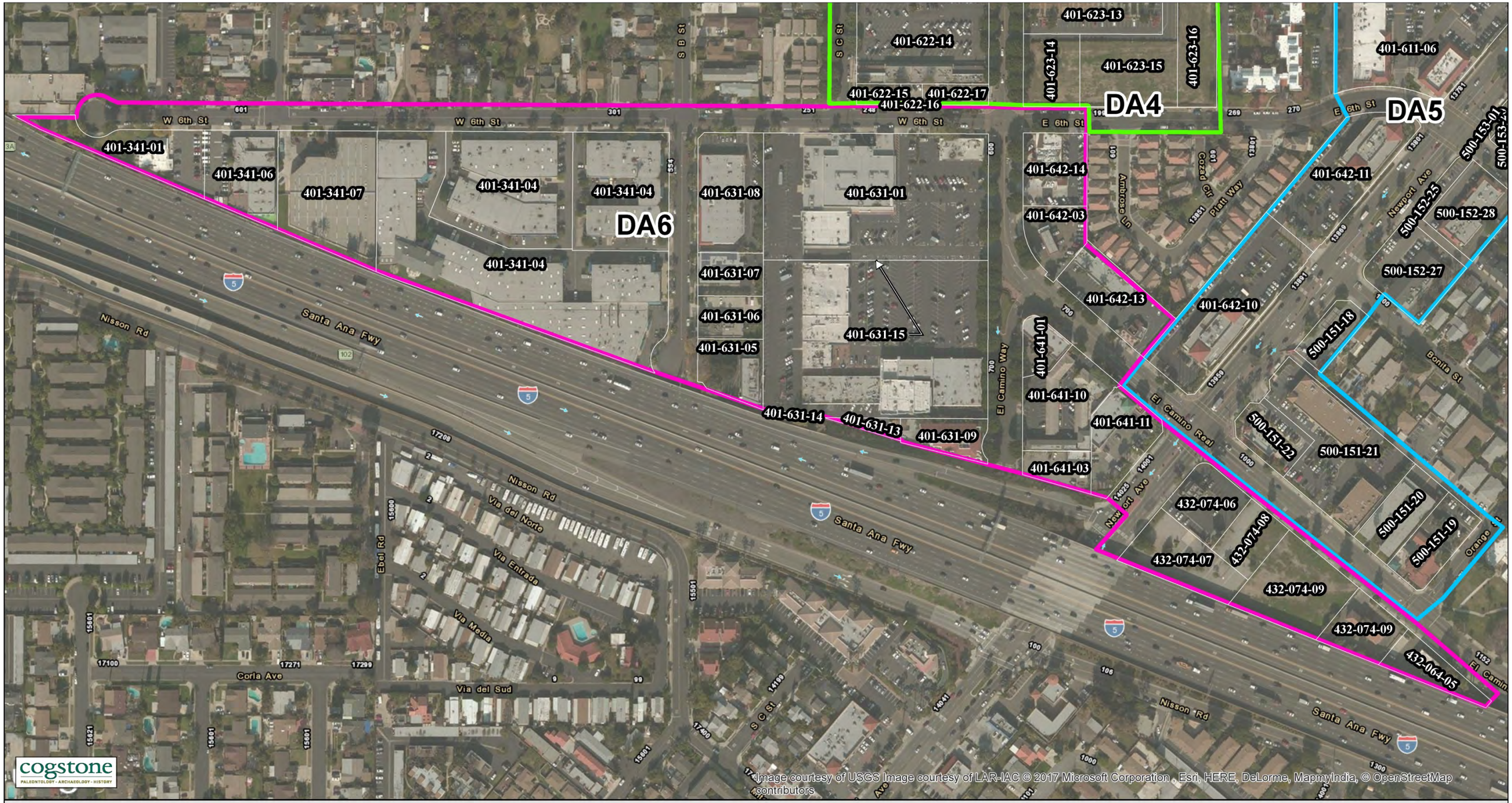
Tustin DT SP

City of Tustin,
Orange County, CA

Parcels
Development Area 2
Development Area 3
Development Area 4
Development Area 5
Development Area 6

0 200 400 Feet
0 50 100 Meters
1:3,480

N
1 in = 290 ft



Tustin DT SP

City of Tustin,
Orange County, CA

Parcels

Development Area 4

Development Area 5

Development Area 6

0 200 400 Feet

0 50 100 Meters

1:2,790

N

1 in = 233 ft

APPENDIX C. HISTORICAL RESOURCES LIST

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
125	Mountain View Drive	Commercial	1925	DA1	401-522-09	1920	Acupuncture
N/A	N/A	Alley	N/A	DA1	401-361-32		Alley
112	North A Street	Parking Lot	N/A	DA1	401-522-12		Parking lot associated with 415-429 West 1st Street
120	South B Street	Residential	1952	DA1	401-561-03	1950	
205	West 1st Street	Commercial	1983	DA1	401-531-14	1980	
215	West 1st Street	Commercial	1983	DA1	401-531-13	1980	
301	West 1st Street	Commercial	1981	DA1	401-523-17	1980	Law Firm
305	West 1st Street	Commercial	1983	DA1	401-523-16	1980	Sathya Sai Laba Society & Book Center
310	West 1st Street	Commercial	1987	DA1	401-561-20, 401-561-21	1980	
312	West 1st Street	Commercial	1956	DA1	401-561-02	1950	Dentist's Office
320	West 1st Street	Residential	1938	DA1	401-561-19	1930	
330	West 1st Street	Residential	1953	DA1	401-561-18	1950	
345	West 1st Street	Residential	1969	DA1	401-523-15	1960	Villa Viento Apartments; Portion within the PA is undeveloped
365	West 1st Street	Commercial	1964	DA1	401-523-30	1960	Medical Offices
395	West 1st Street	Commercial	1978	DA1	401-523-31	1970	Shell Gas Station
400	West 1st Street	Commercial	1915	DA1	401-361-01	1910	Prescott & Prescott
420	West 1st Street	Residential	1912	DA1	401-361-28	1910	
435	West 1st Street	Residential - Mobile Homes	1940's	DA1	401-522-27	1940	Mobile Home Park
440	West 1st Street	Commercial	1980	DA1	401-361-31	1980	Tustin Professional Center
450	West 1st Street	Residential	1922	DA1	401-361-24	1920	
465	West 1st Street	Commercial	1929	DA1	401-522-10	1920	
501	West 1st Street	Commercial	< 1952	DA1	401-521-14	1950	Salon Montage
505	West 1st Street	Commercial	1933	DA1	401-521-13	1930	The Sanctuary
515	West 1st Street	Commercial	1935	DA1	401-521-12	1930	
519	West 1st Street	Commercial	1935	DA1	401-521-12	1930	
520	West 1st Street	Commercial	1916	DA1	401-361-23	1910	Originally Used as Residential; Reynolds Group
530	West 1st Street	Residential	1959	DA1	401-361-22	1950	Apartment Complex
560	West 1st Street	Commercial	1950	DA1	401-361-21	1950	Printer/Insurance
610	West 1st Street	Commercial	1975	DA1	401-551-01	1970	7-11 Convenience Store
621	West 1st Street	Commercial	1973	DA1	401-302-06	1970	Retail/Medical
660	West 1st Street	Commercial	1983	DA1	401-551-39	1980	Hughes & Hughes Law Firm
661	West 1st Street	Commercial	1963	DA1	401-302-07	1960	Medical Offices
690	West 1st Street	Residential	1925	DA1	401-551-07	1920	Law Offices
700	West 1st Street	Commercial	1982	DA1	401-541-01	1980	
720	West 1st Street	Commercial	1960	DA1	401-511-02	1960	Roger Joseph Hair Studio
721	West 1st Street	Commercial	1977	DA1	401-302-08	1970	Banquet Center
730	West 1st Street	Commercial	1974	DA1	401-541-02	1970	
741	West 1st Street	Commercial	1964	DA1	401-302-13	1960	Tustin Santa Ana Vet Hospital
750	West 1st Street	Commercial	1915	DA1	401-541-17	1910	Originally Used as Residential; Tustin Redhill Insurance
415-429	West 1st Street	Commercial	1964	DA1	401-522-11	1960	Ultimate Custom Car Care
640	West 1st Street	Commercial	1990	DA1	401-551-40	1990	Plaza on First
125	Yorba Street	Residential	1928	DA1	401-521-12	1920	
133	Yorba Street	Residential	1928	DA1	401-521-11	1920	
130	Centennial Way	Commercial	1963	DA2	401-591-02	1960	

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
140	Centennial Way	Commercial	1963	DA2	401-591-08	1960	Katnik Brothers Real Estate
160	Centennial Way	Commercial	1965	DA2	401-591-09	1960	Offices
101	East 1st Street	Commercial	1968	DA2	401-532-38	1960	Carwash
131	East 1st Street	Commercial	1967	DA2	401-532-37	1960	Big O Tires
150	East 1st Street	Commercial	1957	DA2	401-583-01	1950	Tustin War Memorial; The Learning Village Preschool
171	East 1st Street	Commercial	1963	DA2	401-532-36	1960	John's Place
240	East 1st Street	Commercial	1991	DA2	401-581-01	1990	Tustin Plaza Carwash
245	East 1st Street	Commercial	1969	DA2	401-141-07	1960	McDonald's
340	East 1st Street	Commercial	1961	DA2	401-591-07	1960	United States Post Office
341	East 1st Street	Commercial	1969	DA2	401-141-11	1960	Restaurant
380	East 1st Street	Commercial	1976	DA2	401-591-05	1970	WellPrint-Total Image
381	East 1st Street	Commercial	1969	DA2	401-141-10	1960	Dentist's Office
414	East 1st Street	Commercial	1962	DA2	401-591-04	1960	Louie's Barber Shop
440	East 1st Street	Commercial	1965	DA2	401-591-03	1960	Tustin Inn
450	East 1st Street	Commercial	1984	DA2	401-591-01	1980	Jalapenos Mexican Food
360-368	East 1st Street	Commercial	1963	DA2	401-591-06	1960	Scooters Mailbox Cards & Gifts
100	El Camino Real	Commercial	1976	DA2	401-571-01	1970	
105	El Camino Real	Commercial	1974	DA2	401-583-15	1970	
130	El Camino Real	Commercial	1955	DA2	401-571-02	1950	Dentist
135	El Camino Real	Residential	1922	DA2	401-583-14	1920	
N/A	N/A	Parking Lot	N/A	DA2	401-141-12		Parking lot related to 401-141-07
125	North A Street	Residential	1945	DA2	401-523-31	1940	
115	North Prospect Avenue	Commercial	1966	DA2	401-141-05	1960	Santiago Cycling; Kahler Cycling Academy
121	North Prospect Avenue	Commercial	1972	DA2	401-141-04	1970	Don's Cyclery
14982	Prospect Avenue	Commercial	1962	DA2	401-141-06	1960	Integrity Auto Care
125	South C Street	Residential	1952	DA2	401-571-14	1950	Bel Air Motor Hotel
105	South Prospect Avenue	Commercial	1957	DA2	401-581-03	1950	
130	South Prospect Avenue	Commercial	1966	DA2	401-583-02	1960	Evergreen Medical Offices
135	South Prospect Avenue	Commercial	1970	DA2	401-581-03	1970	Mountain View Tire
137	South Prospect Avenue	Commercial	1962	DA2	401-581-10	1960	
137	West 1st Street	Commercial	1930	DA2	401-532-28	1930	
139	West 1st Street	Commercial	1930	DA2	401-532-28	1930	
145	West 1st Street	Commercial	1982	DA2	401-532-14	1980	
155	West 1st Street	Commercial	1976	DA2	401-532-13	1970	
N/A	N/A	Parking Lot	N/A	DA2, DA4	401-581-02		Parking Lot and street access to parking lot
275	Centennial Way	Commercial	1977	DA3	401-601-09	1970	Offices
535	East 1st Street	Commercial	1972	DA3	401-151-08	1970	Dentist's Office
550	East 1st Street	Commercial	1978	DA3	401-601-08	1970	Haggen; Larwin Square
615	East 1st Street	Commercial	1965	DA3	401-162-03	1960	Chase Bank
630	East 1st Street	Commercial	1962	DA3	401-601-01	1960	Larwin Square & Parking Lot
631	East 1st Street	Commercial	1977	DA3	401-292-15	1970	Tustin Courtyard

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
662	East 1st Street	Commercial	1961	DA3	401-601-10	1960	Fedex
671	East 1st Street	Commercial	1977	DA3	401-292-14	1970	Tustin Courtyard
701	East 1st Street	Commercial	1977	DA3	401-292-13	1970	Bank of the West
505-515	East 1st Street	Commercial	1979	DA3	401-151-11	1970	Wellington Plaza
111	Fashion Lane	Commercial	1975	DA3	401-162-09	1970	Offices
14971	Holt Avenue	Commercial	1979	DA3	401-292-12	1970	Tustin Courtyard
18182	Irvine Boulevard	Commercial	1977	DA3	401-292-08	1970	Kohl's & Parking Lot
18232	Irvine Boulevard	Commercial	1977	DA3	401-292-03	1970	CitiBank
N/A	N/A	Parking Lot	N/A	DA3	401-151-13		Parking lot related to 401-151-11
N/A	N/A	Parking Lot	N/A	DA3	401-163-10		Parking lot related to 401-151-08
13341	Newport Avenue	Commercial	1972	DA3	401-601-04	1970	Bank of America; Larwin Square
13421	Newport Avenue	Commercial	1977	DA3	401-601-05	1970	El Pollo Loco; Larwin Square
13451	Newport Avenue	Commercial	1978	DA3	401-601-06	1970	Spires Restaurant; Larwin Square
13471	Newport Avenue	Commercial	1978	DA3	401-601-07	1970	US Bank; Larwin Square
230	East 1st Street	Community - Park	1911	DA4	401-574-01	1910	Peppertree Park
230	East 1st Street	Park	1911	DA4	401-574-01		Peppertree Park
115 1/2	East 2nd Street	Commercial	1912	DA4	401-583-08	1910	Chiropractor
160	East 2nd Street	Commercial	1965	DA4	401-584-01	1960	Senior Citizen Care
240	East 3rd Street	Commercial	1965	DA4	401-582-05	1960	Senior Citizen Care Center
201	East 6th Street	Vacant Lot	N/A	DA4	401-623-15, 401-623-16		Vacant Field
101-133	East 6th Street	Vacant Lot	N/A	DA4	401-623-14		Vacant Field
150	East Main Street	Parking Lot		DA4	401-623-17		Parking Lot
160	East Main Street	Commercial	1880	DA4	401-623-02	1880	Moved in 1920's from SE Corner of Main and El Camino Real
174	East Main Street	Commercial	1956	DA4	401-623-17	1950	
191	East Main Street	Commercial	1920	DA4	401-585-14	1920	Restaurants/Shops
220	East Main Street	Commercial	1963	DA4	401-623-04	1960	Saddleback Chapel
270	East Main Street	Commercial	1954	DA4	401-623-06	1950	Storage?
275	East Main Street	Commercial	1960	DA4	401-592-18	1960	
17842	East Main Street	Green Space	N/A	DA4	401-623-05		
150	El Camino Real	Commercial	1982	DA4	401-571-15	1980	
155	El Camino Real	Commercial	2002	DA4	401-583-17	2000	Blondies
170	El Camino Real	Commercial	1912	DA4	401-571-05	1910	Offices
180	El Camino Real	Residential	1913	DA4	401-571-06	1910	L J & Associates
181	El Camino Real	Commercial	1952	DA4	401-583-10	1950	Dentist
190	El Camino Real	Commercial	1912	DA4	401-571-07	1910	Medical Offices
195	El Camino Real	Commercial	1952	DA4	401-583-09	1950	El Camino Café
205	El Camino Real	Parking Lot	N/A	DA4	401-584-11		
215	El Camino Real	Commercial	1920	DA4	401-584-10	1920	Medical Offices
220	El Camino Real	Commercial	1977	DA4	401-572-06	1970	Salon Gallery & Suites
225	El Camino Real	Vacant Lot	N/A	DA4	401-584-09		Farmer's Market lot
235	El Camino Real	Vacant Lot	N/A	DA4	401-584-08		Farmer's Market lot
245	El Camino Real	Vacant Lot	N/A	DA4	401-584-07		Farmer's Market lot
250	El Camino Real	Commercial	1979	DA4	401-572-03	1970	Offices & Parking Lot
255	El Camino Real	Vacant Lot	N/A	DA4	401-584-06		Farmer's Market lot
300	El Camino Real	Commercial	1952	DA4	401-573-01	1950	Synergy

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
305	El Camino Real	Commercial	1960	DA4	401-585-02	1960	Salon and Fabric Store
330	El Camino Real	Commercial	1971	DA4	401-573-02	1970	Offices
405	El Camino Real	Commercial	1926	DA4	401-623-01	1920	
420	El Camino Real	Vacant Lot	N/A	DA4	401-622-18		Vacant Lot
434	El Camino Real	Commercial	1911	DA4	401-622-08	1910	
440	El Camino Real	Residential	1906	DA4	401-622-09	1900	
449	El Camino Real	Commercial	1963	DA4	401-623-12	1960	
450	El Camino Real	Park	N/A	DA4	401-622-10		Respite Park
460	El Camino Real	Commercial	1930	DA4	401-622-11	1930	Dance Center
505	El Camino Real	Commercial	2003	DA4	401-623-13	2000	Armstong Garden Center
520	El Camino Real	Commercial	1952	DA4	401-622-14	1950	Jamestown Village & Parking lot
560	El Camino Real	Commercial	1915	DA4	401-622-17	1910	Tustin Garage; The Black Marlin
355-365	El Camino Real	Commercial	1925	DA4	401-585-05	1920	
397-399	El Camino Real	Commercial	1925	DA4	401-585-06	1920	Knights of Pythias Building
N/A	N/A	Parking Lot	N/A	DA4	401-582-02		Maybe related to 401-582-05
N/A	N/A	Parking Lot	N/A	DA4	401-622-07		Parking lot
N/A	N/A	Street Access	N/A	DA4	401-585-21		Street Access to surrounding APNs
175	South C Street	Commercial	1984	DA4	401-571-11	1980	Prussak Welch & Avila Law Firm
195	South C Street	Commercial	1985	DA4	401-571-16	1980	Offices
200	South C Street	Commercial	1987	DA4	401-574-04	1980	Tustin Area Senior Center
245	South C Street	Commercial	1912	DA4	401-572-04	1910	Tustin Blacksmith
300	South C Street	Community - Educational	1951	DA4	401-574-05	1950	Tustin Unified School District Administration Building
305	South C Street	Residential	1886	DA4	401-573-11	1880	Lindsay House
315	South C Street	Residential	1908	DA4	401-573-10	1900	
325	South C Street	Commercial	1948	DA4	401-573-09	1940	
333	South C Street	Residential	1950	DA4	401-573-09	1950	Kelly's Hair Design
335	South C Street	Commercial	1899	DA4	401-573-08	1890	McCharles House Restaurant & Gardens
445	South C Street	Parking Lot	N/A	DA4	401-622-40		Parking Lot
500	South C Street	Commercial	1885	DA4	401-622-36	1880	Originally Residential; now dental office
555	South C Street	Residential	1952	DA4	401-622-15	1950	
572	South C Street	Parking Lot	N/A	DA4	401-622-19		Parking Lot
333	South D Street	Residential	1967	DA4	401-585-07	1960	
337	South D Street	Residential	1967	DA4	401-585-07	1960	
150	South Prospect Avenue	Commercial	1976	DA4	401-583-03	1970	
153	South Prospect Avenue	Parking Lot	N/A	DA4	401-581-06, 401-581-11		
155	South Prospect Avenue	Parking Lot	N/A	DA4	401-581-07		
180	South Prospect Avenue	Commercial	1982	DA4	401-583-16	1980	Offices
185	South Prospect Avenue	Parking Lot	N/A	DA4	401-581-08		
215	South Prospect Avenue	Residential - Mobile Homes	N/A	DA4	401-581-09	1960	
230	South Prospect Avenue	Residential	1915	DA4	401-584-02	1910	

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
250	South Prospect Avenue	Vacant Lot	N/A	DA4	401-584-04, 401-584-05		
270	South Prospect Avenue	Commercial	2007	DA4	401-585-20	2000	Offices; Prospect Village
272	South Prospect Avenue	Commercial	2007	DA4	401-585-08	2000	Offices; Prospect Village
274	South Prospect Avenue	Commercial	2007	DA4	401-585-19	2000	Offices; Prospect Village
276	South Prospect Avenue	Commercial	2007	DA4	401-585-09	2000	Offices; Prospect Village
278	South Prospect Avenue	Commercial	2007	DA4	401-585-18	2000	Offices; Prospect Village
280	South Prospect Avenue	Commercial	2007	DA4	401-585-10	2000	Offices; Prospect Village
282	South Prospect Avenue	Commercial	2007	DA4	401-585-17	2000	Offices; Prospect Village
284	South Prospect Avenue	Commercial	2007	DA4	401-585-11	2000	Offices; Prospect Village
286	South Prospect Avenue	Commercial	2007	DA4	401-585-16	2000	Offices; Prospect Village
288	South Prospect Avenue	Commercial	2007	DA4	401-585-12	2000	Offices; Prospect Village
290	South Prospect Avenue	Commercial	2007	DA4	401-585-15	2000	Offices; Prospect Village
292	South Prospect Avenue	Commercial	2007	DA4	401-585-13	2000	Offices; Prospect Village
240 A	South Prospect Avenue	Residential	1933	DA4	401-584-03	1930	
240 B	South Prospect Avenue	Residential	1933	DA4	401-584-03	1930	
301-335	South Prospect Avenue	Parking Lot	N/A	DA4	401-582-04		Parking lot related to 401-582-05
125	West 2nd Street	Transportation - Parking Lot	N/A	DA4	401-571-08		Parking Lot Associated with 190 El Camino Real
125	West 2nd Street	Parking Lot	1952	DA4	401-571-08		Parking Lot Associated with 190 El Camino Real
155	West 3rd Street	Commercial	1915	DA4	401-572-05	1910	hbp dance extreme
135	West 6th Street	Residential	1952	DA4	401-622-16	1950	
100	West Main Street	Commercial	1975	DA4	401-622-04	1970	Offices
115	West Main Street	Commercial	1921	DA4	401-573-12	1920	Mrs. B's Consignment
130	West Main Street	Commercial	1914	DA4	401-622-03	1910	Grace Music
138	West Main Street	Commercial	1914	DA4	401-622-02	1910	Salon
145	West Main Street	Commercial	1982	DA4	401-573-07	1980	Offices
158	West Main Street	Commercial	1914	DA4	401-622-01	1910	Atrz Building; Rutabegorz Restaurant and others
210	West Main Street	Commercial	1981	DA4	401-622-20	1980	Offices
218	West Main Street	Commercial	1981	DA4	401-622-38	1980	Steven's Square
222	West Main Street	Residential	1981	DA4	401-622-37	1980	Steven's Square
222	West Main Street	Commercial	N/A	DA4	401-622-39	1980	Steven's Square
225	West Main Street	Community - Religious	1929	DA4	401-574-03	1920	Tustin Presbyterian Church
228	West Main Street	Commercial	1887	DA4	401-622-21	1880	Originally Residential - Stevens Mansion; part of Stevens Square

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
230	West Main Street	Green Space	N/A	DA4	401-622-22		Landscaped yard associated with 250 West Main Street
232	West Main Street	Residential	1981	DA4	401-622-26	1980	Steven's Square
235	West Main Street	Utility	N/A	DA4	401-582-03		City of Tustin Main Street Water Facility
238	West Main Street	Commercial	1981	DA4	401-622-25	1980	Steven's Square
242	West Main Street	Commercial	1981	DA4	401-622-24	1980	
250	West Main Street	Commercial	1981	DA4	401-622-23	1980	
1051	Bryan Avenue	Commercial	1970	DA5	500-131-08	1970	Tustin Care Center
1082	Bryan Avenue	Commercial	1972	DA5	500-162-02	1970	Saddleback Animal Hospital
1091	Bryan Avenue	Commercial	1961	DA5	500-131-09	1960	Edgewood PrePrimary Academy
300	Centennial Way	Commercial	1975	DA5	401-592-16	1970	City Hall
315	Centennial Way	Commercial	1970	DA5	401-612-01	1970	
335	Centennial Way	Commercial	1974	DA5	401-612-02	1970	Offices
1022	East 1st Street	Commercial	1968	DA5	500-062-02	1960	KFC
1042	East 1st Street	Commercial	1965	DA5	500-062-03	1960	SoCal Wine & Spirits
1076	East 1st Street	Commercial	1971	DA5	500-062-04	1970	Albertson
345	East Main Street	Community - Educational	2009	DA5	401-592-19	2000	Tustin Branch Library
535	East Main Street	Commercial	1965	DA5	401-612-04	1960	Baskin Robbins
1131	East Main Street	Commercial	1976	DA5	500-162-03	1970	Suvarnabhumi Thai Restaurant
1081	El Camino Real	Commercial	1959	DA5	500-151-20	1950	
1111	El Camino Real	Community - Educational	1962	DA5	500-151-19	1960	Adventures in Learning Preschool
1142	El Camino Real	Commercial	1985	DA5	432-064-05	1980	Tustana Animal Hospital
1132	Newport Avenue	Vacant Lot	N/A	DA5	432-074-09		Vacant Lot
13348	Newport Avenue	Commercial	1964	DA5	500-062-01	1960	Chipotle Mexican Grill
13400	Newport Avenue	Commercial	1976	DA5	500-131-02	1970	Tustin Community Dentistry
13420	Newport Avenue	Commercial	1965	DA5	500-131-04	1960	Tustin Medical and Dental Offices
13432	Newport Avenue	Commercial	1965	DA5	500-131-05	1960	Tropic Tan
13444	Newport Avenue	Commercial	1964	DA5	500-131-35	1960	China Palace
13522	Newport Avenue	Commercial	1980	DA5	500-162-01	1980	Family Healthcare of Tustin
13561	Newport Avenue	Commercial	1980	DA5	401-612-05	1980	Tustin Auto Wash & 76 Gas
13572	Newport Avenue	Commercial	1976	DA5	500-162-04	1970	
13612	Newport Avenue	Commercial	1976	DA5	500-162-05	1970	Oggi's Pizza and Brewing Co.
13662	Newport Avenue	Commercial	1990	DA5	500-171-28	1990	
13662	Newport Avenue	Parking Lot	N/A	DA5	500-171-02		Parking Lot
13682	Newport Avenue	Commercial	1958	DA5	500-171-18	1950	Newport Avenue Preschool & Kindergarten
13732	Newport Avenue	Commercial	1980	DA5	500-171-19	1980	
13762	Newport Avenue	Commercial	1980	DA5	500-153-19	1980	Shops
13771	Newport Avenue	Commercial	1986	DA5	401-611-06	1980	Tustin Plaza
13812	Newport Avenue	Commercial	1988	DA5	500-153-20	1980	Shops
13812	Newport Avenue	Parking Lot	N/A	DA5	500-153-01		Parking Lot
13821	Newport Avenue	Commercial	1986	DA5	401-642-11	1980	Offices
13842	Newport Avenue	Commercial	1980	DA5	500-152-28	1980	7-11; Restaurants
13842	Newport Avenue	Parking Lot	N/A	DA5	500-152-25		Parking Lot
13882	Newport Avenue	Commercial	1985	DA5	500-152-27	1980	Haveli Fine Indian Cuisine
13891	Newport Avenue	Commercial	1970	DA5	401-642-10	1970	Offices
13920	Newport Avenue	Commercial	1955	DA5	500-151-18	1950	

Street Number	Street Name	Resource Type	Year Constructed	Development Areas	APN	Decade	Use
13982	Newport Avenue	Commercial	1995	DA5	500-151-22	1990	Arby's
14002	Newport Avenue	Commercial	1968	DA5	432-074-06	1960	
14042	Newport Avenue	Parking Lot	N/A	DA5	432-074-07		Parking Lot
1038-1072	Newport Avenue	Vacant Lot	N/A	DA5	432-074-08		Vacant Lot
13942-62	Newport Avenue	Commercial	1995	DA5	500-151-21	1990	Newport Camino Plaza
607	El Camino Real	Residential	1953	DA6	401-642-14	1950	
610	El Camino Real	Parking Lot	N/A	DA6	401-631-13, 401-631-14		Parking lot related to 401-631-09, Parking Lot related to 401-631-15
620	El Camino Real	Commercial	1957	DA6	401-631-01	1950	
630	El Camino Real	Commercial	1960	DA6	401-631-01	1960	Best Hair Care
695	El Camino Real	Commercial	1949	DA6	401-642-03	1940	
725	El Camino Real	Commercial	1962	DA6	401-642-13	1960	India Snack and Grocery
740	El Camino Real	Commercial	1972	DA6	401-641-01	1970	Realtor and Dentist Office
750	El Camino Real	Commercial	1960	DA6	401-641-10	1960	Tustin Motor Court; extensively remodeled including new windows and roof
640-692	El Camino Real	Commercial	1960	DA6	401-631-15	1960	El Camino Plaza
725	El Camino Way	Community - Educational	1990	DA6	401-641-03	1990	Brain Builders Education Center
730	El Camino Way	Commercial	1977	DA6	401-631-09	1970	Offices
775-799	El Camino Way	Street Access	N/A	DA6	401-631-20		Street Access
14001	Newport Avenue	Commercial	2004	DA6	401-641-11	2000	Medical Spa
620	South B Street	Commercial	1964	DA6	401-341-04	1960	
621	South B Street	Commercial	1978	DA6	401-631-08	1970	Offices
649	South B Street	Commercial	1960	DA6	401-631-07	1960	Printing
653	South B Street	Commercial	1956/1957	DA6	401-631-06	1950	Insurance
655	South B Street	Community - Religious	1972	DA6	401-631-05	1970	Cathedral of Christ the King
436	West 6th Street	Commercial	1960+	DA6	401-341-04	1960	
550	West 6th Street	Commercial	1985	DA6	401-341-07	1980	Self Storage
580	West 6th Street	Commercial	1968	DA6	401-341-06	1960	Boys & Girls Clubs of Tustin
600	West 6th Street	Community - Religious	1959	DA6	401-341-01	1950	Adat Hallel Messianic Congregation
420-694	West 6th Street	Commercial	1961-1963	DA6	401-341-04	1960	
125	West Main Street	Vacant Lot	N/A		401-573-13		Vacant Lot

APPENDIX D: NOISE IMPACT ANALYSIS

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Tustin Downtown Commercial Core Specific Plan

NOISE IMPACT ANALYSIS

CITY OF TUSTIN

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
AELUP	Airport Environs Land Use Plan
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
DA	Development Area
dBA	A-weighted decibels
DCCSP	Downtown Commercial Core Specific Plan
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-5	Interstate 5
INCE	Institute of Noise Control Engineering
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Tustin Downtown Commercial Core Specific Plan
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
sf	Square Feet
SR-55	State Route 55
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this program-level noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Tustin Downtown Commercial Core Specific Plan (DCCSP) ("Project"). The Project is generally located northeast of Interstate 5 (I-5) and east of State Route 55 (SR-55), and is bound on the north side by First Street and on the east side by Newport Avenue. The Project consists of 220 acres located entirely within the City of Tustin with parcels located on the north side of First Street and on the east side of Newport Avenue. The Tustin DCCSP includes all previously allowed commercial and office intensity (i.e., no increase in the allowed nonresidential intensity or development), and introduces the option to include residential intensity (up to 887 residential units) as a part of mixed-use and/or standalone residential projects within five of the six Development Areas (DAs). Standalone residential project would only be allowed in DA-6, and no residential is would be allowed in DA-5. Additionally, the Project includes re-development and new retail development. For analytical purposes, it is estimated that approximately 146,000 square feet (SF) of retail will occur due to re-development and natural growth within the Specific Plan. The Project also proposes to include up to an additional 300,000 SF of retail development within the Specific Plan. As such, this analysis evaluates the development of up to 887 residential dwelling units and an additional 300,000 of retail development within the Specific Plan (or a total of 446,000 SF by 2035 with ambient growth). This study has been prepared to satisfy applicable City of Tustin noise standards and significance criteria based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels at land uses adjacent to study area roadway segments. To quantify the traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 32 roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Tustin Downtown Commercial Core Specific Plan Traffic Study* prepared by Stantec Consulting Services, Inc. (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing and Long Range Cumulative 2035 traffic conditions. The analysis shows that the Project-related traffic noise level increases under all traffic scenarios will be *less than significant*.

ON-SITE TRAFFIC NOISE ANALYSIS

The results of the on-site traffic noise analysis show that residential dwelling units proposed in Development Areas 1, 2, 3, 4, and 6 will experience future unmitigated exterior noise levels greater than 65 dBA CNEL, which represents *normally incompatible* land use based on the City of Tustin General Plan Noise Element, Table N-2 compatibility criteria. (3) Exterior noise levels are shown to exceed the City of Tustin General Plan Noise Element, Table N-3, 65 dBA CNEL exterior noise level standards at outdoor environments of residential dwelling units, as defined by the

Noise Element. Based on the results of this analysis and the proximity of future residential dwelling units to the I-5 and SR-55 Freeways, the on-site traffic-related noise impacts at future residential dwelling units within the Tustin DCCSP will be *potentially significant*, and require exterior noise mitigation. With the exterior noise mitigation measures identified in this report, the on-site traffic noise impacts will be reduced to *less than significant* impacts with mitigation.

EXTERIOR NOISE MITIGATION

To reduce the on-site traffic noise levels for future residential dwelling units, a site-specific noise study is required for all future development with residential units located within the Tustin DCCSP.

- Prior to the issuance of a building permit for residential dwelling units within the Tustin DCCSP, the Project Applicant/ Developer shall submit a final acoustical report to the City of Tustin Director of Development Services, or designee, which shall identify all reasonable and feasible noise mitigation measures to satisfy the 65 dBA CNEL exterior noise level standard, as defined by Table N-3 of the City of Tustin General Plan Noise Element.
- If the exterior noise levels cannot be fully mitigated to the 65 dBA CNEL exterior noise level standard for outdoor environments, the final acoustical report shall satisfy the 45 dBA CNEL interior noise level standard of the City of Tustin General Plan Noise Element, and by Title 24, Part 2, of the California Building Code.

INTERIOR NOISE MITIGATION

To provide the necessary interior noise level reduction to satisfy the City of Tustin General Plan Noise Element, Table N-3, 45 dBA CNEL interior noise level standard for residential dwelling units, Tustin DCCSP buildings will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning).

INTERIOR NOISE MITIGATION

To satisfy the City of Tustin General Plan Noise Element, Table N-3, 45 dBA CNEL interior noise standards the Project shall provide the following noise mitigation measure:

- Prior to the issuance of a building permit for residential dwelling units within the Tustin DCCSP, the Project Applicant/ Developer shall submit a final acoustical report to the City of Tustin Director of Development Services, or designee, that demonstrates that the interior noise levels in all habitable rooms will satisfy the 45 dBA CNEL interior noise level standard of the City of Tustin General Plan Noise Element, and by Title 24, Part 2, of the California Building Code.

OPERATIONAL NOISE ANALYSIS

Project-related stationary-source (operational) noise may be produced by the ground floor retail and office uses on the adjacent land uses within development of the Project. At the time this noise study was prepared, the exact location, size, quantity, and distribution of any non-residential mixed uses was unknown. However, to assess the worst-case future exterior noise conditions, reference noise sources were identified to describe the potential non-residential noise conditions. The on-site Project-related noise sources representing potential future ground

floor retail and/or office uses are expected to include: air conditioning units and parking lot vehicle movements. These expected Project-related noise sources are consistent with existing noise sources observed in the Project study area. Since residential is considered a noise-sensitive receiving land use, it is not expected to include any meaningful operational source noise consistent with the existing residential land use in the Project study area.

Moreover, since the Project includes the potential for the operation of potential ground floor retail and office uses included in mixed-use residential development, and the noise levels due to operation of such uses will vary depending on the tenant, the impacts due to Project operational noise levels from potential non-residential uses is described as *potentially significant*. Special noise generators, including but not limited to music (live or otherwise), sound amplification devices, and tenant-specific noise sources shall, therefore, require a site-specific noise analysis prior to building permit approval. With the mitigation measure outlined below, impacts related to operational noise levels generated by the Project will be *less than significant*.

OPERATIONAL NOISE MITIGATION MEASURES

The following mitigation measures are identified to reduce the operational noise levels associated with the Project.

- Prior to the issuance of a building permit for non-residential uses associated with residential dwelling unit construction of the Tustin DCCSP the Project Applicant/ Developer shall submit a final acoustical report to the City of Tustin Director of Development Services, or designee, that demonstrates exterior noise levels at adjacent sensitive land uses will satisfy the City of Tustin Municipal Code, Section 4614 exterior noise level limits. The site-specific noise study shall identify the necessary noise mitigation measures, if any, required to reduce exterior noise levels to below the City of Tustin Municipal Code, Section 4614 exterior noise level limits;

OPERATIONAL VIBRATION LEVELS

The Project's residential development is not expected to include any specific type of operational vibration sources, and therefore, the potential operational vibration impacts for the Tustin Downtown Commercial Core Specific Plan residential land use is considered *less than significant*.

CONSTRUCTION NOISE AND VIBRATION ANALYSIS

Construction noise represents a short-term increase on the ambient noise levels. Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site. Using sample reference noise levels to represent the planned construction activities of the Tustin Downtown Commercial Core Specific Plan area, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. To evaluate whether the Project will generate *potentially significant* temporary construction noise levels at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (4) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. For the purposes of this analysis,

the NIOSH construction noise level threshold of 85 dBA Leq, described in Section 3.5, is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations.

Based on the construction noise level contours shown in this report, the highest reference construction noise level of 79.6 dBA Leq at 50 feet will exceed the 85 dBA Leq NIOSH thresholds at distances of 27 feet or less from peak construction activity. Therefore, Project-related construction noise levels at sensitive receiver locations within 27 feet of construction activities, such as existing residential uses in the Project study area, are considered *potentially significant* noise impacts. However, with the mitigation measures identified in this noise study, Project construction noise levels would be reduced during future development of the Tustin DCCSP to *less than significant* impacts with mitigation.

Further, to describe the temporary Project construction noise level contributions to the existing ambient noise environment, the Project construction noise levels were combined with the existing ambient noise levels measurements at the off-site receiver locations. A temporary noise level increase of 12 dBA Leq is considered a potentially significant impact based on the Caltrans substantial noise level increase criteria which is used to assess the Project-construction noise level increases. (5) The Project will contribute unmitigated, worst-case construction noise level increases ranging from 8.6 to 19.8 dBA Leq during the daytime hours at the closest sensitive receiver locations. Note that these construction noise level increases are based on the peak construction reference noise level at 50 feet, and do not include any noise attenuation provided by existing barriers, berms, or intervening structures. Since the worst-case temporary noise level increases during Project construction are shown to exceed the 12 dBA Leq significance threshold, the unmitigated construction noise level increases are considered *potentially significant* temporary noise impacts. Therefore, mitigation measures are identified in this noise study to reduce the construction noise levels during the development of the additional residential dwelling units of the Tustin DCCSP. With the construction noise mitigation measures identified in this report, the temporary construction noise level increases would be reduced to *less than significant* impacts with mitigation.

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Based on the reference vibration levels provided by the Federal Transit Administration (FTA), a large bulldozer represents the peak source of vibration with a reference velocity of 0.089 in/sec PPV at 25 feet. At distances ranging from 25 to 125 feet from the Project site, construction vibration velocity levels are expected to range from 0.008 to 0.089 in/sec PPV. The analysis shows that the building damage thresholds will only be exceeded at extremely fragile historic buildings due to Project construction-related vibration levels of up to 0.089 in/sec PPV at 25 feet from large bulldozers. At all other distances the construction-related vibration levels are shown to satisfy the Caltrans building damage thresholds for fragile buildings, and older residential buildings.

Compared with the Caltrans construction vibration standard for human annoyance, the proposed Project construction activities will exceed the *distinctly perceptible* vibration standard of 0.04 in/sec PPV at receiver locations within 25 feet of large bulldozers if used during Project construction. Therefore, the use of large bulldozers within 25 feet of nearby sensitive land uses (e.g. residential, school, etc.) shall be minimized unless the vibration levels are shown to be less than the Caltrans *Transportation and Construction Vibration Guidance Manual*, Table 20, peak particle velocity (PPV) threshold of 0.04 in/sec. With the recommended mitigation measures in this study, the Project-related vibration impacts at the nearby sensitive receiver locations represent a *less than significant* impact during the worst-case construction activities at the Project site boundary.

The construction vibration levels at the site of the closest sensitive receivers will approach *distinctly perceptible* levels at 25 feet, however, they are unlikely to be sustained during the entire construction period; but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter. Further, construction at the Project site will be restricted to Municipal Code daytime construction hours, unless otherwise permitted by the City, thereby reducing potential vibration impacts during the sensitive nighttime hours.

CONSTRUCTION NOISE AND VIBRATION MITIGATION MEASURES

Though construction noise and vibration are temporary, intermittent and of short duration, and will not present any long-term impacts, the following mitigation measures would reduce noise and vibration levels produced by construction equipment to nearby noise-sensitive uses. Temporary construction-related noise and vibration impacts will be reduced to *less than significant* impacts with the incorporation of the following mitigation measures:

- Construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards, and all stationary construction equipment shall be placed so that emitted noise is directed away from the noise-sensitive use nearest the construction activity.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receiver nearest to the construction activity.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment by TCC Article 4, Chapter 6, Section 4617. The contractor shall design delivery routes to minimize the exposure of sensitive land uses to delivery truck noise.
- Construction activity within 27 feet of occupied noise-sensitive uses shall reduce construction noise levels at nearby sensitive land uses to below 85 dBA Leq and reduce construction-related noise level increases to below 12 dBA Leq above the existing ambient noise level:

    1. Install temporary construction noise barriers at the Project site boundary which break the line of sight for occupied noise-sensitive uses for the duration of construction activities that could generate noise exceeding 85 dBA Leq. The noise control barrier(s) must provide a solid face from top to bottom and shall:

a. Provide a minimum transmission loss of 20 dBA and be constructed with an acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) attached to the construction site perimeter fence or equivalent temporary fence posts;

b. Be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired; and

c. Be removed and the site appropriately restored upon the conclusion of the construction activity.

2. Install sound dampening mats or blankets to the engine compartments of heavy mobile equipment (e.g. graders, dozers, heavy trucks). The dampening materials must be capable of a 5 dBA minimum noise reduction, must be installed prior to the use of heavy mobile construction equipment, and must remain installed for the duration of the equipment use.

- Prior to approval of a demolition permit, grading plans, and/or issuance of building permits for construction activities within 25 feet of existing residential structures or occupied noise-sensitive uses that require the use of large bulldozers, large loaded trucks, jackhammers, pile drivers, and/or caisson drills, the City of Tustin Building Division shall ensure that construction plans and specifications state that the use of such vibratory equipment shall be prohibited within 25 feet of existing residential structures or occupied noise-sensitive uses. Instead, small rubber-tired bulldozers shall be used within this area during demolition and/or grading operations to reduce vibration effects. If the use of large bulldozers, large loaded trucks, jackhammers, pile drivers, and/or caisson drills is necessary within 25 feet of existing residential structures or occupied noise-sensitive uses, a site-specific analysis shall be prepared and submitted to the City of Tustin demonstrating that construction activity would not result in vibration at sensitive receptors that is more than the Caltrans thresholds for annoyance (0.04 in/sec PPV at receiver locations) and damage (per the Transportation and Construction Vibration Guidance Manual, September 2013, Tables 19 & 20 by building type).
- Any site-specific development project within 25 feet of an extremely fragile historic building shall engage a qualified structural engineer to conduct a pre-construction assessment of the structural integrity of the nearby historic structure(s) and submit evidence that the operation of vibration-generating equipment associated with the new development would not result in structural damage to the adjacent historic building(s). If recommended by the pre-construction assessment, groundborne vibration monitoring of nearby historic structures shall be required.

SUMMARY OF SIGNIFICANCE FINDINGS

The results of this Tustin Downtown Commercial Core Specific Plan Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF SIGNIFICANCE FINDINGS

Analysis	Condition(s)	Report Section	Significance Findings	
			Unmitigated	Mitigated
Off-Site Traffic Noise	Long-Term Exterior Noise Level Increases	7	*Less Than Significant*	*n/a*
On-Site Traffic Noise	Future Exterior Noise Levels	8	*Potentially Significant*	*Less Than Significant*
	Future Interior Noise Levels			*Less Than Significant*
On-Site Aircraft Noise	Exterior & Interior Noise Levels	3, 4	*Less Than Significant*	*n/a*
Operational	Exterior Noise Levels	9	*Potentially Significant*	*Less Than Significant*
	Vibration Levels		*Less Than Significant*	*n/a*
Construction	Temporary Noise Levels	10	*Potentially Significant*	*Less Than Significant*
	Temporary Noise Level Increases			
	Vibration Levels (Building Damage)			*Less Than Significant*
	Vibration Levels (Annoyance)			*Less Than Significant*

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1 INTRODUCTION

This program-level noise analysis has been completed to determine the noise impacts associated with the development of the Tustin Downtown Commercial Core Specific Plan (DCCSP) ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational and short-term construction noise impacts.

1.1 PROJECT LOCATION

The Project Area is generally located northeast of Interstate 5 (I-5) and east of State Route 55 (SR-55) and is bound on the north side by First Street and on the east side by Newport Avenue. The Project consists of 220 acres located entirely within the City of Tustin with parcels located on the north side of First Street and on the east side of Newport Avenue, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The proposed DCCSP introduces residential (multi-family and mixed-use) as an economic engine to invigorate the businesses within the Specific Plan area by increasing the area's population base and demand for goods and services. Multi-family residential use within the Specific Plan is not permitted by right but requires approval of a discretionary entitlement. The DCCSP establishes a residential housing bank with a maximum of 887 new dwelling units that may be developed within the Specific Plan area. Residential projects, whether vertical or horizontal mixed-use or standalone residential development, require an initial step to reserve units from the housing bank. This initial step is the approval of a Residential Allocation Reservation (RAR). Residential projects would then also require City Design Review approval, as well as any other necessary entitlements such as subdivision maps or conditional use permits. The 887 units are allocated by DA.

Table 1-1 provides the total number of dwelling units that may be transferred into each DA, through approval of a RAR, which shall not exceed 25 percent of the original DA unit allocation. Transferred units shall be deducted from the donating DA(s) so that the maximum number of new dwelling units within the Specific Plan would not exceed 887 units. Existing residences are present within the Specific Plan boundaries. Exhibit 1-B shows the Project land uses by DA. As indicated on Table 1-1, no additional dwelling units are allocated for DA 5.

Additionally, the Project includes re-development and new retail development. For analytical purposes, it is estimated that approximately 146,000 square feet (SF) of commercial or non-residential will occur due to re-development and natural growth within the Specific Plan. The Project also proposes to include up to an additional 300,000 SF of retail development within the Specific Plan. As such, this analysis evaluates the development of up to 887 residential dwelling units and 446,000 SF of retail development within the Specific Plan Area.

TABLE 1-1: PROJECT DEVELOPMENT AREAS

Development Area	Additional Dwelling Units	Maximum Allowable Increase (Transfer)[1]
DA 1	45	11
DA 2	92	23
DA 3	200	50
DA 4	150	38
DA 5	0	0
DA 6	400	100
Total	887	No Change

[1] Allowable increase of up to 25% by transferring from other DAs. The maximum total number of additional dwelling units in DCCSP area does not exceed 887 units.

Project-related stationary-source (operational) noise may be produced by the ground floor retail and office uses on the adjacent land uses within development of the Project. At the time this noise study was prepared, the exact location, size, quantity, and distribution of any non-residential mixed uses was unknown. However, to assess the worst-case future exterior noise conditions, reference noise sources are identified to describe the potential non-residential noise conditions. The on-site Project-related noise sources representing potential future ground floor retail and/or office uses are expected to include: air conditioning units and parking lot vehicle movements. These expected Project-related noise sources are consistent with existing noise sources observed in the Project study area. Since residential is considered a noise-sensitive receiving land use, it is not expected to include any meaningful operational source noise consistent with the existing residential land use in the Project study area.

The Tustin DCCSP also includes modifications to roadway classifications specified in the Orange County Transportation Authority (OCTA) Master Plan of Arterial Highways (MPAH) and City of Tustin Circulation Element and/or configuration changes on Main Street, First Street, Second Street, and Third Street described as follows:

- First Street – Newport Avenue to Yorba Street: Change from Primary to Divided Collector (change from four travel lanes with on-street parking to two travel lanes with a median turn lane, diagonal parking, and bike lanes)—requires MPAH amendment (Primary to Divided Collector);
- Second Street – C Street to Prospect Avenue: Change from a two-lane/two-way street with parallel parking to a single lane/one-way street (eastbound) with back-in diagonal parking;
- Third Street – C Street to Prospect Avenue: Change from a two-lane/two-way street with parallel parking to a single lane/one-way street (westbound) with back-in diagonal parking;
- Main Street – New port Avenue to Williams Street: Change from a two-lane street (west of Library) and a four-lane street (east of Library) with parallel parking to two travel lanes with a median, bike lanes and parallel parking—requires MPAH amendment (Primary to Divided Collector).

EXHIBIT 1-A: LOCATION MAP

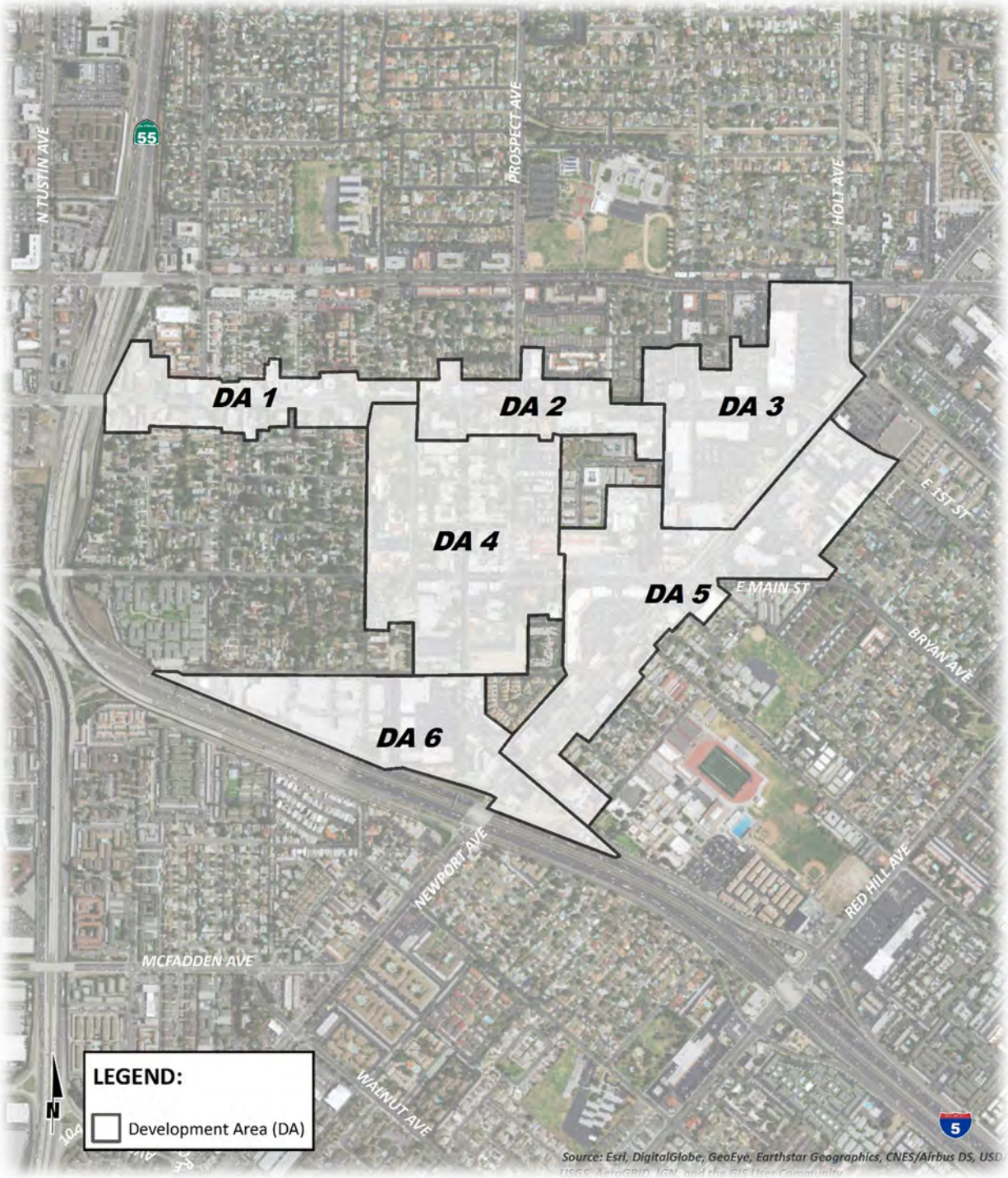
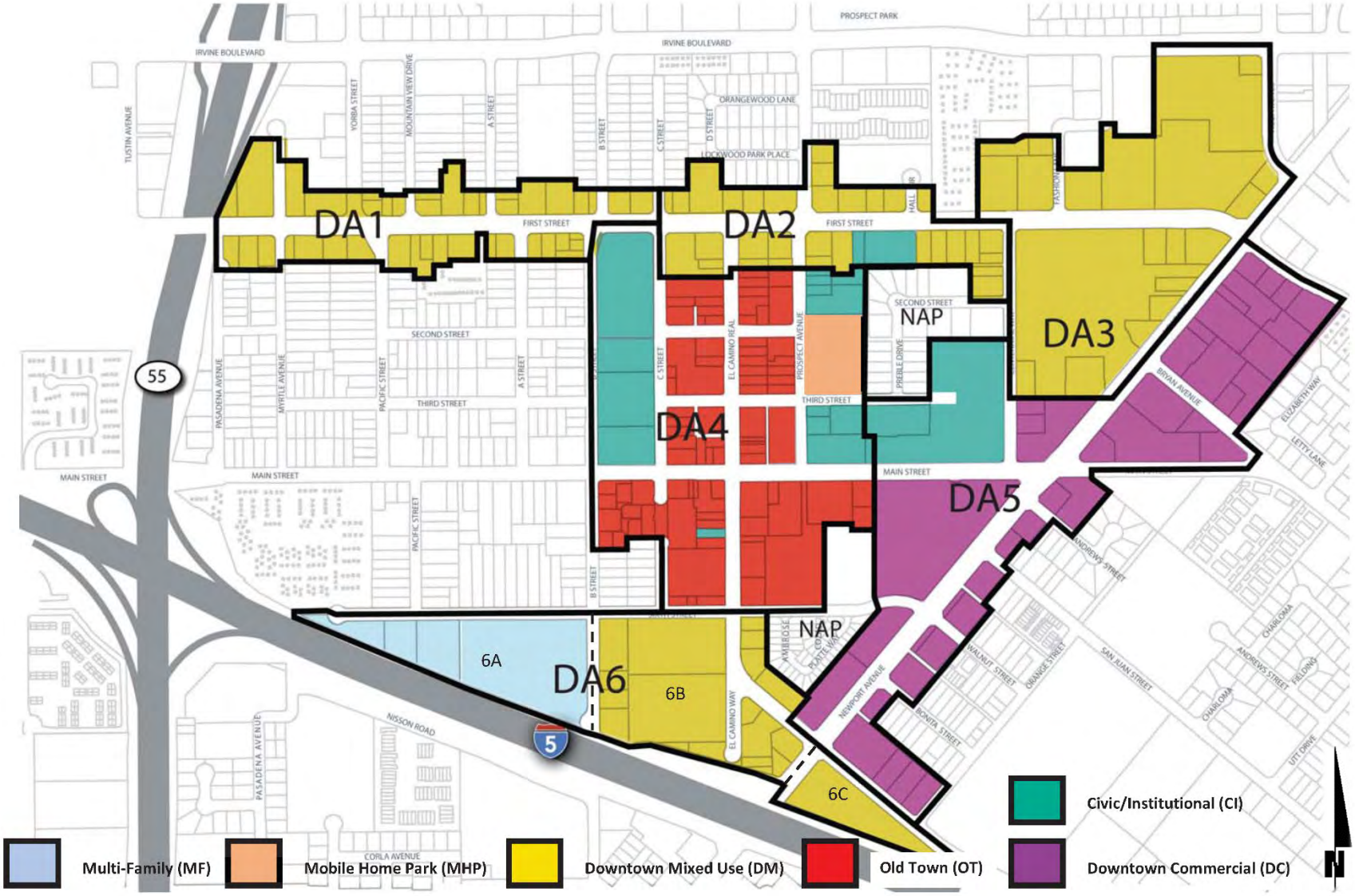


EXHIBIT 1-B: SITE PLAN



2 FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		SLEEP DISTURBANCE
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (6) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (7) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{50}, L_{25}, L_8 and L_2, are commonly used. The percentile noise descriptors are the noise levels equaled or exceeded during 50 percent, 25 percent, 8 percent, and 2 percent of a stated time. Sound levels associated with the L_2 and L_8 typically describe transient or short-term events, while levels associated with the L_{50} describe the steady state (or median) noise conditions. While the L_{50} describes the median noise levels occurring 50 percent of the time, the Leq accounts for the total energy (average) observed for the entire hour. Therefore, the Leq noise descriptor is generally 1-2 dBA higher than the L_{50} noise level.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA Leq sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise-sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Tustin relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (6)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (8)

2.3.3 ATMOSPHERIC EFFECTS

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (6)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (8)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (8)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (9)

2.7 COMMUNITY RESPONSE TO NOISE

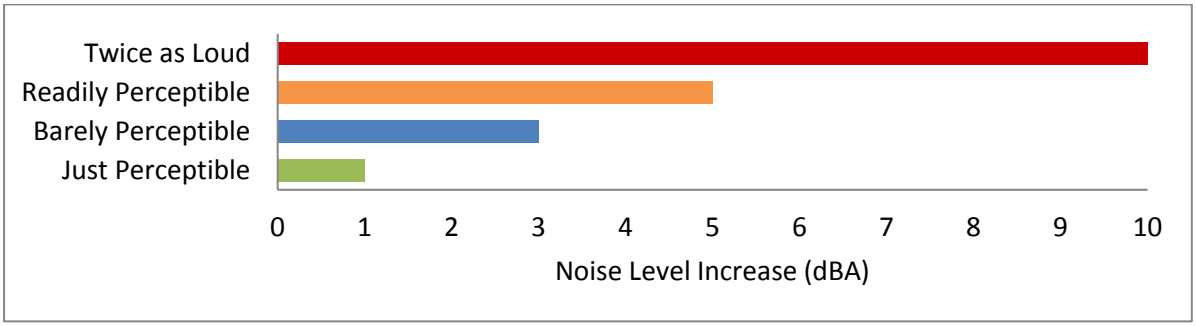
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (10) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When

traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (10) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (8)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 EXPOSURE TO HIGH NOISE LEVELS

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (11)

OSHA has implemented requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (12)

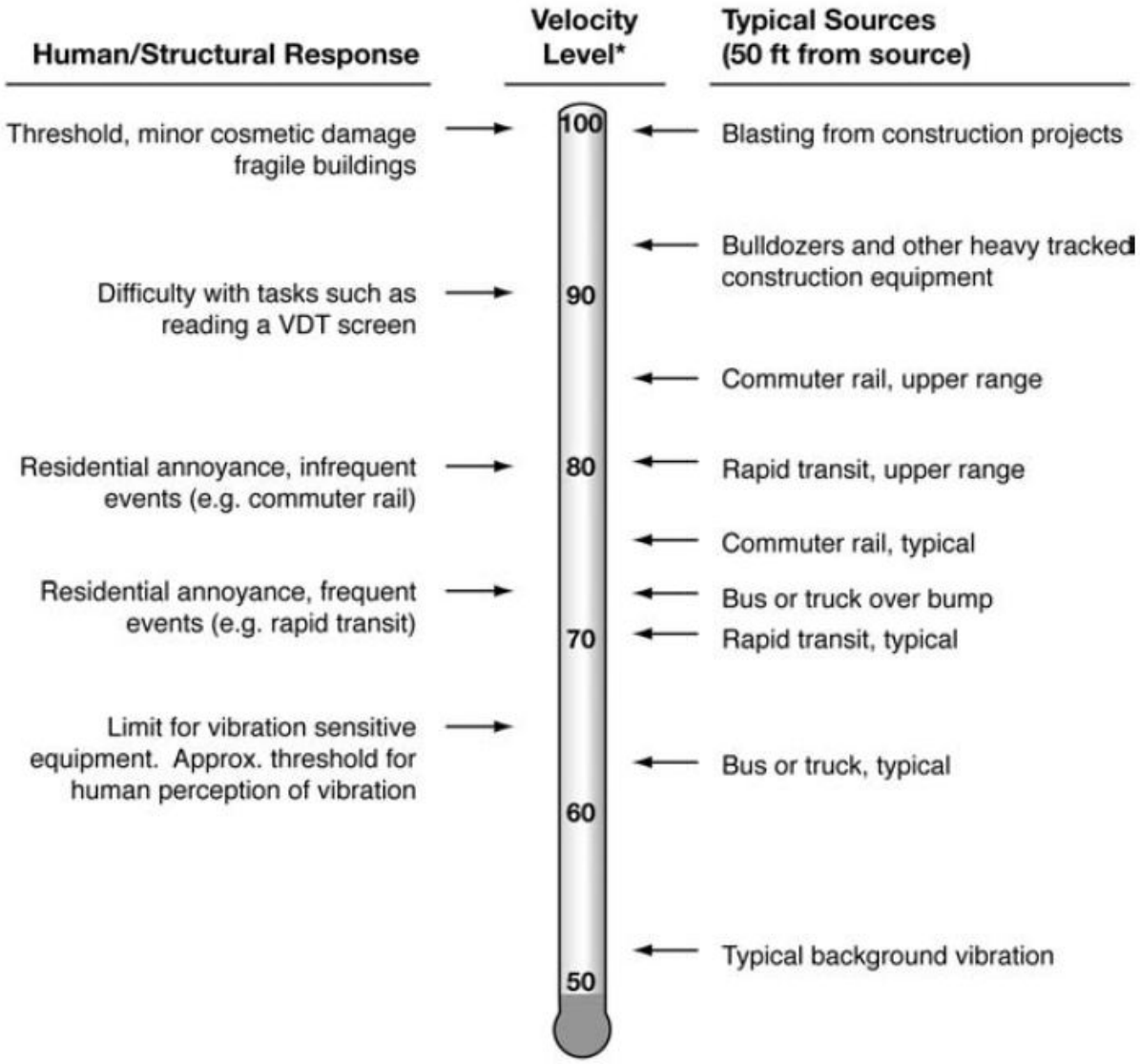
2.9 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (13), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings, but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal, and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research. (14) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING STANDARDS

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

The 2014 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (15) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of

the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA Leq for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1). Alternatively, Section 5.507.4.2 indicates that if the interior noise level performance standard of 50 dBA CNEL for non-residential uses is satisfied, then a project will satisfy the Green Building Standards Code requirements.

3.3 CITY OF TUSTIN NOISE ELEMENT

The City of Tustin has adopted a Noise Element of the General Plan to achieve and maintain environmental noise levels compatible with land uses in the City. (3) The Noise Element identifies noise-sensitive land uses, noise sources, and areas of potential noise impacts. In addition, the Noise Element includes goals, polices, and programs to protect City residents from excessive noise levels. The goals and policies related to Project development are outlined below from the City of Tustin General Plan Noise Element:

Goal 1: *Use noise control measures to reduce the impact from transportation noise sources.*

Policy 1.1: *Pursue construction of new barriers, or the augmentation of existing barriers, to reduce noise impacts along the Route 5 and Route 55 freeways along segments directly next to residential areas.*

Policy 1.9: *Encourage, where feasible, noise mitigation measures, such as noise barriers and realignments, in the design and construction of new roadway projects in the Tustin Planning Area.*

Policy 1.10: *Enforce the State's Vehicle Code noise standards within the City.*

Policy 1.11: *Consider noise impacts to residential neighborhoods when designating truck routes and major circulation corridors.*

Goal 2: *Incorporate noise considerations into land use planning decisions.*

Policy 2.1: *Adopt planning guidelines that establish acceptable noise standards for various land uses throughout the Tustin Planning Area.*

Policy 2.2: *Apply the state's noise insulation standards to the conversion of existing apartments into condominiums wherever feasible.*

Policy 2.3: *Use noise/land use compatibility standards as a guide for future planning and development.*

Policy 2.4: *Review proposed projects in terms of compatibility with nearby noise-sensitive land uses with the intent of reducing noise impacts.*

Policy 2.5: *Require new residential developments located in proximity to existing commercial/industrial operations to control residential interior noise levels as a condition of approval.*

Policy 2.6: *Requires that commercial uses developed as part of a mixed-use project (with residential) not be noise intensive. Design mixed-use structures to prevent transfer of noise from the commercial to residential use.*

Policy 2.7: *Require new commercial/industrial operations located in proximity to existing or proposed residential areas to incorporate noise mitigation into project design.*

Policy 2.8: *Replace a significant noise source with non-noise generating land uses when plans for future use of areas are developed.*

Goal 3: *Develop measures to control non-transportation noise impacts.*

Policy 3.2: Minimize the impacts of construction noise on adjacent land uses through limiting the permitted hours of activity.

3.3.1 LAND USE COMPATIBILITY

The noise criteria identified in the City of Tustin General Plan Noise Element, Table N-2, are guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown on Exhibit 3-A of this report, provides the City of Tustin with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise environment.

The *Land Use Noise Compatibility Matrix* describes categories of compatibility and not specific noise standards. The proposed residential uses of the Project are considered *clearly compatible* with unmitigated exterior noise levels of less than 60 dBA CNEL. For *normally compatible* exterior noise levels, approaching 65 dBA CNEL for residential use, *new construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice*. (3)

3.3.2 NOISE STANDARDS

To control transportation-related noise sources such as arterial roads, freeways, airports, and railroads, the City of Tustin has established the standards provided in Table N-3 of General Plan Noise Element for acceptable community noise levels. For Project residential uses, the Noise Element requires an exterior noise level not to exceed 65 dBA CNEL in outdoor environments, *limited to rear yard of single family homes, multifamily patios and balconies (with a depth of 6' or more) and common recreation areas*. (3) In addition, an interior noise level standard of 45 dBA CNEL for residential homes is identified consistent with California Code of Regulations, Title 24, Building Standards for residential use. Exhibit 3-B shows the City of Tustin General Plan Noise Element exterior noise level standards.

EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY MATRIX

LAND USE CATEGORIES		COMMUNITY NOISE EQUIVALENT LEVEL CNEL						
CATEGORIES	USES	<55	60	65	70	75	80>	
RESIDENTIAL	Single Family, Duplex, Multiple Family	A	A	B	C	C	D	D
RESIDENTIAL	Mobile Home	A	A	B	C	C	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theater	A	A	A	A	B	B	C
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheater, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
COMMERCIAL General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL General	Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

INTERPRETATION	
ZONE A CLEARLY COMPATIBLE	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
ZONE B NORMALLY COMPATIBLE	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
ZONE C NORMALLY INCOMPATIBLE	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design
ZONE D CLEARLY INCOMPATIBLE	New construction or development should generally not be undertaken.

Source: City of Tustin General Plan Noise Element, Table N-2.

EXHIBIT 3-B: EXTERIOR NOISE STANDARDS

Land Use	Noise Standards[1]	
	Interior[2,3]	Exterior
Residential - Single family, multifamily, duplex, mobile home	CNEL 45 dB	CNEL 65 dB[4]
Residential - Transient lodging, hotels, motels, nursing homes, hospitals	CNEL 45 dB	CNEL 65 dB[4]
Private offices, church sanctuaries, libraries, board rooms, conference rooms, theaters, auditoriums, concert halls, meeting halls, etc.	Leq(12) 45 dB(A)	-
Schools	Leq(12) 45 dB(A)	Leq(12) 67 dB(A)[5]
General offices, reception, clerical, etc.	Leq(12) 50 dB(A)	-
Bank lobby, retail store, restaurant, typing pool, etc.	Leq(12) 55 dB(A)	-
Manufacturing, kitchen, warehousing, etc.	Leq(12) 65 dB(A)	-
Parks, playgrounds	-	CNEL 65 dB[5]
Golf courses, outdoor spectator sports, amusement parks	-	CNEL 70 dB[5]

NOTES

1. CNEL: Community Noise Equivalent Level.
   Leq(12): The A-weighted equivalent sound level averaged over a 12-hour period (usually the hours of operation).
2. Noise standard with windows closed. Mechanical ventilation shall be provided per UBC requirements to provide a habitable environment.
3. Indoor environment excluding bathrooms, toilets, closets and corridors.
4. Outdoor environment limited to rear yard of single family homes, multifamily patios and balconies (with a depth of 6' or more) and common recreation areas.
5. Outdoor environment limited to playground areas, picnic areas, and other areas of frequent human use.

Source: City of Tustin General Plan Noise Element, Table N-3.

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Tustin Downtown Commercial Core Specific Plan Project, stationary-source (operational) noise is typically evaluated against standards established under a City's Municipal Code. To accurately describe potential operational noise levels of the uses within the Tustin DCCSP this analysis presents the operational noise standards on Table 3-1.

The City of Tustin Municipal Code, Chapter 6 Noise Control, Sections 4613 and 4614 establish Noise Zones and noise level standards for stationary noise sources, respectively. For residential use (Noise Zone 1), the exterior noise level shall not exceed 55 dBA L_{50} during daytime hours (7:00 a.m. to 10:00 p.m.) and shall not exceed 50 dBA L_{50} during the nighttime hours (10:00 p.m. to 7:00 a.m.). Exterior noise level limits, not to be exceeded at any time, for other uses include: 60 dBA L_{50} for commercial uses (Noise Zone 2), 70 dBA L_{50} for industrial uses (Noise Zone 3), 55 dBA L_{50} for special uses (Noise Zone 4), and 60 dBA L_{50} for mixed-use (Noise Zone 5). Special uses, per the City of Tustin Municipal Code, include hospitals, convalescent homes, public and institutional schools, libraries, and churches. The exterior noise level standards for each land use shall apply for a cumulative period of 30 minutes in any hour, as well as plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. (16) It is important to note that the City of Tustin Municipal Code, Section 4614(c) includes adjustments to the base exterior noise level limits, described above, should the ambient noise level already exceed the limits shown on Table 3-1. These ambient adjustments increase the exterior noise level limits to reflect the ambient measured noise level, however, this noise study uses the more conservative base exterior noise level limits when evaluating potential Project-related operational noise level impacts. Appendix 3.1 includes the City of Tustin Municipal Code, Chapter 6 Noise Control exterior noise level standards used in this noise study.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Noise Zone[1]	Land Use	Time Period	Exterior Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
1	Residential	Daytime	55	60	65	70	75
		Nighttime	50	55	60	65	70
2	Commercial	Any Time	60	65	70	75	80
3	Industrial	Any Time	70	75	80	85	90
4	Special[2]	Any Time	55	60	65	70	75
5	Mixed-Use	Any Time	60	65	70	75	80

[1] Source: Sections 4613 & 4614 of the City of Tustin Municipal Code (Appendix 3.1).
[2] Special land uses per the City of Tustin Municipal Code, Section 4613: Hospitals, convalescent homes, public and institutional schools, libraries, and churches.
[3] The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{25} is the noise level exceeded 25% of the time.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Tustin Downtown Commercial Core Specific Plan, noise from construction activities are typically evaluated against standards established under a City's Municipal Code. To control noise impacts associated with the construction of the proposed Project, the City of Tustin has established limits to the hours of operation. Unless otherwise permitted by the City, Section 4617(e) of the City's Municipal Code indicates that construction activity shall be exempt from the noise standards of the Municipal Code if limited to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. Saturdays; with no activity allowed on Sundays and Federal holidays. (16)

However, the City's General Plan and Municipal Code do not establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes as the *generation of noise levels in excess of standards* or as a *substantial temporary or periodic noise increase*. Therefore, this noise study identifies construction noise level thresholds to evaluate these potential impacts.

3.5.1 CONSTRUCTION NOISE LEVEL COMPLIANCE THRESHOLD

To evaluate whether the Project will generate potentially significant temporary construction noise levels at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (4) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3 dBA increase, the exposure time is cut in half. This results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. (4) For the purposes of this analysis, the lowest, more conservative construction noise level threshold of 85 dBA Leq is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations. Since this construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as Leq noise levels. Therefore, the noise level threshold of 85 dBA Leq over a period of eight hours or more is used to evaluate the potential Project-related construction noise level impacts at the nearby sensitive receiver locations.

3.5.2 CONSTRUCTION-RELATED HEARING CONSERVATION

The Occupational Safety and Health Administration (OSHA) requires hearing protection be provided by employers in workplaces where the noise levels may, over long periods of exposure to high noise levels, endanger the hearing of their employees. Standard 29 CFR, Part 1910 indicates the noise levels under which a hearing conservation program is required to be provided to workers exposed to high noise levels. (11) This analysis does not evaluate the noise exposure of construction workers within the Project site based on CEQA requirements, and instead, evaluates the Project-related construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such

as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (12)

3.6 CONSTRUCTION VIBRATION STANDARDS

The City of Tustin General Plan and Municipal Code do not identify specific vibration level standards. Therefore, applicable vibration standards identified by the California Department of Transportation ("Caltrans") *Transportation and Construction Vibration Guidance Manual* are used in this noise study. (17) According to the Caltrans vibration manual, large bulldozers, and loaded trucks used during construction activities can produce vibration which can potentially cause annoyance at sensitive land uses within the Project study area, or damage to adjacent structures. Caltrans has developed a screening tool to determine of vibration from construction equipment is substantial enough to impact surrounding uses. The Caltrans vibration manual establishes thresholds for determining potential vibration impacts resulting in building damage or human annoyance. These thresholds are summarized in Table 3-2 below.

TABLE 3-2: VIBRATION STANDARDS

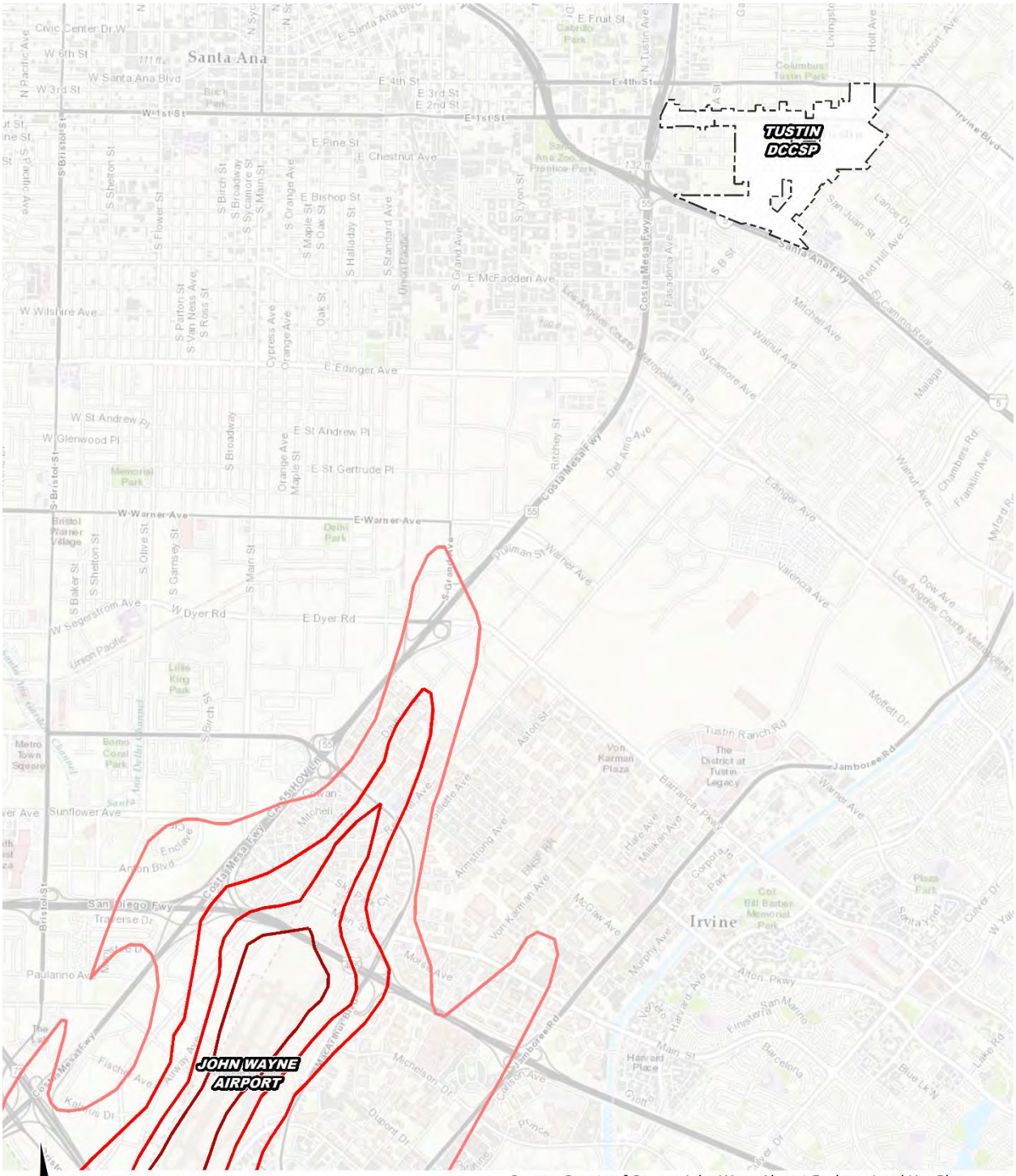
Caltrans Guidelines	Peak Particle Velocity for Continuous Sources (PPV) (in/sec)
Building Damage	
Extremely Fragile Historic Buildings	0.08
Fragile Buildings	0.10
Historic Buildings	0.25
Older Residential Structures	0.30
New Residential Structures	0.50
Modern Industrial/Commercial Buildings	0.50
Human Annoyance	
Barely Perceptible	0.01
Distinctly Perceptible	0.04
Strongly Perceptible	0.10
Severe	0.40

Source: Caltrans Transportation and Construction Vibration Guidance Manual, September 2013, Tables 19 & 20.

3.7 JOHN WAYNE AIRPORT ENVIRONS LAND USE PLAN

The Project site is located approximately 4.5 miles northeast of John Wayne Airport. The John Wayne Airport Environs Land Use Plan (AELUP) identifies the noise compatibility criteria to determine the potential impacts to land uses within the noise contours of the airport. (18) Table 1 of the AELUP shows that residential land use, such as the Project, is considered *normally consistent* with exterior noise levels approaching 60 dBA CNEL due to aircraft noise. *Conditionally consistent* residential land use is located within the 60 to 65 dBA CNEL noise level contours of the John Wayne Airport, and requires interior noise reduction measures to satisfy an interior noise level of 45 dBA CNEL. To determine if the Project is located within the noise level contours of the John Wayne Airport, the AELUP noise level contour boundaries provided by the County of Orange are shown on Exhibit 3-C. (18) As shown on Exhibit 3-C of this report, the Project site is located outside of the 60 dBA CNEL noise contour boundaries of John Wayne airport, and therefore, no exterior noise mitigation measures are required due to aircraft noise. Notwithstanding, this noise study has been prepared to satisfy the 45 dBA CNEL interior noise level standard for residential uses consistent with the City of Tustin General Plan Noise Element.

EXHIBIT 3-C: JOHN WAYNE AIRPORT NOISE LEVEL CONTOUR BOUNDARIES



LEGEND:
Unmitigated Noise Level Contour Boundary

60 dBA CNEL
65 dBA CNEL
70 dBA CNEL
75 dBA CNEL

Source: County of Orange John Wayn Airport Environs Land Use Plan.

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or

D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

While the CEQA Guidelines and the City of Tustin General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under CEQA Guideline A, they do not define the levels at which increases are considered substantial for use under Guidelines B, C, and D. CEQA Guidelines E and F apply to nearby public and private airports, if any, and the Project's land use compatibility. The Project site is located approximately 4.5 miles northeast of John Wayne Airport. Table 1 of the John Wayne Airport Environs Land Use Plan (AELUP) shows that residential land use, such as the Project, is considered *normally consistent* with exterior noise levels approaching 60 dBA CNEL due to aircraft noise. As previously shown on Exhibit 3-C of this report, the Project site is located outside of the 60 dBA CNEL noise contour boundaries of John Wayne airport, and therefore, would not expose people residing or working in the Project area to excessive noise levels. No further noise analysis is conducted in relation to Guidelines E and F.

4.1 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receivers in order to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (19)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

4.1.1 Substantial Permanent Noise Level Increases

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (20) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL).

For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. According to the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Federal Interagency Committee on Noise (FICON), 1992.

4.1.2 SUBSTANTIAL TEMPORARY OF PERIODIC NOISE LEVEL INCREASES

Due to the temporary, short-term nature of noise-generating construction activities, the temporary or periodic noise level increases over the existing ambient conditions must be considered under CEQA Guideline D. Therefore, the Caltrans *Traffic Noise Analysis Protocol* 12 dBA Leq *substantial* noise level increase threshold is used in this analysis to assess temporary noise level increases. (5) If the Project-related construction noise levels generate a temporary noise level increase above the existing ambient noise levels of up to 12 dBA Leq, then the Project construction noise level increases will be considered a potentially significant impact. Although the Caltrans recommendations were specifically developed to assess traffic noise impacts, the 12 dBA Leq substantial noise level increase threshold is used in California to address noise level increases with the potential to exceed existing conditions. (5)

4.2 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-2 shows the significance criteria summary matrix.

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
  - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project-related noise level increase; or
  - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project-related noise level increase; or
  - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).

ON-SITE TRANSPORTATION NOISE

- If the on-site exterior noise levels exceed 65 dBA CNEL at the outdoor environments of future residential uses within the Project site. Interior noise levels shall not exceed 45 dBA CNEL for residential dwelling units (City of Tustin General Plan Noise Element, Table N-3);

OPERATIONAL NOISE

- If Project-related operational (stationary-source) noise levels exceed:
  - 55 dBA L_{50} during daytime hours (7:00 a.m. to 10:00 p.m.) or 50 dBA L_{50} during the nighttime hours (10:00 p.m. to 7:00 a.m.) at residential uses (Noise Zone 1); or
  - 60 dBA L_{50} for commercial uses (Noise Zone 2); or
  - 70 dBA L_{50} for industrial uses (Noise Zone 3); or
  - 55 dBA L_{50} for special uses (Noise Zone 4); or
  - 60 dBA L_{50} for mixed-use (Noise Zone 5); and
  - The exterior noise level standards for each Noise Zone identified above shall apply for a cumulative period of 30 minutes in any hour, as well as plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA

for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time (City of Tustin Municipal Code, Chapter 6 Noise Control, Section 4614); or

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities:
  - create noise levels which exceed the 85 dBA Leq acceptable noise level threshold at the nearby sensitive receiver locations (NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure); or
  - generate temporary Project construction-related noise level increases which exceed the 12 dBA Leq *substantial* noise level increase threshold at noise-sensitive receiver locations (Caltrans, Traffic Noise Analysis Protocol).
- If Project-related construction activities generate vibration levels which exceed the Caltrans building damage vibration level thresholds, or the *distinctly perceptible* human annoyance vibration level threshold of 0.04 in/sec PPV at nearby sensitive receiver locations identified on Table 3-2 (Caltrans Transportation and Construction Vibration Guidance Manual, Tables 19 & 20).

TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
On-Site[2]	Residential	Exterior Noise Level Standard	65 dBA CNEL	
		Interior Noise Level Standard	45 dBA CNEL	
Operational	All[3]	≥ 30 Minutes L_{50}	See Table 3-1 Exterior Noise Level Standards by Noise Zone	
		≥ 15 Minutes L_{25}		
		≥ 5 Minutes L_8		
		≥ 1 Minute L_2		
		Anytime L_{max}		
Construction	Noise-Sensitive	Noise Level Threshold[4]	85 dBA Leq	n/a
		Noise Level Increase[5]	12 dBA Leq	n/a
		Vibration Level Threshold (Building Damage)[6]	See Table 3-2	n/a
		Vibration Level Threshold (Distinctly Perceptible)[6]	0.04 in/sec PPV	n/a

[1] Source: FICON, 1992.
[2] Source: City of Tustin General Plan Noise Element, Table N-3.
[3] Source: Sections 4613 & 4614 of the City of Tustin Municipal Code (Appendix 3.1).
[4] Source: NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure, June 1998.
[5] Source: Caltrans Traffic Noise Analysis Protocol, May 2011.
[6] Source: Caltrans Transportation and Construction Vibration Guidance Manual, September 2013, Tables 19 & 20.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "n/a" = No nighttime construction activity is permitted, so no nighttime construction noise level limits are identified.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, eight 24-hour noise level measurements were taken within future Development Areas (DAs) of the Project and adjacent to sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. from Thursday, April 13th, to Friday, April 14th, 2017. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013, (21) consistent with the City of Tustin Municipal Code, Section 4620 Noise Level Measurement Criteria. (16)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent any part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (6) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (13)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (13) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise-sensitive areas and are used to estimate the

future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (Leq). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Table 5-2 summarizes the noise levels at existing and future Project land uses described below in relation to the 24-hour CNEL land use compatibility criteria of the City of Tustin General Plan Noise Element Table N-2. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels within Development Area 1 on Pasadena Avenue near existing residential homes and State Route 55. The noise level measurements collected show an overall 24-hour exterior noise level of 73.2 dBA CNEL. Based on Table N-2 of the City of Tustin General Plan Noise Element, previously shown on Exhibits 3-A and 3-B of this report, the 24-hour noise level represents *normally incompatible* residential use. The hourly noise levels measured at location L1 ranged from 67.7 to 69.7 dBA Leq during the daytime hours and from 59.3 to 69.7 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 68.9 dBA Leq with an average nighttime noise level of 65.7 dBA Leq.
- Location L2 represents the noise levels at the northern boundary of Development Area 1 and existing residential homes on C Street. The noise level measurements collected show an overall 24-hour exterior noise level of 61.4 dBA CNEL. Based on Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *normally compatible* residential use. Location L2 is also located at the boundary of an existing office building parking lot and residential homes. The hourly noise levels measured at location L2 ranged from 57.3 to 61.5 dBA Leq during the daytime hours and from 43.8 to 55.9 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 59.8 dBA Leq with an average nighttime noise level of 51.6 dBA Leq.
- Location L3 represents the noise levels on B Street adjacent to existing residential homes, Peppertree Park, and the Tustin Area Senior Center. The 24-hour CNEL indicates that the overall exterior noise level is 65.3 dBA CNEL. Based on Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *normally compatible* park use and *normally incompatible* senior center and residential use. At location L3 the background ambient noise levels ranged from 49.7 to 64.0 dBA Leq during the daytime hours to levels of 47.2 to 63.3 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 61.3 dBA Leq with an average nighttime noise level of 58.0 dBA Leq.
- Location L4 represents the noise levels within Development Area 4 on Prospect Avenue near existing mobile homes and commercial/office uses. Per Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *clearly compatible* office use and *normally compatible* mobile home park use. The noise level measurements collected show an overall 24-hour exterior noise level of 63.7 dBA CNEL. The hourly noise levels measured at location L4 ranged

from 58.4 to 68.1 dBA Leq during the daytime hours and from 45.7 to 57.5 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 63.2 dBA Leq with an average nighttime noise level of 53.0 dBA Leq.

- Location L5 represents the noise levels on Newport Avenue within Development Area 3 and existing commercial uses. The noise level measurements collected show an overall 24-hour exterior noise level of 74.8 dBA CNEL. Based on Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *normally compatible* commercial use and *normally incompatible* residential use. The hourly noise levels measured at location L5 ranged from 68.5 to 74.8 dBA Leq during the daytime hours and from 59.1 to 73.1 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 71.6 dBA Leq with an average nighttime noise level of 66.8 dBA Leq.
- Location L6 represents the noise levels on El Camino Real within Development Area 4 near existing commercial uses south of Main Street. The 24-hour CNEL indicates that the overall exterior noise level is 66.9 dBA CNEL. Based on Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *normally incompatible* residential use and *clearly compatible* commercial use. At location L6 the background ambient noise levels ranged from 61.4 to 65.2 dBA Leq during the daytime hours to levels of 51.6 to 65.0 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 63.3 dBA Leq with an average nighttime noise level of 59.1 dBA Leq.
- Location L7 represents the noise levels within Development Area 6 adjacent to mixed-use-designated uses and existing commercial/office use. The noise level measurements collected show an overall 24-hour exterior noise level of 67.4 dBA CNEL. Based on Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *normally incompatible* residential use. The hourly noise levels measured at location L7 ranged from 62.4 to 65.5 dBA Leq during the daytime hours and from 56.1 to 62.1 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 63.9 dBA Leq with an average nighttime noise level of 59.4 dBA Leq.
- Location L8 represents the noise levels in Development Area 5 north of the intersection of Newport Avenue and El Camino Real near existing commercial uses. The 24-hour CNEL indicates that the overall exterior noise level is 66.9 dBA CNEL. Per Table N-2 of the City of Tustin General Plan Noise Element, the 24-hour noise level represents *normally incompatible* residential use and *clearly compatible* commercial use. At location L8 the background ambient noise levels ranged from 59.6 to 64.2 dBA Leq during the daytime hours to levels of 55.2 to 63.4 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 61.9 dBA Leq with an average nighttime noise level of 59.6 dBA Leq.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with I-5 and SR-55 and aircraft overflight events from John Wayne Airport. The 24-hour existing noise level measurements shown on Table 5-1 present the worst-case existing ambient noise conditions.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Adjacent Tustin DCCSP Development Area		Description	Energy Average Hourly Noise Level (dBA Leq)[2]		CNEL
	No.	Land Use		Daytime	Nighttime	
L1	1	Downtown Mixed-Use	Located within Development Area 1 on Pasadena Avenue near existing residential homes and State Route 55.	68.7	65.7	73.2
L2	1, 2	Downtown Mixed-Use	Located at the northern boundary of Development Area 1 and existing residential homes on C Street.	59.8	51.6	61.4
L3	4	Civic/ Institutional	Located on B Street adjacent to existing residential homes, Peppertree Park, and the Tustin Area Senior Center.	61.3	58.0	65.3
L4	4	Old Town, Mobile Home Park	Located within Development Area 4 on Prospect Avenue near existing mobile homes and commercial/office uses.	63.2	53.0	63.7
L5	3,5	Downtown Mixed-Use	Located on Newport Avenue within Development Area 3 and existing commercial uses.	71.6	66.8	74.8
L6	4	Old Town	Located on El Camino Real within Development Area 4 near existing commercial uses south of Main Street.	63.3	59.1	66.9
L7	6	Multi-Family, Downtown Mixed-Use	Located within Development Area 6 adjacent to mixed-use-designated uses and existing commercial/office use.	63.9	59.4	67.4
L8	5,6	Downtown Mixed-Use, Commercial	Located in Development Area 5 north of the intersection of Newport Avenue and El Camino Real near existing commercial uses.	61.9	59.6	66.9

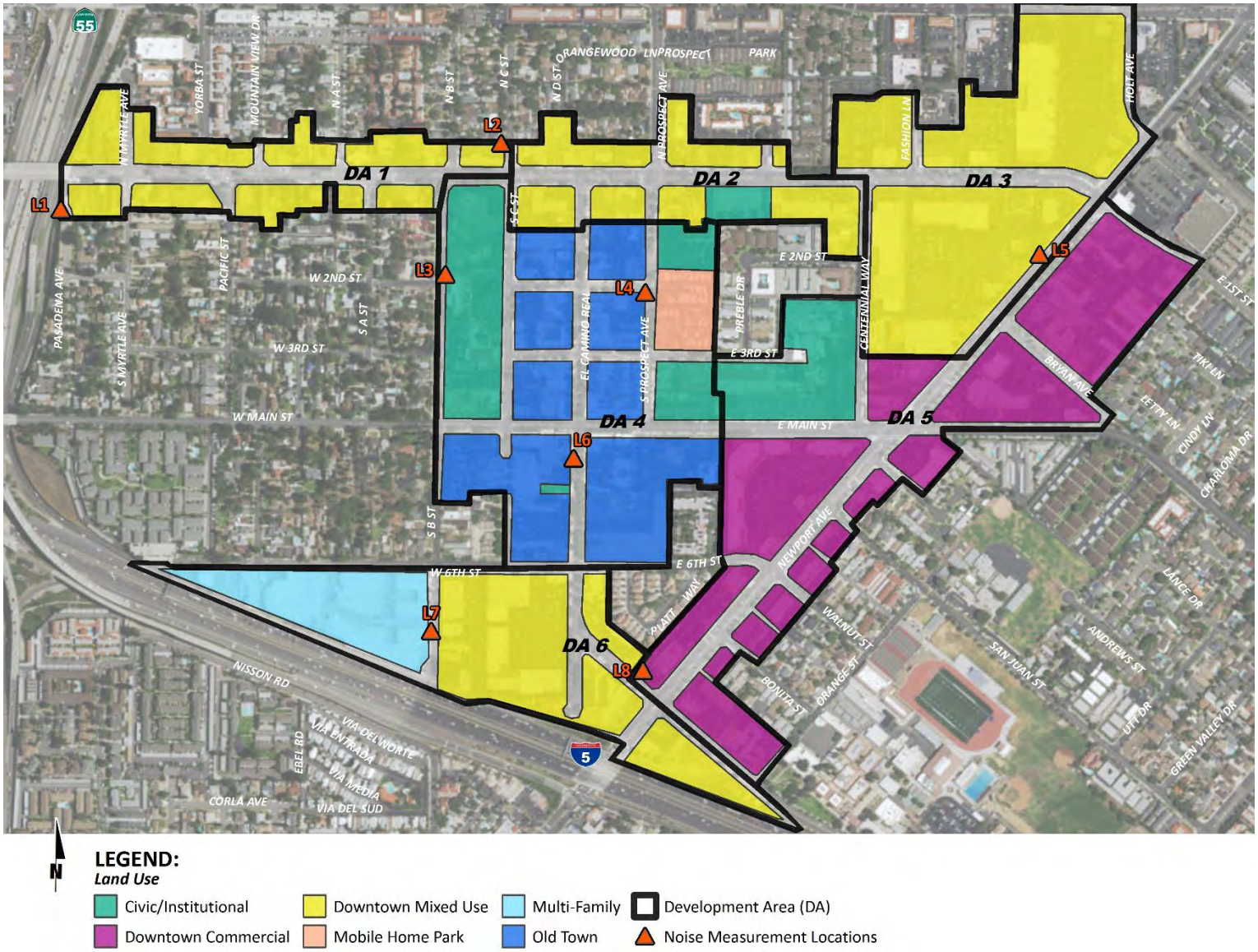
[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average hourly levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

TABLE 5-2: EXISTING LAND USE COMPATIBILITY

Location[1]	Adjacent Tustin DCCSP Development Area		CNEL[2]	Land Use Compatibility[3]
	Number	Land Use		
L1	1	Downtown Mixed-Use	73.2	*Normally Incompatible*
L2	1, 2	Downtown Mixed-Use	61.4	*Normally Compatible*
L3	4	Civic/ Institutional	65.3	*Normally Compatible* (Park); *Incompatible* (Senior Center, Residential)
L4	4	Old Town, Mobile Home Park	63.7	*Clearly Compatible* (Office); *Normally Compatible* (Mobile Home)
L5	3,5	Downtown Mixed-Use	74.8	*Normally Compatible* (Commercial) *Normally Incompatible* (Residential)
L6	4	Old Town	66.9	*Clearly Compatible* (Commercial) *Normally Incompatible* (Residential)
L7	6	Multi-Family, Downtown Mixed-Use	67.4	*Normally Incompatible*
L8	5,6	Downtown Mixed-Use, Commercial	66.9	*Clearly Compatible* (Commercial) *Normally Incompatible* (Residential)

[1] See Exhibit 5-A for the noise level measurement locations.
[2] The long-term 24-hour measurement worksheets are included in Appendix 5.2.
[3] See Exhibit 3-A for the City of Tustin General Plan Noise Element land use compatibility matrix.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (22) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (23) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 32 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Tustin General Plan Circulation Element, and the posted vehicle speeds. For this analysis, soft site conditions are used to analyze the traffic noise impacts within the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Caltrans' research has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (24) The Existing and Long Range Cumulative 2035 average daily traffic volumes used for this study are presented on Table 6-2 and are provided by the *Tustin Downtown Commercial Core Specific Plan Traffic Study* prepared by Stantec Consulting Services, Inc. (2)

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Adjacent Land Use[1]	Distance From Centerline To Nearest Adjacent Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	B St.	s/o First St.	Residential	25'	25
2	B St.	s/o Main St.	Residential	25'	25
3	C St.	s/o First St.	Civic/Institutional	25'	25
4	C St.	s/o 2nd St.	Civic/Institutional	25'	25
5	C St.	s/o 3rd St.	Civic/Institutional	25'	25
6	El Camino Real	s/o First St.	Commercial	40'	25
7	El Camino Real	s/o 2nd St.	Commercial	40'	25
8	El Camino Real	s/o 3rd St.	Commercial	40'	25
9	El Camino Real	s/o Main St.	Commercial	40'	25
10	El Camino Real	n/o Newport Av.	Commercial	40'	25
11	Prospect Av.	s/o First St.	Commercial	40'	30
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	40'	30
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	40'	30
14	Newport Av.	s/o Irvine Bl.	Commercial	60'	40
15	Newport Av.	s/o First St.	Commercial	60'	40
16	Newport Av.	s/o Main St.	Commercial	60'	40
17	Newport Av.	s/o El Camino Real	Commercial	60'	35
18	Irvine Bl.	w/o Yorba St.	Commercial	50'	40
19	Irvine Bl.	e/o Yorba St.	Commercial	50'	40
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	50'	40
21	First St.	w/o Yorba St.	Commercial	33'	35
22	First St.	e/o Yorba St.	Commercial	33'	35
23	First St.	w/o Prospect Av.	Commercial	33'	35
24	First St.	e/o Prospect Av.	Commercial	33'	35
25	2nd St.	w/o El Camino Real	Commercial	25'	25
26	2nd St.	e/o El Camino Real	Commercial	25'	25
27	3rd St.	w/o El Camino Real	Commercial	25'	25
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	25'	25
29	Main St.	w/o B St.	Residential	33'	30
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	33'	30
31	Main St.	e/o El Camino Real	Commercial	33'	30
32	6th St.	e/o B St.	Residential	25'	25

[1] Source: Google Earth aerial imagery.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the City of Tustin General Plan Circulation Element.
[3] Posted speed limits.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]					
			Existing			Long-Range 2035		
			Without Project	With Project	With Transfer Sensitivity	Without Project	With Project	With Transfer Sensitivity
1	B St.	s/o First St.	2.7	2.2	2.3	4.0	3.1	3.2
2	B St.	s/o Main St.	2.7	2.2	2.3	4.0	3.1	3.2
3	C St.	s/o First St.	2.8	2.3	2.4	4.0	3.2	3.3
4	C St.	s/o 2nd St.	2.8	2.6	2.7	3.0	2.9	3.0
5	C St.	s/o 3rd St.	2.8	2.9	3.0	2.0	2.3	2.5
6	El Camino Real	s/o First St.	5.9	4.1	4.7	8.0	6.2	6.8
7	El Camino Real	s/o 2nd St.	5.9	4.2	4.7	7.0	5.3	5.9
8	El Camino Real	s/o 3rd St.	5.9	4.2	4.7	7.0	5.3	5.9
9	El Camino Real	s/o Main St.	11.3	10.9	11.9	14.0	13.6	14.6
10	El Camino Real	n/o Newport Av.	11.3	12.7	13.6	13.0	14.4	15.3
11	Prospect Av.	s/o First St.	3.6	3.1	3.3	7.0	6.6	6.7
12	Prospect Av.	s/o 2nd St.	3.6	3.1	3.3	7.0	6.6	6.8
13	Prospect Av.	s/o 3rd St.	3.6	3.1	3.6	9.0	5.5	6.1
14	Newport Av.	s/o Irvine Bl.	26.6	26.0	26.1	27.0	26.4	26.5
15	Newport Av.	s/o First St.	26.6	28.0	28.0	28.0	29.4	29.4
16	Newport Av.	s/o Main St.	26.6	27.9	27.9	27.0	28.2	28.3
17	Newport Av.	s/o El Camino Real	28.7	30.6	30.9	36.0	37.9	38.2
18	Irvine Bl.	w/o Yorba St.	34.9	36.2	36.6	41.0	42.3	42.7
19	Irvine Bl.	e/o Yorba St.	26.6	28.2	28.5	31.0	32.6	32.9
20	Irvine Bl.	e/o Prospect Av.	27.8	28.1	28.6	37.0	37.3	37.8
21	First St.	w/o Yorba St.	20.1	15.8	16.3	21.0	16.7	17.2
22	First St.	e/o Yorba St.	17.1	13.6	14.2	21.0	17.5	18.1
23	First St.	w/o Prospect Av.	17.1	14.9	15.4	18.0	15.8	16.4
24	First St.	e/o Prospect Av.	13.9	13.7	13.9	17.0	16.8	17.0
25	2nd St.	w/o El Camino Real	0.8	0.5	0.6	1.0	1.2	1.3
26	2nd St.	e/o El Camino Real	0.8	0.6	0.6	2.0	1.6	1.7
27	3rd St.	w/o El Camino Real	0.9	0.6	0.7	2.0	1.4	1.6
28	3rd St.	e/o El Camino Real	0.9	0.6	0.8	2.0	2.0	2.2
29	Main St.	w/o B St.	11.6	12.2	12.7	13.0	13.6	14.1
30	Main St.	e/o B St.	11.6	12.1	12.7	16.0	16.5	17.1
31	Main St.	e/o El Camino Real	11.1	10.5	10.9	15.0	14.4	14.7
32	6th St.	e/o B St.	1.9	1.8	2.0	3.0	2.8	3.0

[1] Source: Tustin Downtown Commercial Core Specific Plan Traffic Study, Stantec Consulting Services, Inc., June 2017.

Table 6-3 presents the time of day vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix on Interstate 5 (I-5) and State Route 55 (SR-55) are based on traffic volumes provided by the *2015 Annual Average Daily Truck Traffic (AADT) on the California Highway System*, prepared by the Caltrans Traffic Data Branch. (25) The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	77.5%	84.8%	86.5%
Evening (7:00 p.m. - 10:00 p.m.)	12.9%	4.9%	2.7%
Nighttime (10:00 p.m. - 7:00 a.m.)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

Source: County of Orange Land Use/Noise Compatibility Manual, December 1993.

TABLE 6-4: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
I-5[1]	94.50%	2.43%	3.07%	100.00%
SR-55[1]	92.30%	4.27%	3.43%	100.00%
All Roadways[2]	97.42%	1.84%	0.74%	100.00%

[1] Source: Caltrans Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2015.
[2] Source: County of Orange Land Use/Noise Compatibility Manual, December 1993.

Table 6-5 shows the future traffic conditions on I-5 and SR-55 which are based on an assumed growth of 10-percent above the existing traffic volumes collected from the *Annual Average Daily Truck Traffic (AADT) on the California Highway System*, prepared by the Caltrans Traffic Data Branch. (25) The Table 6-5 traffic noise model input data for I-5 and SR-55 are used to calculate the noise level contour boundaries and assess future land use compatibility at Project on-site residential uses.

TABLE 6-5: FREEWAY TRAFFIC MODEL INPUTS

Roadway	Lanes	Average Daily Traffic Volume[1]	Speed Limit (mph)[2]	Site Conditions
I-5 Freeway	12	307,500	70	Soft
SR-55 Freeway	10	262,500	70	Soft

[1] Future volumes based on a 10-percent increase in existing traffic volumes (Source: Caltrans Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2015).
[2] Posted speed limits.

6.3 CONSTRUCTION VIBRATION ASSESSMENT METHODOLOGY

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

While vehicular traffic is rarely perceptible, construction activity has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-6. Based on the reference vibration levels provided by the Federal Transit Administration (FTA) for various construction equipment types, it is possible to estimate the potential building damage and human response (annoyance) using the following vibration assessment methods defined by the FTA and Caltrans. To describe the potential vibration impacts, the following equation is used: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 6-6: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

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7 OFF-SITE TRAFFIC NOISE IMPACTS

To assess the off-site traffic-related CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the *Tustin Downtown Commercial Core Specific Plan Traffic Study*. (2) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Project: This scenario refers to the existing present-day noise conditions, without and with the proposed Project.
    - With Project Transferability Sensitivity Analysis: This scenario refers to the existing present-day noise conditions with the worst-case Project Transferability Sensitivity Analysis of the Traffic Study, which includes a 25-percent increase in proposed residential units.
- Long Range Cumulative 2035 Without / With Project: This scenario refers to the background noise conditions at future Year 2035 without and with the proposed Project plus ambient growth. This scenario corresponds to 2035 conditions, and includes all cumulative projects identified in the Traffic Study.
    - With Project Transferability Sensitivity Analysis: This scenario refers to the future Year 2035 noise conditions with the worst-case Project Transferability Sensitivity Analysis of the Traffic Study, which includes a 25-percent increase in proposed residential units.

7.1 TRAFFIC NOISE CONTOURS

To quantify the Project's traffic noise impacts on the surrounding areas, the changes in traffic noise levels on roadway segments surrounding the Project were calculated based on the changes in the average daily traffic volumes. Based on the noise impact significance criteria described in Section 4 and shown on Table 4-2, a significant off-site traffic noise level impact occurs:

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project-related noise level increase; or
    - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project-related noise level increase; or
    - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).

The noise-sensitive significance criteria is applied to the Project-related off-site traffic noise level increases based on the land uses adjacent to the study area roadway segments. Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise

contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-6 present a summary of the exterior traffic noise levels, without barrier attenuation, for the 32 study area roadway segments analyzed from the without Project to the with Project and with Project Transferability conditions in each of the two timeframes: Existing and Long Range Cumulative 2035 conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the six traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	B St.	s/o First St.	Residential	59.3	RW	RW	RW
2	B St.	s/o Main St.	Residential	59.3	RW	RW	RW
3	C St.	s/o First St.	Civic/Institutional	59.4	RW	RW	RW
4	C St.	s/o 2nd St.	Civic/Institutional	59.4	RW	RW	RW
5	C St.	s/o 3rd St.	Civic/Institutional	59.4	RW	RW	RW
6	El Camino Real	s/o First St.	Commercial	61.2	RW	RW	48
7	El Camino Real	s/o 2nd St.	Commercial	61.2	RW	RW	48
8	El Camino Real	s/o 3rd St.	Commercial	61.2	RW	RW	48
9	El Camino Real	s/o Main St.	Commercial	64.1	RW	RW	75
10	El Camino Real	n/o Newport Av.	Commercial	64.1	RW	RW	75
11	Prospect Av.	s/o First St.	Commercial	60.9	RW	RW	46
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	60.9	RW	RW	46
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	60.9	RW	RW	46
14	Newport Av.	s/o Irvine Bl.	Commercial	70.9	69	149	322
15	Newport Av.	s/o First St.	Commercial	70.9	69	149	322
16	Newport Av.	s/o Main St.	Commercial	70.9	69	149	322
17	Newport Av.	s/o El Camino Real	Commercial	69.8	RW	126	272
18	Irvine Bl.	w/o Yorba St.	Commercial	73.0	79	170	367
19	Irvine Bl.	e/o Yorba St.	Commercial	71.8	66	142	306
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	72.0	68	146	315
21	First St.	w/o Yorba St.	Commercial	70.8	37	80	173
22	First St.	e/o Yorba St.	Commercial	70.1	33	72	155
23	First St.	w/o Prospect Av.	Commercial	70.1	33	72	155
24	First St.	e/o Prospect Av.	Commercial	69.2	RW	63	135
25	2nd St.	w/o El Camino Real	Commercial	54.0	RW	RW	RW
26	2nd St.	e/o El Camino Real	Commercial	54.0	RW	RW	RW
27	3rd St.	w/o El Camino Real	Commercial	54.5	RW	RW	RW
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	54.5	RW	RW	RW
29	Main St.	w/o B St.	Residential	66.8	RW	43	94
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	66.8	RW	43	94
31	Main St.	e/o El Camino Real	Commercial	66.6	RW	42	91
32	6th St.	e/o B St.	Residential	57.8	RW	RW	RW

[1] Source: Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	B St.	s/o First St.	Residential	58.4	RW	RW	RW
2	B St.	s/o Main St.	Residential	58.4	RW	RW	RW
3	C St.	s/o First St.	Civic/Institutional	58.6	RW	RW	RW
4	C St.	s/o 2nd St.	Civic/Institutional	59.1	RW	RW	RW
5	C St.	s/o 3rd St.	Civic/Institutional	59.6	RW	RW	RW
6	El Camino Real	s/o First St.	Commercial	59.7	RW	RW	RW
7	El Camino Real	s/o 2nd St.	Commercial	59.8	RW	RW	RW
8	El Camino Real	s/o 3rd St.	Commercial	59.8	RW	RW	RW
9	El Camino Real	s/o Main St.	Commercial	63.9	RW	RW	73
10	El Camino Real	n/o Newport Av.	Commercial	64.6	RW	RW	81
11	Prospect Av.	s/o First St.	Commercial	60.3	RW	RW	42
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	60.3	RW	RW	42
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	60.3	RW	RW	42
14	Newport Av.	s/o Irvine Bl.	Commercial	70.8	68	147	317
15	Newport Av.	s/o First St.	Commercial	71.2	72	154	333
16	Newport Av.	s/o Main St.	Commercial	71.1	72	154	332
17	Newport Av.	s/o El Camino Real	Commercial	70.1	61	132	284
18	Irvine Bl.	w/o Yorba St.	Commercial	73.1	81	175	376
19	Irvine Bl.	e/o Yorba St.	Commercial	72.1	69	148	318
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	72.0	68	147	318
21	First St.	w/o Yorba St.	Commercial	69.7	RW	68	147
22	First St.	e/o Yorba St.	Commercial	69.1	RW	62	133
23	First St.	w/o Prospect Av.	Commercial	69.5	RW	66	142
24	First St.	e/o Prospect Av.	Commercial	69.1	RW	62	134
25	2nd St.	w/o El Camino Real	Commercial	52.0	RW	RW	RW
26	2nd St.	e/o El Camino Real	Commercial	52.8	RW	RW	RW
27	3rd St.	w/o El Camino Real	Commercial	52.8	RW	RW	RW
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	52.8	RW	RW	RW
29	Main St.	w/o B St.	Residential	67.0	RW	45	97
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	67.0	RW	45	96
31	Main St.	e/o El Camino Real	Commercial	66.4	RW	41	88
32	6th St.	e/o B St.	Residential	57.5	RW	RW	RW

[1] Source: Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EXISTING WITH PROJECT TRANSFERABILITY CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	B St.	s/o First St.	Residential	58.6	RW	RW	RW
2	B St.	s/o Main St.	Residential	58.6	RW	RW	RW
3	C St.	s/o First St.	Civic/Institutional	58.8	RW	RW	RW
4	C St.	s/o 2nd St.	Civic/Institutional	59.3	RW	RW	RW
5	C St.	s/o 3rd St.	Civic/Institutional	59.7	RW	RW	RW
6	El Camino Real	s/o First St.	Commercial	60.2	RW	RW	42
7	El Camino Real	s/o 2nd St.	Commercial	60.2	RW	RW	42
8	El Camino Real	s/o 3rd St.	Commercial	60.2	RW	RW	42
9	El Camino Real	s/o Main St.	Commercial	64.3	RW	RW	77
10	El Camino Real	n/o Newport Av.	Commercial	64.9	RW	RW	84
11	Prospect Av.	s/o First St.	Commercial	60.6	RW	RW	44
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	60.6	RW	RW	44
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	60.9	RW	RW	46
14	Newport Av.	s/o Irvine Bl.	Commercial	70.9	68	147	317
15	Newport Av.	s/o First St.	Commercial	71.2	72	154	333
16	Newport Av.	s/o Main St.	Commercial	71.1	72	154	332
17	Newport Av.	s/o El Camino Real	Commercial	70.2	62	133	286
18	Irvine Bl.	w/o Yorba St.	Commercial	73.2	82	176	379
19	Irvine Bl.	e/o Yorba St.	Commercial	72.1	69	149	321
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	72.1	69	149	321
21	First St.	w/o Yorba St.	Commercial	69.9	RW	70	150
22	First St.	e/o Yorba St.	Commercial	69.3	RW	64	137
23	First St.	w/o Prospect Av.	Commercial	69.6	RW	67	145
24	First St.	e/o Prospect Av.	Commercial	69.2	RW	63	135
25	2nd St.	w/o El Camino Real	Commercial	52.8	RW	RW	RW
26	2nd St.	e/o El Camino Real	Commercial	52.8	RW	RW	RW
27	3rd St.	w/o El Camino Real	Commercial	53.4	RW	RW	RW
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	54.0	RW	RW	RW
29	Main St.	w/o B St.	Residential	67.2	RW	46	100
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	67.2	RW	46	100
31	Main St.	e/o El Camino Real	Commercial	66.5	RW	42	90
32	6th St.	e/o B St.	Residential	58.0	RW	RW	RW

[1] Source: Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: YEAR 2035 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	B St.	s/o First St.	Residential	61.0	RW	RW	29
2	B St.	s/o Main St.	Residential	61.0	RW	RW	29
3	C St.	s/o First St.	Civic/Institutional	61.0	RW	RW	29
4	C St.	s/o 2nd St.	Civic/Institutional	59.7	RW	RW	RW
5	C St.	s/o 3rd St.	Civic/Institutional	58.0	RW	RW	RW
6	El Camino Real	s/o First St.	Commercial	62.6	RW	RW	59
7	El Camino Real	s/o 2nd St.	Commercial	62.0	RW	RW	54
8	El Camino Real	s/o 3rd St.	Commercial	62.0	RW	RW	54
9	El Camino Real	s/o Main St.	Commercial	65.0	RW	40	86
10	El Camino Real	n/o Newport Av.	Commercial	64.7	RW	RW	82
11	Prospect Av.	s/o First St.	Commercial	63.8	RW	RW	72
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	63.8	RW	RW	72
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	64.9	RW	40	85
14	Newport Av.	s/o Irvine Bl.	Commercial	71.0	70	151	325
15	Newport Av.	s/o First St.	Commercial	71.2	72	154	333
16	Newport Av.	s/o Main St.	Commercial	71.0	70	151	325
17	Newport Av.	s/o El Camino Real	Commercial	70.8	68	147	316
18	Irvine Bl.	w/o Yorba St.	Commercial	73.7	88	190	409
19	Irvine Bl.	e/o Yorba St.	Commercial	72.5	73	157	339
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	73.2	82	177	382
21	First St.	w/o Yorba St.	Commercial	71.0	38	83	178
22	First St.	e/o Yorba St.	Commercial	71.0	38	83	178
23	First St.	w/o Prospect Av.	Commercial	70.3	35	75	161
24	First St.	e/o Prospect Av.	Commercial	70.1	33	72	155
25	2nd St.	w/o El Camino Real	Commercial	55.0	RW	RW	RW
26	2nd St.	e/o El Camino Real	Commercial	58.0	RW	RW	RW
27	3rd St.	w/o El Camino Real	Commercial	58.0	RW	RW	RW
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	58.0	RW	RW	RW
29	Main St.	w/o B St.	Residential	67.3	RW	47	101
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	68.2	RW	54	116
31	Main St.	e/o El Camino Real	Commercial	67.9	RW	52	111
32	6th St.	e/o B St.	Residential	59.7	RW	RW	RW

[1] Source: Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: YEAR 2035 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	B St.	s/o First St.	Residential	59.9	RW	RW	25
2	B St.	s/o Main St.	Residential	59.9	RW	RW	25
3	C St.	s/o First St.	Civic/Institutional	60.0	RW	RW	25
4	C St.	s/o 2nd St.	Civic/Institutional	59.6	RW	RW	RW
5	C St.	s/o 3rd St.	Civic/Institutional	58.6	RW	RW	RW
6	El Camino Real	s/o First St.	Commercial	61.4	RW	RW	50
7	El Camino Real	s/o 2nd St.	Commercial	60.8	RW	RW	45
8	El Camino Real	s/o 3rd St.	Commercial	60.8	RW	RW	45
9	El Camino Real	s/o Main St.	Commercial	64.9	RW	RW	84
10	El Camino Real	n/o Newport Av.	Commercial	65.1	RW	41	88
11	Prospect Av.	s/o First St.	Commercial	63.6	RW	RW	69
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	63.6	RW	RW	69
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	62.8	RW	RW	61
14	Newport Av.	s/o Irvine Bl.	Commercial	70.9	69	148	320
15	Newport Av.	s/o First St.	Commercial	71.4	74	160	344
16	Newport Av.	s/o Main St.	Commercial	71.2	72	155	334
17	Newport Av.	s/o El Camino Real	Commercial	71.1	71	152	327
18	Irvine Bl.	w/o Yorba St.	Commercial	73.8	90	194	417
19	Irvine Bl.	e/o Yorba St.	Commercial	72.7	76	163	351
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	73.3	83	178	384
21	First St.	w/o Yorba St.	Commercial	70.0	33	71	153
22	First St.	e/o Yorba St.	Commercial	70.2	34	73	158
23	First St.	w/o Prospect Av.	Commercial	69.7	RW	68	147
24	First St.	e/o Prospect Av.	Commercial	70.0	33	71	154
25	2nd St.	w/o El Camino Real	Commercial	55.8	RW	RW	RW
26	2nd St.	e/o El Camino Real	Commercial	57.0	RW	RW	RW
27	3rd St.	w/o El Camino Real	Commercial	56.4	RW	RW	RW
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	58.0	RW	RW	RW
29	Main St.	w/o B St.	Residential	67.5	RW	48	104
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	68.3	RW	55	118
31	Main St.	e/o El Camino Real	Commercial	67.7	RW	50	108
32	6th St.	e/o B St.	Residential	59.4	RW	RW	RW

[1] Source: Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: YEAR 2035 WITH PROJECT TRANSFERABILITY CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	B St.	s/o First St.	Residential	60.0	RW	RW	25
2	B St.	s/o Main St.	Residential	60.0	RW	RW	25
3	C St.	s/o First St.	Civic/Institutional	60.2	RW	RW	26
4	C St.	s/o 2nd St.	Civic/Institutional	59.7	RW	RW	RW
5	C St.	s/o 3rd St.	Civic/Institutional	59.0	RW	RW	RW
6	El Camino Real	s/o First St.	Commercial	61.8	RW	RW	53
7	El Camino Real	s/o 2nd St.	Commercial	61.2	RW	RW	48
8	El Camino Real	s/o 3rd St.	Commercial	61.2	RW	RW	48
9	El Camino Real	s/o Main St.	Commercial	65.2	RW	41	88
10	El Camino Real	n/o Newport Av.	Commercial	65.4	RW	42	91
11	Prospect Av.	s/o First St.	Commercial	63.6	RW	RW	70
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	63.7	RW	RW	71
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	63.2	RW	RW	66
14	Newport Av.	s/o Irvine Bl.	Commercial	70.9	69	149	321
15	Newport Av.	s/o First St.	Commercial	71.4	74	160	344
16	Newport Av.	s/o Main St.	Commercial	71.2	72	156	335
17	Newport Av.	s/o El Camino Real	Commercial	71.1	71	153	329
18	Irvine Bl.	w/o Yorba St.	Commercial	73.9	90	195	420
19	Irvine Bl.	e/o Yorba St.	Commercial	72.7	76	164	353
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	73.3	83	180	387
21	First St.	w/o Yorba St.	Commercial	70.1	34	72	156
22	First St.	e/o Yorba St.	Commercial	70.3	35	75	161
23	First St.	w/o Prospect Av.	Commercial	69.9	33	70	151
24	First St.	e/o Prospect Av.	Commercial	70.1	33	72	155
25	2nd St.	w/o El Camino Real	Commercial	56.1	RW	RW	RW
26	2nd St.	e/o El Camino Real	Commercial	57.3	RW	RW	RW
27	3rd St.	w/o El Camino Real	Commercial	57.0	RW	RW	RW
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	58.4	RW	RW	RW
29	Main St.	w/o B St.	Residential	67.6	RW	50	107
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	68.5	RW	56	121
31	Main St.	e/o El Camino Real	Commercial	67.8	RW	51	110
32	6th St.	e/o B St.	Residential	59.7	RW	RW	RW

[1] Source: Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVELS

Table 7-1 presents the Existing without Project conditions CNEL noise levels. From this we can see that the exterior noise levels are expected to range from 54.0 to 73.0 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 52.0 to 73.1 dBA CNEL. As shown on Table 7-7 the Project will generate a noise level increase of up to 0.5 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Existing with Project conditions at the land uses adjacent to roadways conveying Project traffic.

Table 7-3 shows the Existing with Project Transferability conditions will range from 52.8 to 73.2 dBA CNEL. As shown on Table 7-8 the Project Transferability condition will generate a noise level increase of up to 0.8 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Existing with Project Transferability conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-7: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Planned Land Use[1]	CNEL at Adjacent Land Use (dBA)[1]			Threshold Exceeded?[2]
				No Project	With Project	Project Addition	
1	B St.	s/o First St.	Residential	59.3	58.4	-0.9	No
2	B St.	s/o Main St.	Residential	59.3	58.4	-0.9	No
3	C St.	s/o First St.	Civic/Institutional	59.4	58.6	-0.8	No
4	C St.	s/o 2nd St.	Civic/Institutional	59.4	59.1	-0.3	No
5	C St.	s/o 3rd St.	Civic/Institutional	59.4	59.6	0.2	No
6	El Camino Real	s/o First St.	Commercial	61.2	59.7	-1.5	No
7	El Camino Real	s/o 2nd St.	Commercial	61.2	59.8	-1.4	No
8	El Camino Real	s/o 3rd St.	Commercial	61.2	59.8	-1.4	No
9	El Camino Real	s/o Main St.	Commercial	64.1	63.9	-0.2	No
10	El Camino Real	n/o Newport Av.	Commercial	64.1	64.6	0.5	No
11	Prospect Av.	s/o First St.	Commercial	60.9	60.3	-0.6	No
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	60.9	60.3	-0.6	No
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	60.9	60.3	-0.6	No
14	Newport Av.	s/o Irvine Bl.	Commercial	70.9	70.8	-0.1	No
15	Newport Av.	s/o First St.	Commercial	70.9	71.2	0.3	No
16	Newport Av.	s/o Main St.	Commercial	70.9	71.1	0.2	No
17	Newport Av.	s/o El Camino Real	Commercial	69.8	70.1	0.3	No
18	Irvine Bl.	w/o Yorba St.	Commercial	73.0	73.1	0.1	No
19	Irvine Bl.	e/o Yorba St.	Commercial	71.8	72.1	0.3	No
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	72.0	72.0	0.0	No
21	First St.	w/o Yorba St.	Commercial	70.8	69.7	-1.1	No
22	First St.	e/o Yorba St.	Commercial	70.1	69.1	-1.0	No
23	First St.	w/o Prospect Av.	Commercial	70.1	69.5	-0.6	No
24	First St.	e/o Prospect Av.	Commercial	69.2	69.1	-0.1	No
25	2nd St.	w/o El Camino Real	Commercial	54.0	52.0	-2.0	No
26	2nd St.	e/o El Camino Real	Commercial	54.0	52.8	-1.2	No
27	3rd St.	w/o El Camino Real	Commercial	54.5	52.8	-1.7	No
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	54.5	52.8	-1.7	No
29	Main St.	w/o B St.	Residential	66.8	67.0	0.2	No
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	66.8	67.0	0.2	No
31	Main St.	e/o El Camino Real	Commercial	66.6	66.4	-0.2	No
32	6th St.	e/o B St.	Residential	57.8	57.5	-0.3	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-8: EXISTING OFF-SITE PROJECT TRANSFERABILITY-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Planned Land Use[1]	CNEL at Adjacent Land Use (dBA)[1]			Threshold Exceeded?[2]
				No Project	With Project	Project Addition	
1	B St.	s/o First St.	Residential	59.3	58.6	-0.7	No
2	B St.	s/o Main St.	Residential	59.3	58.6	-0.7	No
3	C St.	s/o First St.	Civic/Institutional	59.4	58.8	-0.6	No
4	C St.	s/o 2nd St.	Civic/Institutional	59.4	59.3	-0.1	No
5	C St.	s/o 3rd St.	Civic/Institutional	59.4	59.7	0.3	No
6	El Camino Real	s/o First St.	Commercial	61.2	60.2	-1.0	No
7	El Camino Real	s/o 2nd St.	Commercial	61.2	60.2	-1.0	No
8	El Camino Real	s/o 3rd St.	Commercial	61.2	60.2	-1.0	No
9	El Camino Real	s/o Main St.	Commercial	64.1	64.3	0.2	No
10	El Camino Real	n/o Newport Av.	Commercial	64.1	64.9	0.8	No
11	Prospect Av.	s/o First St.	Commercial	60.9	60.6	-0.3	No
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	60.9	60.6	-0.3	No
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	60.9	60.9	0.0	No
14	Newport Av.	s/o Irvine Bl.	Commercial	70.9	70.9	0.0	No
15	Newport Av.	s/o First St.	Commercial	70.9	71.2	0.3	No
16	Newport Av.	s/o Main St.	Commercial	70.9	71.1	0.2	No
17	Newport Av.	s/o El Camino Real	Commercial	69.8	70.2	0.4	No
18	Irvine Bl.	w/o Yorba St.	Commercial	73.0	73.2	0.2	No
19	Irvine Bl.	e/o Yorba St.	Commercial	71.8	72.1	0.3	No
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	72.0	72.1	0.1	No
21	First St.	w/o Yorba St.	Commercial	70.8	69.9	-0.9	No
22	First St.	e/o Yorba St.	Commercial	70.1	69.3	-0.8	No
23	First St.	w/o Prospect Av.	Commercial	70.1	69.6	-0.5	No
24	First St.	e/o Prospect Av.	Commercial	69.2	69.2	0.0	No
25	2nd St.	w/o El Camino Real	Commercial	54.0	52.8	-1.2	No
26	2nd St.	e/o El Camino Real	Commercial	54.0	52.8	-1.2	No
27	3rd St.	w/o El Camino Real	Commercial	54.5	53.4	-1.1	No
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	54.5	54.0	-0.5	No
29	Main St.	w/o B St.	Residential	66.8	67.2	0.4	No
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	66.8	67.2	0.4	No
31	Main St.	e/o El Camino Real	Commercial	66.6	66.5	-0.1	No
32	6th St.	e/o B St.	Residential	57.8	58.0	0.2	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

7.3 LONG RANGE CUMULATIVE 2035 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-4 shows that the Long Range Cumulative 2035 without Project exterior noise levels, which do not account for any noise attenuation features, are expected to range from 55.0 to 73.7 dBA CNEL without the Project. Table 7-5 presents the Long Range Cumulative 2035 with Project conditions noise level contours that are expected to range from 55.8 to 73.8 dBA CNEL. As shown on Table 7-9 the Project will generate *less than significant* noise level increases of up to 0.8 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related increases represent a *less than significant* impact under Long Range Cumulative 2035 conditions.

Table 7-6 presents the Long Range Cumulative 2035 with Project Transferability conditions noise level contours that are expected to range from 56.1 to 73.9 dBA CNEL. As shown on Table 7-10 the Project will generate *less than significant* noise level increases of up to 1.1 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project Transferability-related increases represent a *less than significant* impact under Long Range Cumulative 2035 conditions.

TABLE 7-9: YEAR 2035 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Planned Land Use[1]	CNEL at Adjacent Land Use (dBA)[1]			Threshold Exceeded?[2]
				No Project	With Project	Project Addition	
1	B St.	s/o First St.	Residential	61.0	59.9	-1.1	No
2	B St.	s/o Main St.	Residential	61.0	59.9	-1.1	No
3	C St.	s/o First St.	Civic/Institutional	61.0	60.0	-1.0	No
4	C St.	s/o 2nd St.	Civic/Institutional	59.7	59.6	-0.1	No
5	C St.	s/o 3rd St.	Civic/Institutional	58.0	58.6	0.6	No
6	El Camino Real	s/o First St.	Commercial	62.6	61.4	-1.2	No
7	El Camino Real	s/o 2nd St.	Commercial	62.0	60.8	-1.2	No
8	El Camino Real	s/o 3rd St.	Commercial	62.0	60.8	-1.2	No
9	El Camino Real	s/o Main St.	Commercial	65.0	64.9	-0.1	No
10	El Camino Real	n/o Newport Av.	Commercial	64.7	65.1	0.4	No
11	Prospect Av.	s/o First St.	Commercial	63.8	63.6	-0.2	No
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	63.8	63.6	-0.2	No
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	64.9	62.8	-2.1	No
14	Newport Av.	s/o Irvine Bl.	Commercial	71.0	70.9	-0.1	No
15	Newport Av.	s/o First St.	Commercial	71.2	71.4	0.2	No
16	Newport Av.	s/o Main St.	Commercial	71.0	71.2	0.2	No
17	Newport Av.	s/o El Camino Real	Commercial	70.8	71.1	0.3	No
18	Irvine Bl.	w/o Yorba St.	Commercial	73.7	73.8	0.1	No
19	Irvine Bl.	e/o Yorba St.	Commercial	72.5	72.7	0.2	No
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	73.2	73.3	0.1	No
21	First St.	w/o Yorba St.	Commercial	71.0	70.0	-1.0	No
22	First St.	e/o Yorba St.	Commercial	71.0	70.2	-0.8	No
23	First St.	w/o Prospect Av.	Commercial	70.3	69.7	-0.6	No
24	First St.	e/o Prospect Av.	Commercial	70.1	70.0	-0.1	No
25	2nd St.	w/o El Camino Real	Commercial	55.0	55.8	0.8	No
26	2nd St.	e/o El Camino Real	Commercial	58.0	57.0	-1.0	No
27	3rd St.	w/o El Camino Real	Commercial	58.0	56.4	-1.6	No
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	58.0	58.0	0.0	No
29	Main St.	w/o B St.	Residential	67.3	67.5	0.2	No
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	68.2	68.3	0.1	No
31	Main St.	e/o El Camino Real	Commercial	67.9	67.7	-0.2	No
32	6th St.	e/o B St.	Residential	59.7	59.4	-0.3	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-10: YEAR 2035 OFF-SITE PROJECT TRANSFERABILITY-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Planned Land Use[1]	CNEL at Adjacent Land Use (dBA)[1]			Threshold Exceeded?[2]
				No Project	With Project	Project Addition	
1	B St.	s/o First St.	Residential	61.0	60.0	-1.0	No
2	B St.	s/o Main St.	Residential	61.0	60.0	-1.0	No
3	C St.	s/o First St.	Civic/Institutional	61.0	60.2	-0.8	No
4	C St.	s/o 2nd St.	Civic/Institutional	59.7	59.7	0.0	No
5	C St.	s/o 3rd St.	Civic/Institutional	58.0	59.0	1.0	No
6	El Camino Real	s/o First St.	Commercial	62.6	61.8	-0.8	No
7	El Camino Real	s/o 2nd St.	Commercial	62.0	61.2	-0.8	No
8	El Camino Real	s/o 3rd St.	Commercial	62.0	61.2	-0.8	No
9	El Camino Real	s/o Main St.	Commercial	65.0	65.2	0.2	No
10	El Camino Real	n/o Newport Av.	Commercial	64.7	65.4	0.7	No
11	Prospect Av.	s/o First St.	Commercial	63.8	63.6	-0.2	No
12	Prospect Av.	s/o 2nd St.	Mobile Home Park	63.8	63.7	-0.1	No
13	Prospect Av.	s/o 3rd St.	Mobile Home Park	64.9	63.2	-1.7	No
14	Newport Av.	s/o Irvine Bl.	Commercial	71.0	70.9	-0.1	No
15	Newport Av.	s/o First St.	Commercial	71.2	71.4	0.2	No
16	Newport Av.	s/o Main St.	Commercial	71.0	71.2	0.2	No
17	Newport Av.	s/o El Camino Real	Commercial	70.8	71.1	0.3	No
18	Irvine Bl.	w/o Yorba St.	Commercial	73.7	73.9	0.2	No
19	Irvine Bl.	e/o Yorba St.	Commercial	72.5	72.7	0.2	No
20	Irvine Bl.	e/o Prospect Av.	Civic/Institutional	73.2	73.3	0.1	No
21	First St.	w/o Yorba St.	Commercial	71.0	70.1	-0.9	No
22	First St.	e/o Yorba St.	Commercial	71.0	70.3	-0.7	No
23	First St.	w/o Prospect Av.	Commercial	70.3	69.9	-0.4	No
24	First St.	e/o Prospect Av.	Commercial	70.1	70.1	0.0	No
25	2nd St.	w/o El Camino Real	Commercial	55.0	56.1	1.1	No
26	2nd St.	e/o El Camino Real	Commercial	58.0	57.3	-0.7	No
27	3rd St.	w/o El Camino Real	Commercial	58.0	57.0	-1.0	No
28	3rd St.	e/o El Camino Real	Residential, Comm./Office, & Vacant	58.0	58.4	0.4	No
29	Main St.	w/o B St.	Residential	67.3	67.6	0.3	No
30	Main St.	e/o B St.	Civic/Institutional, Comm./Office	68.2	68.5	0.3	No
31	Main St.	e/o El Camino Real	Commercial	67.9	67.8	-0.1	No
32	6th St.	e/o B St.	Residential	59.7	59.7	0.0	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

8 ON-SITE TRAFFIC NOISE

An on-site exterior noise impact analysis has been completed to determine the traffic-related noise levels and to identify potential necessary mitigation measures for future residential uses within the Tustin Downtown Commercial Core Specific Plan Project. It is expected that the primary source of noise impacts to the Project site will be traffic-related noise from I-5, SR-55, B Street, C Street, El Camino Real, Prospect Avenue, Newport Avenue, Irvine Boulevard, First Street, 2nd Street, 3rd Street, Main Street, and 6th Street.

8.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA noise prediction models and the parameters outlined in Tables 6-2 to 6-5, the expected future exterior noise levels for the Project uses were calculated. Exhibit 8-A shows the Long Range Cumulative 2035 with Project Transferability conditions noise level contours, previously shown on Table 7-6, which are used to present the worst-case future noise levels. As shown on Exhibit 8-A, the I-5 and SR-55 represent the primary sources of traffic noise in the Project study area.

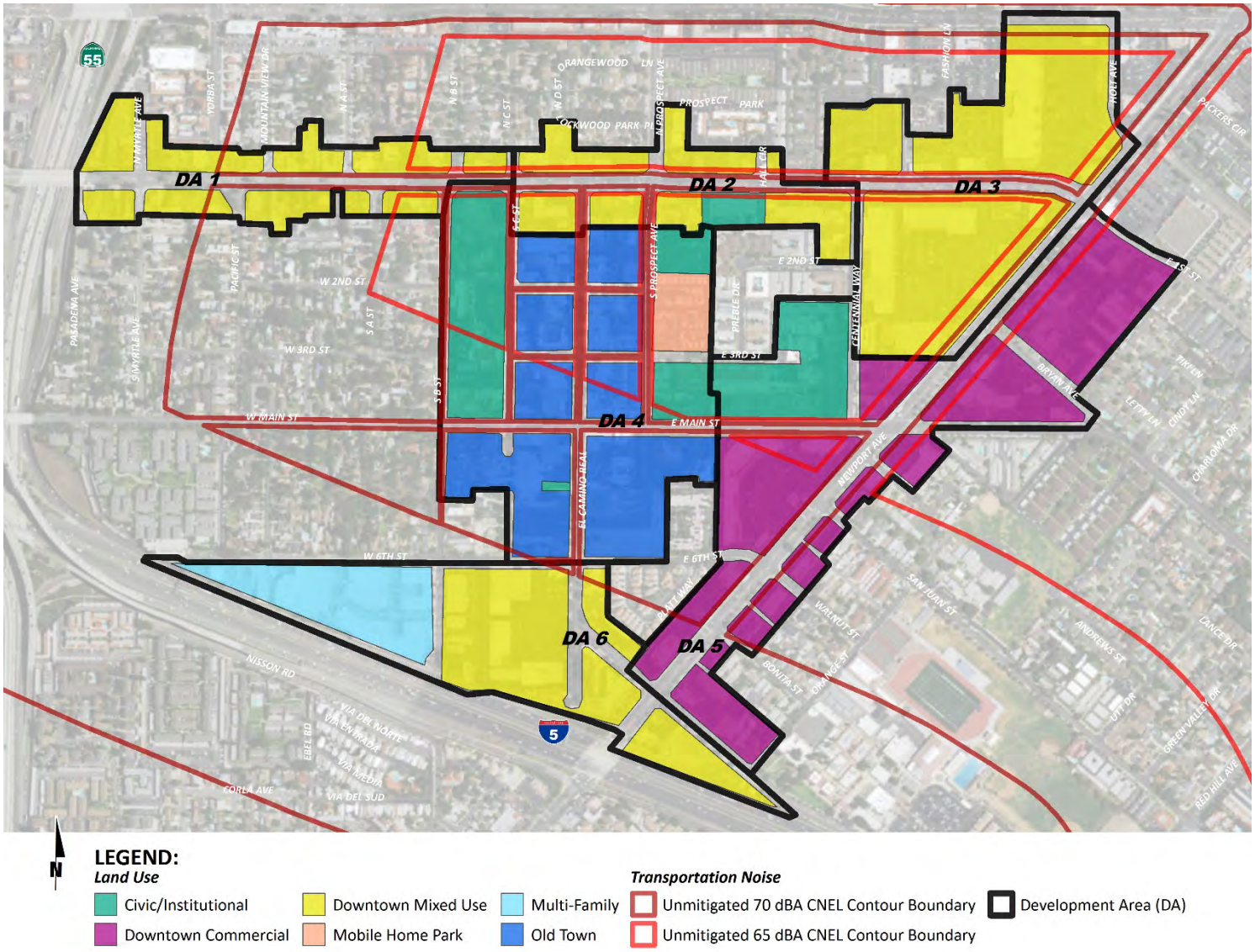
The results of the on-site traffic noise analysis show that residential dwelling units proposed in Development Areas 1, 2, 3, 4, and 6 will experience future unmitigated exterior noise levels greater than 65 dBA CNEL, which represents *normally incompatible* residential use based on the City of Tustin General Plan Noise Element, Table N-2 compatibility criteria. (3) Exterior noise levels are shown to exceed the City of Tustin General Plan Noise Element, Table N-3, 65 dBA CNEL exterior noise level standards at outdoor environments of residential dwelling units, as defined by the Noise Element. Based on the results of this analysis and the proximity of future residential dwelling units to the I-5 and SR-55 Freeways, the on-site traffic-related noise impacts at future residential dwelling units within the Tustin DCCSP will be *potentially significant*, and require exterior noise mitigation. With the exterior noise mitigation measures identified in this report, the on-site traffic noise impacts will be reduced to *less than significant* impacts with mitigation.

8.2 ON-SITE EXTERIOR NOISE MITIGATION

To reduce the on-site traffic noise levels for future residential dwelling units, a site-specific noise study is required for all future development with residential units located within the Tustin DCCSP.

- Prior to the issuance of a building permit for residential dwelling units within the Tustin DCCSP, the Project Applicant/ Developer shall submit a final acoustical report to the City of Tustin Director of Development Services, or designee, which shall identify all reasonable and feasible noise mitigation measures to satisfy the 65 dBA CNEL exterior noise level standard, as defined by Table N-3 of the City of Tustin General Plan Noise Element.
- If the exterior noise levels cannot be fully mitigated to the 65 dBA CNEL exterior noise level standard for outdoor environments, the final acoustical report shall satisfy the 45 dBA CNEL interior noise level standard of the City of Tustin General Plan Noise Element, and by Title 24, Part 2, of the California Building Code.

EXHIBIT 8-A: FUTURE ON-SITE TRAFFIC NOISE LEVEL CONTOURS



8.3 ON-SITE INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels of future residential dwelling units comply with the City of Tustin interior noise level standards, future exterior noise levels discussed in Section 8.1 are used in this section to evaluate potential interior noise levels of the Project.

8.3.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction (NR) of the structure. Typical building construction will provide a noise reduction of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: (1) weather-stripped solid core exterior doors; (2) upgraded dual glazed windows; (3) mechanical ventilation/air conditioning; and (4) exterior wall/roof assembles free of cut outs or openings.

8.3.2 INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, Tustin DCCSP buildings will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). As shown on Exhibit 8-A, some Development Areas will experience exterior noise levels which exceed 65 dBA CNEL at the building façade. With typical building construction and a windows-closed condition, a minimum 25 dBA CNEL reduction is achievable for residential dwelling units of the Project. However, since the exterior noise levels from I-5, SR-55, and the study area roadways will exceed 70 dBA CNEL, detailed interior noise analysis based on site-specific architectural floor plans and elevations are required to satisfy the City of Tustin General Plan Noise Element, Table N-3, 45 dBA CNEL interior noise level standard for residential dwelling units. Therefore, since future interior noise levels of residential dwelling units may exceed 45 dBA CNEL, the noise level impact will be *potentially significant*, requiring interior noise mitigation.

8.2 ON-SITE INTERIOR NOISE MITIGATION

To reduce the on-site interior noise levels for future residential dwelling units, a site-specific noise study is required for all future development with residential units located within the Tustin DCCSP.

- Prior to the issuance of a building permit for residential dwelling units within the Tustin DCCSP, the Project Applicant/ Developer shall submit a final acoustical report to the City of Tustin Director of Development Services, or designee, that demonstrates that the interior noise levels in all habitable rooms will satisfy the 45 dBA CNEL interior noise level standard of the City of Tustin General Plan Noise Element, and by Title 24, Part 2, of the California Building Code.

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9 OPERATIONAL IMPACTS

This section discusses the potential noise and vibration impacts due to the operation of the proposed Project.

9.1 OPERATIONAL NOISE LEVELS

Project-related stationary-source (operational) noise would be generated by the operation of potential ground floor retail and office uses included in mixed-use residential development of the Project. At the time this noise study was prepared, the exact location and uses associated with mixed-use ground floor retail and/or office uses was unknown. Therefore, the on-site Project-related noise sources for potential future ground floor retail and/or office uses are expected to include: air conditioning units and parking lot vehicle movements. These expected Project-related noise sources are consistent with existing noise sources observed in the Project study area. Further, the proposed residential land uses are considered noise-sensitive receiving land uses and are not expected to include any specific type of operational noise levels beyond the typical noise sources associated with existing residential land use in the Project study area.

Since the Project includes the potential for the operation of potential ground floor retail and office uses included in mixed-use residential development, and the noise levels due to operation of such uses will vary depending on the tenant, the impacts due to Project operational noise levels from potential non-residential uses is determined to be *potentially significant*. Special noise generators such as music (live or otherwise), sound amplification devices, and tenant-specific noise sources shall, therefore, require a site-specific noise analysis prior to building permit approval. With the mitigation measures identified below, operational noise impacts will be *less than significant*.

9.2 OPERATIONAL NOISE MITIGATION

The following mitigation measures are identified to reduce the operational noise levels associated with the Project.

- Prior to the issuance of a building permit for non-residential uses associated with residential dwelling unit construction of the Tustin DCCSP the Project Applicant/ Developer shall submit a final acoustical report to the City of Tustin Director of Development Services, or designee, that demonstrates exterior noise levels at adjacent sensitive land uses will satisfy the City of Tustin Municipal Code, Section 4614 exterior noise level limits. The site-specific noise study shall identify the necessary noise mitigation measures, if any, required to reduce exterior noise levels to below the City of Tustin Municipal Code, Section 4614 exterior noise level limits;

9.3 OPERATIONAL VIBRATION LEVELS

The Project's residential development is not expected to include any specific type of operational vibration sources, and therefore, the potential operational vibration impacts for the Tustin Downtown Commercial Core Specific Plan residential land use are considered *less than significant*.

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction activity boundaries in relation to the nearby sensitive receiver locations.

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the peak construction activity noise levels during Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver, and would be further reduced to 68 dBA at 200 feet from the source to the receiver.

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the 17-construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 10-1 have been adjusted to describe a common reference distance of 50 feet.

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels (dBA Leq)[7]		Distance to 85 dBA Leq Noise Level Contour (Feet)[8]
			@ Ref. Dist.	@ 50'	
1	Truck Pass-Bys & Dozer Activity[1]	30'	63.6	59.2	3'
2	Dozer Activity[1]	30'	68.6	64.2	5'
3	Construction Vehicle Maintenance Activities[2]	30'	71.9	67.5	7'
4	Foundation Trenching[2]	30'	72.6	68.2	7'
5	Rough Grading Activities[2]	30'	77.9	73.5	13'
6	Framing[3]	30'	66.7	62.3	4'
7	Water Truck Pass-By & Backup Alarm[4]	30'	76.3	71.9	11'
8	Dozer Pass-By[4]	30'	84.0	79.6	27'
9	Two Scrapers & Water Truck Pass-By[4]	30'	83.4	79.0	25'
10	Two Scrapers Pass-By[4]	30'	83.7	79.3	26'
11	Scraper, Water Truck, & Dozer Activity[4]	30'	79.7	75.3	16'
12	Concrete Mixer Truck Movements[5]	50'	71.2	71.2	10'
13	Concrete Paver Activities[5]	30'	70.0	65.6	5'
14	Concrete Mixer Pour & Paving Activities[5]	30'	70.3	65.9	6'
15	Concrete Mixer Backup Alarms & Air Brakes[5]	50'	71.6	71.6	11'
16	Concrete Mixer Pour Activities[5]	50'	67.7	67.7	7'
17	Forklift, Jackhammer, & Metal Truck Bed Loading	50'	67.9	67.9	7'

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] As measured by Urban Crossroads, Inc. on 9/9/16 during the demolition of an existing paved parking lot at 41 Corporate Park in Irvine.
[7] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).
[8] Distance to the NIOSH construction noise level threshold of 85 dBA Leq based on each reference construction equipment noise level measurement.

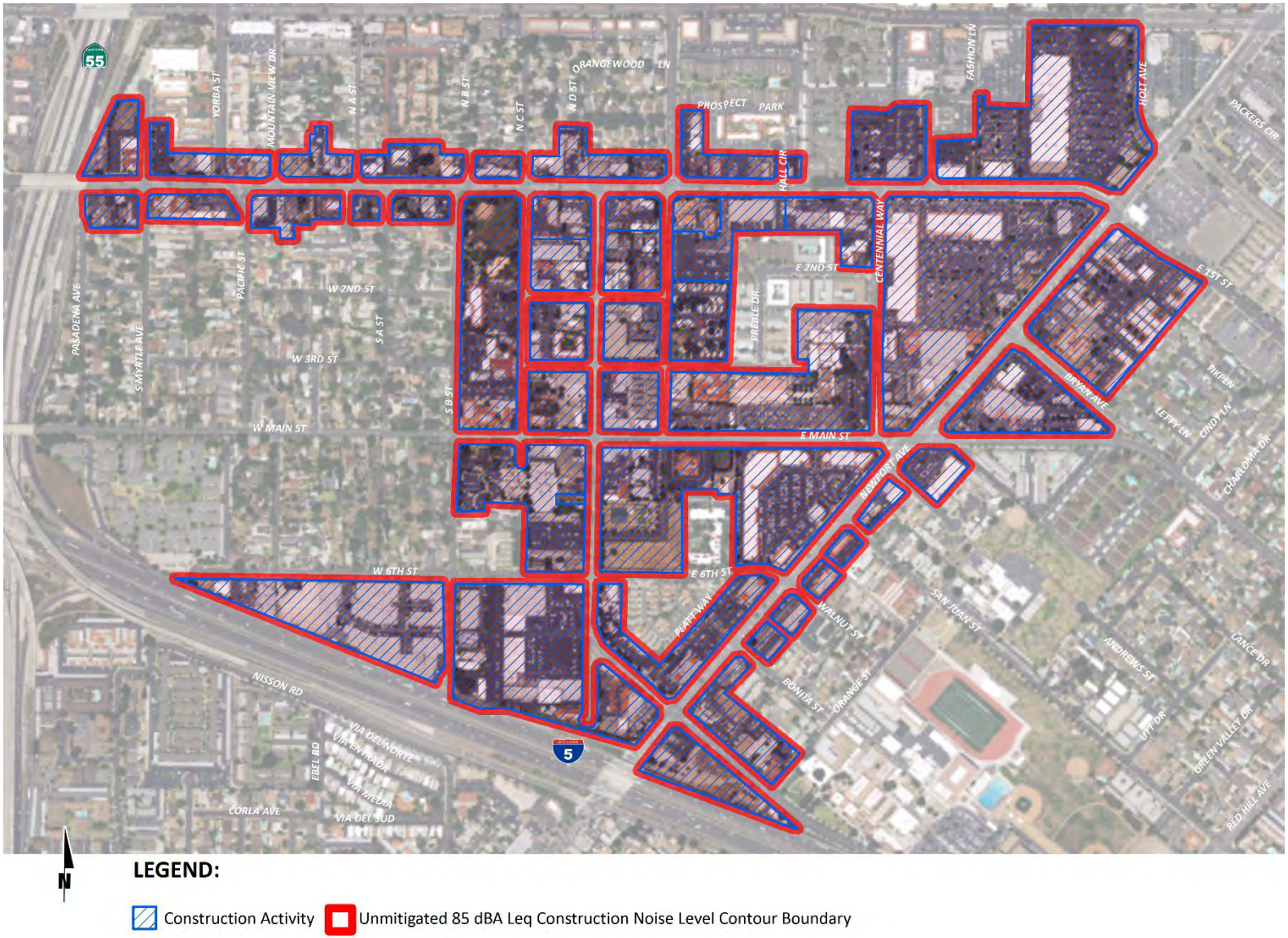
10.3 CONSTRUCTION NOISE ANALYSIS

As previously shown on Table 10-1, the peak reference construction noise level is 79.6 dBA Leq at 50 feet based on a reference noise level measurement of a dozer pass-by event. Mobile construction equipment, such as the reference dozer pass-by, typically generate the highest construction noise levels during residential construction activities. As such, the peak construction reference noise level of 79.6 dBA Leq is used in this program-level analysis to determine potential impacts at sensitive receiver locations adjacent to development within the Tustin DCCSP.

To evaluate whether the Project will generate potentially significant temporary construction noise levels at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (4) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. For the purposes of this analysis, the NIOSH construction noise level threshold of 85 dBA Leq, previously described in Section 3.5, is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations. Table 10-1 shows the distance to from each piece of reference construction equipment to the 85 dBA Leq NIOSH threshold for use in this analysis.

Based on the construction noise level contours, shown on Table 10-1, the peak reference construction noise level of 79.6 dBA Leq at 50 feet will exceed the 85 dBA Leq NIOSH thresholds at distances of 27 feet or less from peak construction activity. Therefore, Project-related construction noise levels at sensitive receiver locations within 27 feet of construction activities, such as existing residential uses in the Project study area, are considered *potentially significant* noise impacts. However, with the mitigation measures identified in this noise study, Project construction noise levels would be reduced during future development of the Tustin DCCSP to *less than significant* impacts with mitigation.

EXHIBIT 10-A: PEAK CONSTRUCTION NOISE LEVEL CONTOUR BOUNDARIES



10.4 CONSTRUCTION NOISE LEVEL INCREASES

To describe the temporary Project construction noise level contributions to the existing ambient noise environment, the peak Project construction noise levels are combined with the existing ambient noise levels measurements. The difference between the combined Project-construction and ambient noise levels are used to describe the construction noise level contributions. Temporary noise level increases that would be experienced at sensitive receiver locations when Project construction-source noise is added to the ambient daytime conditions are presented on Table 10-2. A temporary noise level increase of 12 dBA Leq is considered a potentially significant impact based on the Caltrans substantial noise level increase criteria which is used to assess the Project-construction noise level increases. (5) No nighttime construction activity is permitted in the City of Tustin Municipal Code, and therefore, nighttime noise level increases are not analyzed in this noise study.

As indicated in Table 10-2, the Project will contribute unmitigated, worst-case construction noise level increases ranging from 8.6 to 19.8 dBA Leq during the daytime hours at the closest sensitive receiver locations. Note that these construction noise level increases are based on the peak construction reference noise level at 50 feet, and do not include any noise attenuation provided by existing barriers, berms, or intervening structures. Since the worst-case temporary noise level increases during Project construction are shown to exceed the 12 dBA Leq significance threshold, the unmitigated construction noise level increases are considered *potentially significant* temporary noise impacts. Therefore, mitigation measures are identified in this noise study to reduce the construction noise levels during the development of the additional residential dwelling units of the Tustin DCCSP. With the construction noise mitigation measures identified in this report, the temporary construction noise level increases of up to 19.8 dBA Leq are required to be reduced to below the 12 dBA Leq ambient-increase threshold, and as a result, represent *less than significant* impacts with mitigation.

TABLE 10-2: UNMITIGATED CONSTRUCTION-RELATED TEMPORARY NOISE LEVEL INCREASES

Meas. Location[1]	Proposed Tustin DCCSP Land Use(s)	Existing Land Use(s) at Measurement Location	Existing Daytime Ambient Noise Levels[2]	Peak Project Construction Noise Level (@ 50')[3]	Combined Project and Ambient[4]	Temporary Worst-Case Project Contribution[5]	Threshold Exceeded?[6]
L1	Downtown Mixed-Use	Residential	68.7	79.6	79.9	11.2	No
L2	Downtown Mixed-Use	Residential, Office	59.8	79.6	79.6	19.8	Yes
L3	Civic/Institutional	Residential	61.3	79.6	79.7	18.4	Yes
L4	Old Town, Mobile Home Park	Commercial, Mobile Home Park	63.2	79.6	79.7	16.5	Yes
L5	Downtown Mixed-Use	Commercial	71.6	79.6	80.2	8.6	No
L6	Old Town	Commercial	63.3	79.6	79.7	16.4	Yes
L7	Multi-Family	Industrial	63.9	79.6	79.7	15.8	Yes
L8	Downtown Mixed-Use & Comm.	Commercial	61.9	79.6	79.7	17.8	Yes

[1] Ambient noise level measurement locations as shown on Exhibit 5-A.
[2] Observed daytime ambient noise levels as shown on Table 5-1.
[3] Peak unmitigated Project construction noise levels as shown on Table 10-9.
[4] Represents the combined ambient conditions plus the Project construction activities.
[5] The temporary noise level increase expected with the addition of the proposed Project activities.
[6] Based on the 12 dBA Leq temporary increase significance criteria as defined in Section 4.

10.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as large bulldozers would operate close enough to any residences to cause a vibration impact.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include mobile equipment activities and pile driving, among others. Using the vibration source level of construction equipment provided on Table 6-6 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-3 presents the expected Project related vibration levels at distances ranging from 25 to 125 feet from construction activity.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 0.089 in/sec PPV at 25 feet. At distances ranging from 25 to 125 feet from the Project site, construction vibration velocity levels are expected to range from 0.008 to 0.089 in/sec PPV, as shown on Table 10-3. Table 10-4 shows that the building damage thresholds will only be exceeded at extremely fragile historic buildings due to Project construction-related vibration levels of up to 0.089 in/sec PPV at 25 feet from large bulldozers. At all other distances, the construction-related vibration levels are shown to satisfy the Caltrans building damage thresholds for fragile buildings, and older residential buildings. There are no know extremely fragile historic buildings such as ruins, ancient monuments, in the Project area.

Compared with the Caltrans construction vibration standard for human annoyance, the proposed Project construction activities will exceed the *distinctly perceptible* vibration standard of 0.04 in/sec PPV at receiver locations within 25 feet of large bulldozers if used during Project construction. Therefore, the use of large bulldozers within 25 feet of nearby sensitive land uses (e.g. residential, school, etc.) shall be minimized unless the vibration levels are shown to be less than the Caltrans *Transportation and Construction Vibration Guidance Manual*, Table 20, peak particle velocity (PPV) threshold of 0.04 in/sec. With the recommended mitigation measures in this study, the Project-related vibration impacts at the nearby sensitive receiver locations

represents a *less than significant* impact during the worst-case construction activities at the Project site boundary.

The construction vibration levels at the site of the closest sensitive receivers will approach *distinctly perceptible* levels at 25 feet, however, they are unlikely to be sustained during the entire construction period; but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter. Further, construction at the Project site will be restricted to Municipal Code daytime construction hours, unless otherwise permitted by the City, thereby reducing potential vibration impacts during the sensitive nighttime hours.

TABLE 10-3: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Distance to Const. Activity (Feet)	Receiver PPV Levels (in/sec)[1]				
	Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration
25'	0.003	0.035	0.076	0.089	0.089
50'	0.001	0.012	0.027	0.031	0.031
100'	0.000	0.004	0.010	0.011	0.011
125'	0.000	0.003	0.007	0.008	0.008

[1] Based on the Vibration Source Levels of Construction Equipment included on Table 6-6.

TABLE 10-4: CONSTRUCTION VIBRATION COMPLIANCE

Distance to Const. Activity (Feet)	Peak Vibration Levels (in/sec)	Threshold Exceeded (PPV)?[2]			
		Building Damage by Type			Annoyance
		Extremely Fragile Historic (0.08 in/sec)	Fragile (0.1 in/sec)	Older Residential (0.3 in/sec)	Distinctly Perceptible (0.04 in/sec)
25'	0.089	Yes	No	No	Yes
50'	0.031	No	No	No	No
100'	0.011	No	No	No	No
125'	0.008	No	No	No	No

[1] Based on the Vibration Source Levels of Construction Equipment included on Table 6-6.
[2] Does the peak vibration exceed the acceptable vibration thresholds (Table 3-2)?

10.6 CONSTRUCTION NOISE AND VIBRATION MITIGATION MEASURES

Though construction noise and vibration are temporary, intermittent and of short duration, and will not present any long-term impacts, the following mitigation measures would reduce noise and vibration levels produced by construction equipment to nearby noise-sensitive uses. Temporary construction-related noise and vibration impacts will be reduced to *less than significant* impacts with the incorporation of the following mitigation measures:

- Construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards, and all stationary construction equipment shall be placed so that emitted noise is directed away from the noise-sensitive use nearest the construction activity.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receiver nearest to the construction activity.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment by TCC Article 4, Chapter 6, Section 4617. The contractor shall design delivery routes to minimize the exposure of sensitive land uses to delivery truck noise.
- Construction activity within 27 feet of occupied noise-sensitive uses shall reduce construction noise levels at nearby sensitive land uses to below 85 dBA Leq and reduce construction-related noise level increases to below 12 dBA Leq above the existing ambient noise level:

    1. Install temporary construction noise barriers at the Project site boundary which break the line of sight for occupied noise-sensitive uses for the duration of construction activities that could generate noise exceeding 85 dBA Leq. The noise control barrier(s) must provide a solid face from top to bottom and shall:

        a. Provide a minimum transmission loss of 20 dBA and be constructed with an acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) attached to the construction site perimeter fence or equivalent temporary fence posts;

        b. Be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired; and

        c. Be removed and the site appropriately restored upon the conclusion of the construction activity.

    2. Install sound dampening mats or blankets to the engine compartments of heavy mobile equipment (e.g. graders, dozers, heavy trucks). The dampening materials must be capable of a 5 dBA minimum noise reduction, must be installed prior to the use of heavy mobile construction equipment, and must remain installed for the duration of the equipment use.

- Prior to approval of a demolition permit, grading plans, and/or issuance of building permits for construction activities within 25 feet of existing residential structures or occupied noise-sensitive uses that require the use of large bulldozers, large loaded trucks, jackhammers, pile drivers, and/or caisson drills, the City of Tustin Building Division shall ensure that construction plans and specifications state that the use of such vibratory equipment shall be prohibited within 25 feet of

existing residential structures or occupied noise-sensitive uses. Instead, small rubber-tired bulldozers shall be used within this area during demolition and/or grading operations to reduce vibration effects. If the use of large bulldozers, large loaded trucks, jackhammers, pile drivers, and/or caisson drills is necessary within 25 feet of existing residential structures or occupied noise-sensitive uses, a site-specific analysis shall be prepared and submitted to the City of Tustin demonstrating that construction activity would not result in vibration at sensitive receptors that is more than the Caltrans thresholds for annoyance (0.04 in/sec PPV at receiver locations) and damage (per the Transportation and Construction Vibration Guidance Manual, September 2013, Tables 19 & 20 by building type).

- Any site-specific development project within 25 feet of an extremely fragile historic building shall engage a qualified structural engineer to conduct a pre-construction assessment of the structural integrity of the nearby historic structure(s) and submit evidence that the operation of vibration-generating equipment associated with the new development would not result in structural damage to the adjacent historic building(s). If recommended by the pre-construction assessment, groundborne vibration monitoring of nearby historic structures shall be required.

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2016.
2. **Stantec Consulting Services, Inc.** *Tustin Downtown Commercial Core Specific Plan Traffic Study.* June 2017.
3. **City of Tustin.** *General Plan Noise Element.* November 2012.
4. **National Institute for Occupational Safety and Health.** *Criteria for Recommended Standard: Occupational Noise Exposure.* June 1998.
5. **California Department of Transportation.** *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects.* May 2011.
6. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
7. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
8. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* June, 1995.
9. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
10. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
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13. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* May 2006. FTA-VA-90-1003-06.
14. **Office of Planning and Research.** *State of California General Plan Guidlines 2003.* October 2003.
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17. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* September 2013.
18. **Orange County Airport Land Use Commission.** *Airport Environs Land Use Plan for John Wayne Airport.* April 2008.
19. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
20. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
21. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*

22. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
23. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
24. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
25. —. *2015 Annual Average Daily Truck Traffic on the California Highway System.* 2015.

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Tustin Downtown Commercial Core Specific Plan Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF TUSTIN MUNICIPAL CODE

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CHAPTER 6 - NOISE CONTROL

EDITOR'S NOTE: Ord. No. 828, Sec. 1, adopted July 21, 1980, amended Ch. 6 of Art. 4 to read as herein set out. Prior to amendment, Ch. 6 pertained to similar subject matter, consisted of Section 4611, derived from Ord. No. 9; Ord. No. 239; Ord. No. 450, Secs. 1—3; and Ord. No. 469.

4611 - DECLARATION OF POLICY

In order to control unnecessary, excessive and annoying sounds emanating from incorporated areas of the city, it is hereby declared to be the policy of the City to prohibit such sounds generated from all sources as specified in this chapter.

It is determined that certain noise levels are detrimental to the public health, welfare and safety and contrary to public interest, therefore, the City Council does ordain and declare that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

(Ord. No. 828, Sec. 1, 7-21-80)

4612 - DEFINITIONS

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

(1) "Ambient noise level." The all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

(2) "A-weighted sound level" (dB(A)). A quantity in decibels, read from a standard sound-level meter that is switched to the weighting network labeled "A." The A-weighted network discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear at moderate sound levels.

(3) "Commercial property." A parcel of real property which is developed and zoned either in part or in whole for commercial purposes, including, but not limited to retail and wholesale businesses, and professional offices, but excluding home occupation uses as authorized by Ordinance No. 330.

(4) "CNEL" (community noise equivalent level). A cumulative measure of community noise exposure for a twenty-four-hour day, using the A-weighting sound level and expressed in logarithmic units. This CNEL scale takes into account the single event sound level, single event duration, single event occurrence frequency, and the time of the occurrence of the noise source. Additionally, it applies

weighting factors which place greater significance on noise events occurring in the nighttime (10:00 p.m. to 7:00 a.m.) than on those during the evening (7:00 p.m. to 10:00 p.m.) or daytime (7:00 a.m. to 7:00 p.m.), respectively.

(5) "Cumulative period." An additive period of time composed of individual time segments which may be continuous or interrupted.

(6) "Decibel" (dB). A unit which denotes the ratio between two (2) quantities which are proportional to power: The number of decibels corresponding to the ratio of two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

(7) "Dwelling unit." A single unit providing complete, independent living facilities for one (1) or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

(8) "Emergency machinery," "vehicle," or "work." Any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

(9) "Fixed noise source." A stationary device which creates sounds while fixed or motionless including, but not limited to, industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

(10) "Grading." Any excavating or filling of earth material, or any combination thereof, conducted at a site to prepare said site for construction or other improvements thereon.

(11) "Impact noise." The noise produced by the collision of one (1) mass in motion with a second mass which may be either in motion or at rest.

(12) "Industrial property." A parcel of real property which is developed and zoned either in part or in whole for manufacturing purposes, including research and development uses, but excluding home occupation cases as authorized by Ordinance No. 330.

(13) "Mixed use property." A parcel of real property which is developed or used for residential purposes and/or commercial purposes (including retail and wholesale businesses and professional offices) and/or manufacturing purposes (including research and development uses).

(14) "Mobile noise source." Any noise source other than a fixed noise source.

(15) "Noise level." The "A" weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty (20) micropascals per square meter. The unit of measurement shall be designated as dB(A).

(16) "Noise variance board." An administrative board of five (5) members appointed by the Board of Supervisors of the County of Orange, per Title 4, Division 6, Article 1 of the Codified Ordinances of the County of Orange.

(17) "Person." A person, firm, association, copartnership, joint venture, corporation or any entity, public or private in nature.

(18)

"Property maintenance equipment." A mechanical blower, leafblower, lawn vacuum or parking lot sweeper which produces a current of air by mechanical, electrical, or other means to push, propel, or blow dirt, dust, leaves, grass clippings, trimmings, cuttings, refuse, and/or debris or any other appliance intended for the maintenance of landscaping on private property.

(19) "Residential property." A parcel of real property which is developed and zoned either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

(20) "Simple tone noise." A noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

(21) "Sound level meter." An instrument meeting American National Standard Institute's Standard S1.4-1971 for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

(22) "Sound pressure level" of a sound, in decibels, shall mean twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound to a reference pressure, which reference pressure shall be explicitly stated.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 845, Secs. 1—3, 5-18-81; Ord. No. 1156, Sec. 1, 10-16-95; Ord. No. 1277, Sec. 2, 7-7-03)

4613 - DESIGNATED NOISE ZONES

The properties hereinafter described are hereby assigned the following noise zones:

(a) Noise Zone 1: All residential properties.

(b) Noise Zone 2: All commercial properties.

(c) Noise Zone 3: All industrial properties.

(d) Noise Zone 4: All special properties such as hospitals, convalescent homes, public and institutional schools, libraries and churches.

(e) Noise Zone 5: All mixed use properties.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 1277, Sec. 3, 7-7-03)

4614 - EXTERIOR NOISE STANDARDS

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all property within a designated noise zone:

EXTERIOR NOISE STANDARDS

Noise Zone	Noise Level	Time period

1	55 dB(A)	7:00 a.m.—10:00 p.m.
	50 dB(A)	10:00 p.m.— 7:00 a.m.
2	60 dB(A)	any time
3	70 dB(A)	any time
4	55 dB(A)	any time
5	60 dB(A)	any time

In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It shall be unlawful for any person at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other property to exceed:

(1) The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or

(2) The noise standard plus five (5) db(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or

(5) The noise standard plus twenty (20) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 845, Secs. 4, 5, 5-18-81; Ord. No. 1277, Sec. 4, 7-7-03)

4615 - INTERIOR NOISE STANDARDS

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all property within a designated noise zone:

INTERIOR NOISE STANDARDS

Noise Zone	Noise Level	Time Period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	45 dB(A)	10:00 p.m.— 7:00 a.m.
5 (residential uses only)	55 dB(A)	7:00 a.m.—10:00 p.m.
	45 dB(A)	10:00 p.m.—7:00 a.m.

In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It shall be unlawful for any person at any location within the incorporated area of the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any residential property or mixed use property, to exceed:

(1) The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

(2) The interior noise plus five (5) dB(A) for a cumulative period of more than one (1) minute in any hour; or

(3) The interior noise standard plus ten (10) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 845, Sec. 6, 5-18-81; Ord. No. 1277, Sec. 5, 7-7-03)

4616 - SPECIFIC DISTURBING NOISES PROHIBITED

It shall be unlawful for any person to make, continue, cause to allow to be made or continued for any amount of time the following acts and things which are hereby declared to be unnecessary, excessive and annoying in violation of this article:

(1) Loudspeakers, amplifiers used for advertising. The using, operating or permitting to be played, used, or operated of any radio receiving set, musical instrument, phonograph, loudspeaker, sound amplifier, or other machine or device for the producing or reproducing of sound in excess of the levels described in sections 4614 and 4615 which sound is cast upon the public streets for the purpose of commercial advertising or attracting the attention of the public to any commercial building or structure.

(2) Construction, repairing, remodeling or demolition and grading. The erection, demolition, alteration, repair, excavation, grading, paving or construction of any building or site is prohibited between the hours of 6:00 p.m. and 7:00 a.m., Monday through Friday and 5:00 p.m. and 9:00 a.m. on Saturdays and during all hours Sundays and city observed federal holidays. Trucks, vehicles and equipment that are making or are involved with material deliveries, loading or transfer of materials, equipment service, maintenance of any devices or appurtenances to any construction project in the City shall not be operated on or adjacent to said sites outside of the approved hours for construction activity.

Exception: Construction activities may be permitted outside of those limitations identified in this subsection in the case of urgent necessity or upon a finding that such approval will not adversely impact adjacent properties and the health, safety and welfare of the community if a temporary exception is granted in writing by the Building Official for private property or by the Director of Public Works for public properties or their authorized representatives. All temporary waiver requests shall be made in writing and shall include the specific times, dates and locations requested and a description of the type of activity that is proposed. In granting a temporary exception, conditions may be imposed on construction activities to protect the health, safety and welfare of the community. Any approval granted may be summarily revoked by the Building Official or Director of Public Works at the sole discretion of each official. Notice of such revocation shall be provided to the requestor, Police Department and project file.

(3) Pile drivers, hammers, etc., the operation of a pile driver, power shovel, pneumatic hammer, grading and excavating machinery, paving equipment, or other appliance, the use of which is attended by loud or unusual noise is prohibited between any and all hours on Sundays and city observed federal holidays, between the hours of 6:00 p.m. and 7:00 a.m., Monday through Friday, and between 5:00 p.m. and 9:00 a.m. on Saturdays.

Exception: In the case of urgent necessity and upon a finding that such approval will not adversely impact adjacent properties and the public health, safety and welfare of the community, the above regulations may be modified in writing by the Public Works Director for public property and by the Building Official for private property or their respective authorized representatives. All temporary waiver requests shall be made in writing and shall include the specific times, dates and locations requested and a description of the type of activity that is proposed. In granting a temporary exception, conditions may be imposed on construction activities to protect the health, safety and

welfare of the community. Any approval granted may be summarily revoked by the Building Official or Director of Public Works at the sole discretion of each official. Notice of such revocation shall be provided to the requestor, Police Department and project file.

(4) Property maintenance equipment. The use and operation of property maintenance equipment, the use of which is attended by loud or unusual noise, is prohibited in residentially zoned areas any and all hours on Sundays and city observed federal holidays, before 7:00 a.m. and after 6:00 p.m. Monday through Friday, and before 9:00 a.m. and after 5:00 p.m. on Saturdays. In commercial and industrially zoned areas, the use of property maintenance equipment is prohibited any and all hours on Sundays and city observed federal holidays, before 7:00 a.m. and after 10:00 p.m. Monday through Friday, and before 9:00 a.m. and after 10:00 p.m. on Saturdays. No property owner, lessee, gardener, property maintenance service, contractor, subcontractor, or employer shall permit or allow any person working at their direction to operate property maintenance equipment in violation of the provisions of this section. All debris generated by the use of property maintenance equipment shall be cleaned up and disposed of in accordance with section 4421 of this Code.

Exceptions:

a. Public property maintenance is exempt from the provisions of this subsection (4).

b. The use of property maintenance equipment may be permitted outside of those limitations identified in subsection 4616 (4) in the case of necessity or upon a finding that such approval will not adversely impact adjacent properties and the health, safety, and welfare of the community if a temporary exception is granted in writing by the Building Official or the Building Official's authorized representatives. All temporary exception requests shall be made in writing and shall include the specific times and dates and locations requested and a description of the activity that is proposed. In granting a temporary exception, conditions may be imposed on the use of property maintenance equipment to protect the public health and safety. Any approval granted may be summarily revoked by the Building Official at the sole discretion of the Building Official. Notice of such revocation shall be provided to the requestor, Police Department and project file.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 845, Sec. 7, 5-18-81; Ord. No. 1083, Sec. 1, 4-21-92; Ord. No. 1143, Sec. 1, 2-21-95; Ord. No. 1156, Sec. 2, 10-16-95; Ord. No. 1197, Sec. 3, 3-16-98)

4617 - EXEMPTIONS

The following activities shall be exempted from the provisions of this chapter:

(a) Activities conducted on the grounds of any public or private nursery, elementary, intermediate or secondary school or college, public agency, and public utility.

(b)

Outdoor gatherings, public dances, shows and sporting and entertainment events provided said events are conducted pursuant to a permit (license/permit) issued by the City pursuant to Article 3, Chapter 2 of the Tustin City Code relative to the staging of said events.

(c) Activities conducted on any park or playground provided such park or playground is owned and operated by a public entity.

(d) Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work.

(e) Noise sources associated with construction, repair, remodeling, or grading of any real property between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and the hours of 9:00 a.m. and 5:00 p.m. on Saturdays, excluding city observed federal holidays.

(f) All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

(g) Mobile noise sources associated with agricultural operations provided such operations do not take place between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or any time on Sunday or a city observed federal holiday.

(h) Mobile noise sources associated with agricultural pest control through pesticide application provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

(i) Noise sources associated with maintenance of real property provided said activities take place between the hours of 7:00 a.m. and 6:00 p.m. on any day except Sunday or city observed federal holidays, or between the hours of 9:00 a.m. and 6:00 p.m. on Sunday or city observed federal holidays.

(j) Any activity to the extent regulation thereof has been preempted by state or federal law.

(k) Noise sources associated with the maintenance, repair, remodeling, grading and landscaping of residential real property performed by the owner, provided such activity does take place between the hours of 7:00 a.m. and 9:00 p.m. This section does not authorize noise sources performed by independent building trades contractors.

(l) Noise sources associated with the maintenance and repair of personal property performed by the owner on the owner's residential property, provided such activity takes place between the hours of 7:00 a.m. and 9:00 p.m. This section does not authorize noise sources by independent repairmen or technicians.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 1143, Sec. 2, 2-21-95; Ord. No. 1156, Sec. 3, 10-16-95; Ord. No. 1197, Sec. 4, 3-16-98)

4618 - SCHOOLS, HOSPITALS, COURTS AND CHURCHES

It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital, court, or church while the same is in use, to exceed the noise limits as specified in section 4614 prescribed for the assigned noise zone in which the school, hospital, or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth of a mile of the institution indicating the presence of a school, church, court, or hospital.

(Ord. No. 828, Sec. 1, 7-21-80)

4619 - AIR CONDITIONING AND REFRIGERATION

During a one-year period following the effective date of Ordinance No. 828 the noise level standards as specified in Sections 4614 and 4615 shall be increased by eight (8) dB(A) where the alleged noise source is an air-conditioning apparatus or refrigeration system, which was installed prior to the effective date of said Ordinance.

(Ord. No. 828, Sec. 1, 7-21-80)

4620 - NOISE LEVEL MEASUREMENT CRITERIA

Any noise level measurements made pursuant to the provisions of this Chapter shall be performed using a sound level meter as defined in Section 4612. The location selected for measuring exterior noise levels shall be at any point on the affected property. Interior noise measurements shall be made within the dwelling unit affected by exterior noise. The measurement shall be made at a point at least four (4) feet from the wall, ceiling, or floor nearest the alleged offensive noise source and may be made with the windows of the affected unit open.

(Ord. No. 828, Sec. 1, 7-21-80)

4621 - RESERVED

Editor's note— Section 11 of Ord. No. 1366, adopted Nov. 11, 2009, repealed Section 4621, which pertained to the manner of enforcement; adoption of Title 4, Division 6, Codified Ordinances of Orange County, and derived from Ord. No. 828, adopted July 21, 1980; and Ord. No. 845, adopted May 18, 1981.

4622 - RESERVED

Editor's note— Section 11 of Ord. No. 1366, adopted Nov. 11, 2009, repealed Section 4622, which pertained to variance procedure, and derived from Ord. No. 828, adopted July 21, 1980.

4623 - RESERVED

Editor's note— Section 11 of Ord. No. 1366, adopted Nov. 11, 2009, repealed Section 4623, which pertained to the noise variance board, and derived from Ord. No. 828, adopted July 21, 1980.

4624 - RESERVED

Editor's note— Section 11 of Ord. No. 1366, adopted Nov. 11, 2009, repealed Section 4624, which pertained to appeals and derived from Ord. No. 828, adopted July 21, 1980.

4625 - VIOLATIONS; MISDEMEANORS

Any person violating any of the provisions of this Chapter shall be deemed guilty of a misdemeanor. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. The provisions of this Chapter shall not be construed as permitting conduct not prescribed herein and shall not affect the enforceability of any other applicable provisions of law.

(Ord. No. 828, Sec. 1, 7-21-80; Ord. No. 845, Sec. 9, 5-18-81)

APPENDIX 5.1:

STUDY AREA PHOTOS FROM EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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L1
33, 44' 44.150000", 117, 49' 55.900000"

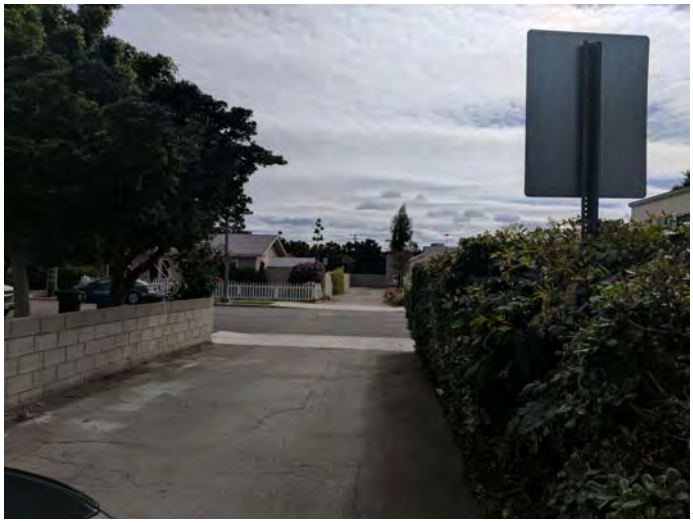
L1_N
33, 44' 43.490000", 117, 49' 56.230000"

L1_NW
33, 44' 43.490000", 117, 49' 56.230000"

L1_SW
33, 44' 42.740000", 117, 49' 59.010000"

L1_W
33, 44' 43.490000", 117, 49' 56.230000"

L2
33, 44' 46.820000", 117, 49' 29.490000"



L2_E
33, 44' 51.410000", 117, 49' 29.770000"

L2_W
33, 44' 51.410000", 117, 49' 29.770000"

L3
33, 44' 38.940000", 117, 49' 34.470000"

L3_N
33, 44' 38.940000", 117, 49' 34.470000"

L3_S
33, 44' 38.940000", 117, 49' 34.470000"

L3_W
33, 44' 38.940000", 117, 49' 34.470000"

L4_E
33, 44' 38.250000", 117, 49' 20.420000"

L4_N
33, 44' 38.360000", 117, 49' 20.790000"

L4_NE
33, 44' 38.360000", 117, 49' 20.790000"

L4_S
33, 44' 38.250000", 117, 49' 20.420000"

L4_W
33, 44' 38.250000", 117, 49' 20.420000"

L5
33, 44' 40.080000", 117, 48' 55.820000"

L5_E
33, 44' 40.080000", 117, 48' 55.820000"

L5_NE
33, 44' 40.730000", 117, 48' 57.550000"

L5_SW
33, 44' 41.970000", 117, 48' 57.010000"

L5_W
33, 44' 40.080000", 117, 48' 55.820000"

L6
33, 44' 30.280000", 117, 49' 25.400000"

L6_N
33, 44' 30.280000", 117, 49' 25.400000"

L6_S
33, 44' 29.130000", 117, 49' 25.330000"

L6_SE
33, 44' 29.130000", 117, 49' 25.330000"

L7
33, 44' 21.470000", 117, 49' 34.660000"

L7_E
33, 44' 20.980000", 117, 49' 36.630000"

L7_S
33, 44' 20.980000", 117, 49' 36.630000"

L7_W
33, 44' 20.980000", 117, 49' 36.630000"

L8
33, 44' 18.940000", 117, 49' 21.120000"

L8_E
33, 44' 18.940000", 117, 49' 21.120000"

L8_S
33, 44' 18.940000", 117, 49' 21.120000"

L8_SW
33, 44' 18.940000", 117, 49' 21.120000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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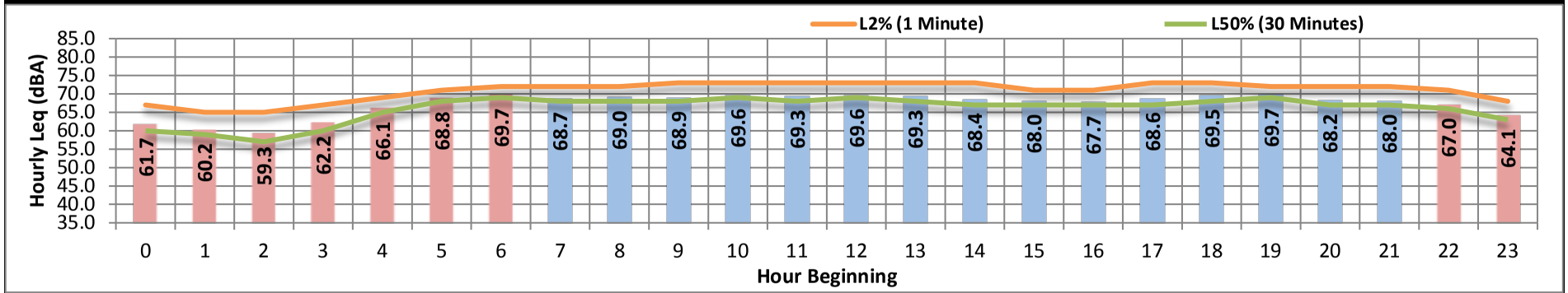
24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L1 - Located within Development Area 1 on Pasadena Avenue near existing residential homes and State Route 55.	*Date:*	4/13-4/14/2017	68.9	65.7	73.2

Hourly Leq dBA Readings (unadjusted)



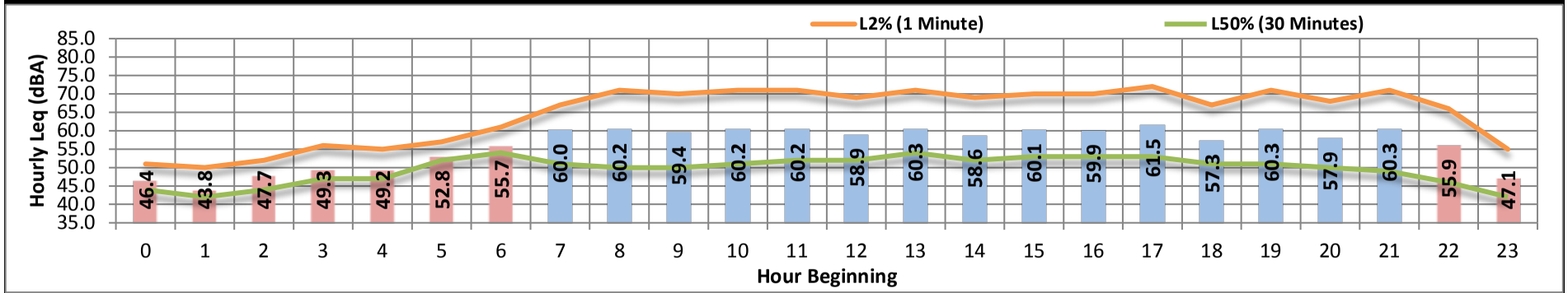
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	67.7	77.7	60.2	72.0	71.0	70.0	69.0	68.0	67.0	65.0	64.0	63.0
	Max	69.7	89.1	64.7	74.0	73.0	72.0	71.0	70.0	69.0	67.0	66.0	66.0
Energy Average:		68.9	Average:		73.3	72.4	71.1	70.2	68.9	67.8	65.9	65.3	64.3
Night	Min	59.3	71.2	47.3	66.0	65.0	63.0	62.0	60.0	57.0	52.0	50.0	48.0
	Max	69.7	82.2	62.9	73.0	72.0	71.0	71.0	70.0	69.0	67.0	67.0	65.0
Energy Average:		65.7	Average:		69.4	68.3	67.0	66.4	64.8	63.0	59.3	58.0	55.6
Hourly Summary													
Night	0	61.7	71.2	48.6	68.0	67.0	65.0	64.0	62.0	60.0	56.0	54.0	51.0
	1	60.2	71.7	47.9	66.0	65.0	64.0	63.0	61.0	59.0	53.0	52.0	49.0
	2	59.3	72.0	47.3	66.0	65.0	63.0	62.0	60.0	57.0	52.0	50.0	48.0
	3	62.2	76.4	49.8	69.0	67.0	65.0	65.0	63.0	60.0	56.0	54.0	51.0
	4	66.1	76.7	56.2	70.0	69.0	69.0	68.0	67.0	65.0	62.0	61.0	59.0
	5	68.8	80.3	61.2	72.0	71.0	70.0	70.0	69.0	68.0	66.0	65.0	63.0
	6	69.7	82.2	62.9	73.0	72.0	71.0	71.0	70.0	69.0	67.0	67.0	65.0
Day	7	68.7	82.1	62.4	73.0	72.0	71.0	70.0	69.0	68.0	66.0	65.0	64.0
	8	69.0	81.1	63.8	73.0	72.0	71.0	70.0	69.0	68.0	66.0	66.0	65.0
	9	68.9	77.7	63.7	74.0	73.0	71.0	70.0	69.0	68.0	66.0	66.0	65.0
	10	69.6	82.6	64.1	74.0	73.0	72.0	71.0	70.0	69.0	66.0	66.0	65.0
	11	69.3	81.2	63.1	74.0	73.0	72.0	71.0	69.0	68.0	66.0	66.0	65.0
	12	69.6	85.2	64.4	73.0	73.0	72.0	71.0	70.0	69.0	67.0	66.0	66.0
	13	69.3	82.8	64.7	74.0	73.0	71.0	71.0	69.0	68.0	67.0	66.0	65.0
	14	68.4	85.7	61.1	74.0	73.0	71.0	70.0	68.0	67.0	65.0	64.0	63.0
	15	68.0	79.3	63.0	73.0	71.0	70.0	69.0	68.0	67.0	65.0	65.0	64.0
	16	67.7	80.9	63.4	72.0	71.0	70.0	69.0	68.0	67.0	65.0	65.0	64.0
	17	68.6	78.6	63.5	74.0	73.0	71.0	70.0	69.0	67.0	66.0	65.0	64.0
	18	69.5	85.5	62.9	73.0	73.0	72.0	71.0	70.0	68.0	66.0	65.0	64.0
	19	69.7	89.1	64.4	73.0	72.0	72.0	71.0	70.0	69.0	67.0	66.0	65.0
	20	68.2	82.0	62.2	73.0	72.0	70.0	69.0	68.0	67.0	65.0	65.0	63.0
	21	68.0	78.1	60.2	73.0	72.0	70.0	70.0	68.0	67.0	65.0	64.0	63.0
Night	22	67.0	81.6	57.7	72.0	71.0	69.0	69.0	67.0	66.0	63.0	62.0	60.0
	23	64.1	81.6	50.0	69.0	68.0	67.0	66.0	64.0	63.0	59.0	57.0	54.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L2 - Located at the northern boundary of Development Area 1 and existing residential homes on C Street.	*Date:*	4/13-4/14/2017	59.8	51.6	61.4

Hourly Leq dBA Readings (unadjusted)



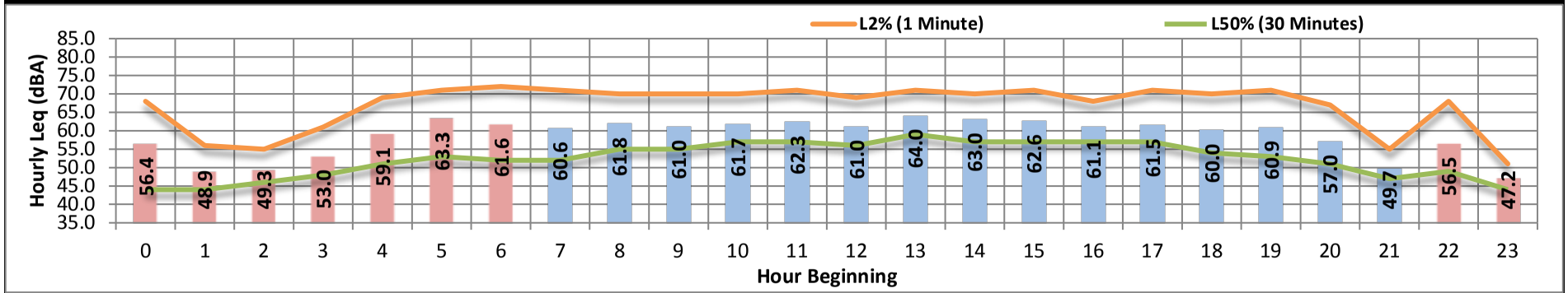
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	57.3	72.5	42.4	70.0	67.0	62.0	59.0	53.0	49.0	45.0	44.0	43.0
	Max	61.5	85.9	48.6	73.0	72.0	69.0	65.0	57.0	54.0	51.0	50.0	49.0
Energy Average:		59.8	Average:		71.9	69.9	65.3	62.1	54.9	51.5	47.9	47.2	45.9
Night	Min	43.8	57.3	38.4	51.0	50.0	47.0	45.0	43.0	42.0	40.0	40.0	38.0
	Max	55.9	76.6	47.9	71.0	66.0	59.0	58.0	56.0	54.0	51.0	51.0	49.0
Energy Average:		51.6	Average:		58.7	55.9	52.6	51.0	47.9	46.4	44.0	43.4	42.6
Hourly Summary													
Night	0	46.4	73.1	41.1	52.0	51.0	49.0	48.0	45.0	44.0	43.0	42.0	41.0
	1	43.8	57.3	38.5	51.0	50.0	47.0	45.0	43.0	42.0	40.0	40.0	40.0
	2	47.7	72.1	40.2	59.0	52.0	49.0	48.0	45.0	44.0	42.0	41.0	41.0
	3	49.3	67.7	42.7	58.0	56.0	52.0	51.0	48.0	47.0	45.0	44.0	43.0
	4	49.2	65.0	43.3	57.0	55.0	52.0	51.0	48.0	47.0	45.0	45.0	44.0
	5	52.8	63.2	44.5	59.0	57.0	56.0	55.0	53.0	52.0	47.0	46.0	45.0
	6	55.7	67.7	47.9	63.0	61.0	59.0	58.0	56.0	54.0	51.0	51.0	49.0
Day	7	60.0	85.9	43.2	73.0	67.0	62.0	59.0	54.0	51.0	47.0	45.0	44.0
	8	60.2	76.0	42.4	73.0	71.0	67.0	63.0	54.0	50.0	45.0	44.0	43.0
	9	59.4	80.9	42.7	72.0	70.0	64.0	62.0	54.0	50.0	46.0	45.0	43.0
	10	60.2	77.1	43.5	72.0	71.0	67.0	64.0	55.0	51.0	47.0	46.0	44.0
	11	60.2	76.8	46.0	73.0	71.0	66.0	63.0	55.0	52.0	48.0	48.0	47.0
	12	58.9	77.6	46.8	70.0	69.0	65.0	62.0	55.0	52.0	49.0	48.0	47.0
	13	60.3	79.3	47.3	72.0	71.0	65.0	61.0	57.0	54.0	51.0	50.0	48.0
	14	58.6	74.9	47.2	71.0	69.0	64.0	60.0	55.0	52.0	49.0	49.0	48.0
	15	60.1	76.6	48.6	71.0	70.0	66.0	64.0	57.0	53.0	50.0	50.0	49.0
	16	59.9	75.3	45.9	72.0	70.0	66.0	63.0	57.0	53.0	49.0	49.0	48.0
	17	61.5	76.8	46.4	73.0	72.0	69.0	65.0	56.0	53.0	50.0	49.0	48.0
	18	57.3	72.5	45.4	70.0	67.0	63.0	60.0	53.2	51.0	48.0	48.0	46.0
	19	60.3	76.0	45.7	73.0	71.0	67.0	64.0	55.0	51.0	48.0	47.0	46.0
	20	57.9	77.2	42.8	72.0	68.0	62.0	59.0	53.0	50.0	46.0	45.0	44.0
	21	60.3	81.8	43.8	72.0	71.0	67.0	63.0	53.0	49.0	45.0	45.0	44.0
Night	22	55.9	76.6	41.4	71.0	66.0	58.0	54.0	49.0	46.0	43.0	42.0	42.0
	23	47.1	67.7	38.4	58.0	55.0	51.0	49.0	44.0	42.0	40.0	40.0	38.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L3 - Located on B Street adjacent to existing residential homes, Peppertree Park, and the Tustin Area Senior Center.	*Date:*	4/13-4/14/2017	61.3	58.0	65.3

Hourly Leq dBA Readings (unadjusted)



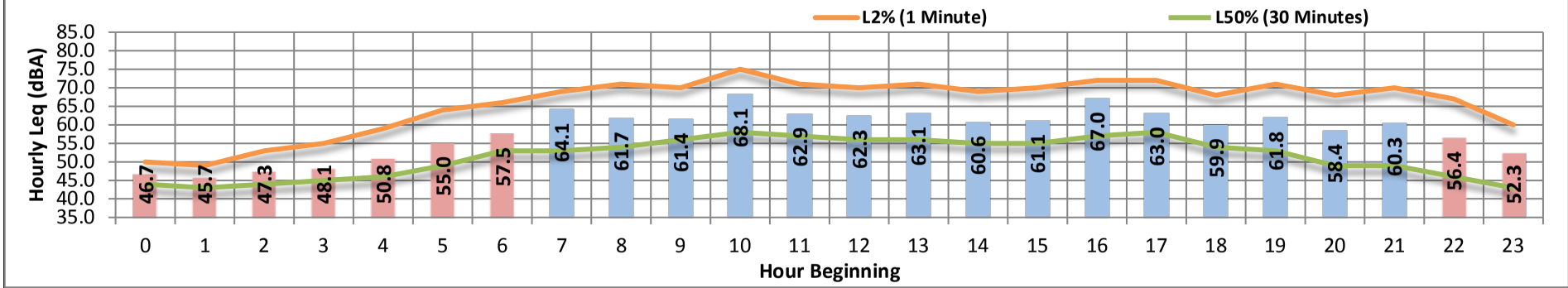
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	49.7	70.9	43.1	60.0	55.0	51.0	50.0	48.0	47.0	45.0	44.0	43.0
	Max	64.0	88.8	53.6	73.0	71.0	69.0	67.0	62.0	59.0	56.0	56.0	54.0
Energy Average:		61.3	Average:		71.2	69.0	65.5	63.3	57.9	54.9	52.3	51.7	50.8
Night	Min	47.2	69.2	40.8	53.0	51.0	48.0	47.0	45.0	44.0	42.0	41.0	41.0
	Max	63.3	85.8	47.2	74.0	72.0	68.0	65.0	58.0	53.0	49.0	49.0	48.0
Energy Average:		58.0	Average:		66.0	63.4	59.8	55.2	50.4	47.9	45.0	44.6	43.9
Hourly Summary													
Night	0	56.4	69.4	40.8	68.0	68.0	68.0	54.0	45.0	44.0	42.0	41.0	41.0
	1	48.9	71.5	40.9	62.0	56.0	48.0	47.0	45.0	44.0	42.0	42.0	41.0
	2	49.3	70.4	43.2	60.0	55.0	51.0	49.0	47.0	46.0	44.0	44.0	43.0
	3	53.0	74.9	45.7	64.0	61.0	55.0	52.0	49.0	48.0	46.0	46.0	46.0
	4	59.1	76.7	47.2	71.0	69.0	66.0	63.0	55.0	51.0	49.0	49.0	48.0
	5	63.3	85.8	44.9	74.0	71.0	66.0	64.0	58.0	53.0	47.0	46.0	45.0
	6	61.6	78.5	44.0	74.0	72.0	68.0	65.0	58.0	52.0	46.0	45.0	44.0
Day	7	60.6	79.7	45.0	73.0	71.0	66.0	63.0	57.0	52.0	47.0	46.0	45.0
	8	61.8	80.0	46.5	72.0	70.0	68.0	66.0	60.0	55.0	50.0	49.0	47.0
	9	61.0	76.7	51.2	72.0	70.0	66.0	65.0	59.0	55.0	52.0	52.0	51.0
	10	61.7	77.8	52.0	71.0	70.0	67.0	65.0	60.0	57.0	54.0	54.0	52.0
	11	62.3	88.8	52.4	73.0	71.0	67.0	65.0	59.0	57.0	55.0	54.0	54.0
	12	61.0	80.7	52.1	72.0	69.0	66.0	64.0	59.0	56.0	55.0	54.0	54.0
	13	64.0	85.1	53.4	73.0	71.0	69.0	67.0	62.0	59.0	56.0	56.0	54.0
	14	63.0	88.8	51.6	72.0	70.0	68.0	66.0	61.0	57.0	54.0	53.0	53.0
	15	62.6	86.5	52.8	73.0	71.0	68.0	67.0	61.0	57.0	55.0	55.0	54.0
	16	61.1	79.1	53.6	71.0	68.0	66.0	64.0	59.0	57.0	55.0	55.0	54.0
	17	61.5	77.0	52.4	72.0	71.0	67.0	64.0	59.0	57.0	55.0	54.0	53.0
	18	60.0	75.9	48.9	72.0	70.0	66.0	64.0	56.0	54.0	51.0	50.0	50.0
	19	60.9	80.2	49.5	72.0	71.0	67.0	64.0	56.0	53.0	51.0	51.0	50.0
	20	57.0	75.2	47.7	70.0	67.0	60.0	56.0	52.0	51.0	49.0	49.0	48.0
	21	49.7	70.9	43.1	60.0	55.0	51.0	50.0	48.0	47.0	45.0	44.0	43.0
Night	22	56.5	69.2	44.5	68.0	68.0	67.0	54.0	50.0	49.0	47.0	46.0	45.0
	23	47.2	70.1	41.0	53.0	51.0	49.0	49.0	47.0	44.0	42.0	42.0	42.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L4 - Located within Development Area 4 on Prospect Avenue near existing mobile homes and commercial/office uses.	*Date:*	4/13-4/14/2017	63.2	53.0	63.7

Hourly Leq dBA Readings (unadjusted)



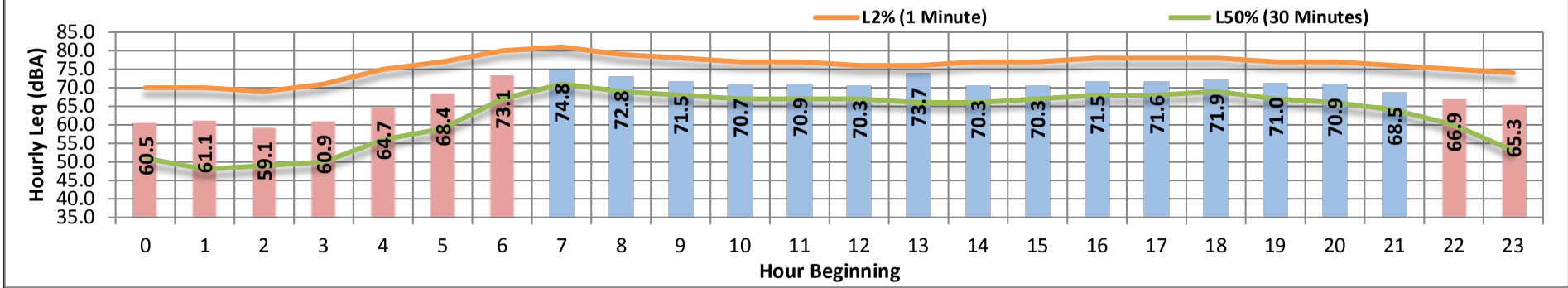
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	58.4	75.0	44.5	70.0	68.0	64.0	62.0	54.0	49.0	46.0	46.0	45.0
	Max	68.1	95.1	49.6	80.0	75.0	71.0	70.0	65.0	58.0	52.0	51.0	50.0
Energy Average:		63.2	Average:		72.6	70.5	67.4	65.5	59.7	54.7	50.2	49.5	48.5
Night	Min	45.7	65.0	39.1	54.0	49.0	46.0	45.0	44.0	43.0	40.0	40.0	40.0
	Max	57.5	79.6	49.3	70.0	67.0	63.0	61.0	55.0	53.0	51.0	50.0	49.0
Energy Average:		53.0	Average:		61.7	58.1	53.9	51.7	47.6	45.9	43.9	43.3	42.8
Hourly Summary													
Night	0	46.7	67.0	40.9	55.0	50.0	48.0	47.0	45.0	44.0	43.0	42.0	42.0
	1	45.7	68.3	40.7	54.0	49.0	46.0	45.0	44.0	43.0	41.0	41.0	40.0
	2	47.3	66.1	40.8	59.0	53.0	48.0	46.0	45.0	44.0	42.0	42.0	40.0
	3	48.1	65.0	42.0	58.0	55.0	51.0	49.0	46.0	45.0	44.0	43.0	42.0
	4	50.8	70.4	43.8	62.0	59.0	55.0	53.0	48.0	46.0	45.0	44.0	44.0
	5	55.0	76.0	44.5	67.0	64.0	59.0	56.0	51.0	49.0	46.0	45.0	45.0
	6	57.5	75.6	49.3	67.0	66.0	63.0	61.0	55.0	53.0	51.0	50.0	49.0
Day	7	64.1	94.1	47.2	72.0	69.0	66.0	64.0	58.0	53.0	50.0	50.0	48.0
	8	61.7	75.8	45.6	72.0	71.0	68.0	66.0	60.0	54.0	49.0	48.0	47.0
	9	61.4	80.6	48.2	72.0	70.0	67.0	65.0	60.0	56.0	51.0	50.0	49.0
	10	68.1	90.7	45.0	80.0	75.0	71.0	70.0	65.0	58.0	50.0	49.0	47.0
	11	62.9	83.4	48.9	73.0	71.0	68.0	66.0	61.0	57.0	51.0	51.0	50.0
	12	62.3	82.7	49.3	71.0	70.0	68.0	66.0	61.0	56.0	52.0	51.0	50.0
	13	63.1	84.3	49.6	74.0	71.0	68.0	66.0	61.0	56.0	52.0	51.0	50.0
	14	60.6	80.0	49.0	71.0	69.0	66.0	64.0	59.0	55.0	51.0	51.0	50.0
	15	61.1	75.8	49.6	71.0	70.0	67.0	65.0	60.0	55.0	52.0	51.0	50.0
	16	67.0	95.1	49.1	74.0	72.0	69.0	67.0	62.0	57.0	52.0	51.0	50.0
	17	63.0	76.6	47.9	73.0	72.0	69.0	67.0	62.0	58.0	51.0	50.0	49.0
	18	59.9	77.9	47.9	70.0	68.0	65.0	64.0	59.0	54.0	50.0	49.0	48.0
	19	61.8	82.6	47.5	73.0	71.0	67.0	65.0	59.0	53.0	49.0	49.0	48.0
	20	58.4	75.0	44.5	71.0	68.0	64.0	62.0	54.0	49.0	47.0	46.0	45.0
	21	60.3	76.1	45.5	72.0	70.0	68.0	65.0	55.0	49.0	46.0	46.0	46.0
Night	22	56.4	73.9	42.1	70.0	67.0	62.0	59.0	49.0	46.0	43.0	43.0	43.0
	23	52.3	79.6	39.1	63.0	60.0	53.0	49.0	45.0	43.0	40.0	40.0	40.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L5 - Located on Newport Avenue within Development Area 3 and existing commercial uses.	*Date:*	4/13-4/14/2017	71.6	66.8	74.8

Hourly Leq dBA Readings (unadjusted)



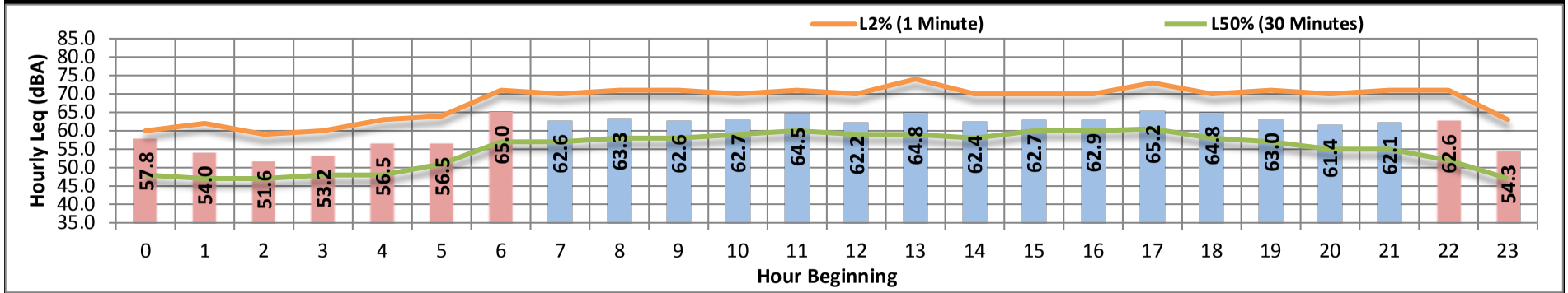
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	68.5	84.2	37.1	77.0	76.0	74.0	73.0	68.0	64.0	50.0	37.0	37.0
	Max	74.8	102.7	54.7	82.0	81.0	80.0	79.0	76.0	71.0	61.0	60.0	57.0
Energy Average:		71.6	Average:		78.9	77.5	75.9	74.9	71.5	67.3	58.5	55.7	53.0
Night	Min	59.1	79.5	44.1	72.0	69.0	64.0	60.0	51.0	48.0	46.0	45.0	45.0
	Max	73.1	91.4	54.1	81.0	80.0	79.0	78.0	73.0	67.0	58.0	56.0	55.0
Energy Average:		66.8	Average:		75.7	73.4	70.3	67.8	59.7	54.8	49.7	48.7	47.9
Hourly Summary													
Night	0	60.5	82.4	47.0	72.0	70.0	67.0	64.0	55.0	51.0	49.0	48.0	47.0
	1	61.1	85.2	44.1	73.0	70.0	66.0	63.0	53.0	48.0	46.0	45.0	45.0
	2	59.1	79.5	45.4	72.0	69.0	64.0	60.0	51.0	49.0	47.0	46.0	46.0
	3	60.9	80.9	46.9	74.0	71.0	67.0	64.0	54.0	50.0	48.0	48.0	47.0
	4	64.7	83.4	48.1	77.0	75.0	71.0	68.0	59.0	56.0	50.0	49.0	48.0
	5	68.4	90.5	49.4	79.0	77.0	75.0	73.0	66.0	59.0	52.0	51.0	50.0
	6	73.1	88.8	54.1	81.0	80.0	79.0	78.0	73.0	67.0	58.0	56.0	55.0
Day	7	74.8	92.3	49.6	82.0	81.0	80.0	79.0	76.0	71.0	59.0	56.0	52.0
	8	72.8	85.3	49.1	80.0	79.0	78.0	77.0	74.0	69.0	59.0	56.0	52.0
	9	71.5	91.1	48.7	79.0	78.0	76.0	75.0	72.0	68.0	59.0	57.0	52.0
	10	70.7	90.5	37.1	79.0	77.0	75.0	74.0	71.0	67.0	50.0	37.0	37.0
	11	70.9	86.9	52.3	79.0	77.0	76.0	75.0	71.0	67.0	60.0	58.0	55.0
	12	70.3	85.0	53.1	78.0	76.0	75.0	74.0	71.0	67.0	60.0	58.0	55.0
	13	73.7	102.7	52.3	78.0	76.0	75.0	74.0	71.0	66.0	59.0	56.0	54.0
	14	70.3	88.7	53.2	79.0	77.0	75.0	74.0	71.0	66.0	59.0	57.0	54.0
	15	70.3	86.2	54.4	78.0	77.0	75.0	74.0	71.0	67.0	59.0	58.0	56.0
	16	71.5	92.5	54.5	79.0	78.0	76.0	75.0	72.0	68.0	61.0	59.0	57.0
	17	71.6	86.3	54.7	79.0	78.0	76.0	75.0	72.0	68.0	61.0	60.0	57.0
	18	71.9	91.8	52.9	79.0	78.0	76.0	76.0	72.0	69.0	61.0	59.0	56.0
	19	71.0	90.6	53.4	78.0	77.0	76.0	75.0	71.0	67.0	60.0	58.0	55.0
	20	70.9	94.2	50.7	79.0	77.0	75.0	74.0	70.0	66.0	57.0	55.0	53.0
	21	68.5	84.2	49.7	77.0	76.0	74.0	73.0	68.0	64.0	54.0	52.0	50.0
Night	22	66.9	87.0	47.4	77.0	75.0	73.0	71.0	65.0	60.0	50.0	49.0	48.0
	23	65.3	91.4	45.0	76.0	74.0	71.0	69.0	61.0	53.0	47.0	46.0	45.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L6 - Located on El Camino Real within Development Area 4 near existing commercial uses south of Main Street.	*Date:*	4/13-4/14/2017	63.3	59.1	66.9

Hourly Leq dBA Readings (unadjusted)



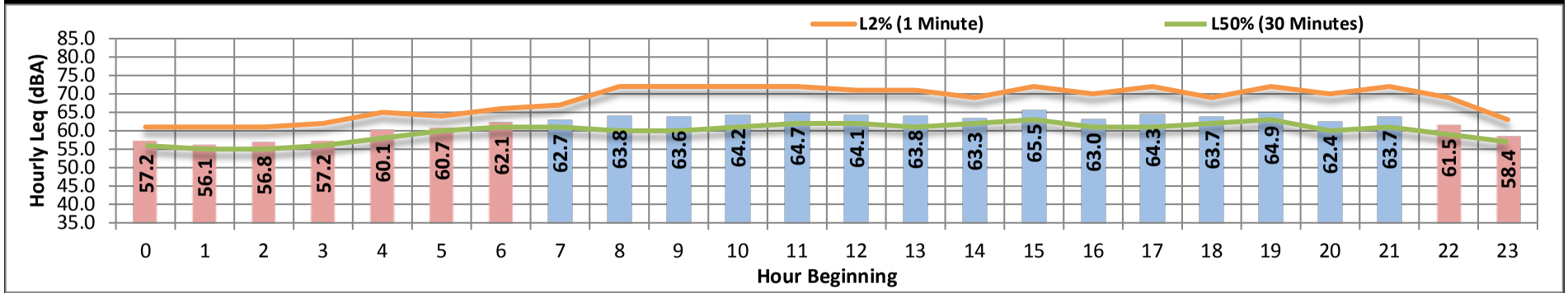
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	61.4	76.4	47.3	71.0	70.0	66.0	64.0	59.0	55.0	51.0	50.0	48.0
	Max	65.2	94.6	53.1	76.0	74.0	70.0	68.0	64.0	60.5	56.0	56.0	54.0
Energy Average:		63.3	Average:		72.5	70.8	67.8	66.2	61.5	58.2	53.9	53.1	51.7
Night	Min	51.6	76.2	42.3	62.0	59.0	55.0	52.0	49.0	47.0	44.0	44.0	43.0
	Max	65.0	91.7	50.4	74.0	71.0	67.0	66.0	61.0	57.0	53.0	52.0	51.0
Energy Average:		59.1	Average:		66.2	63.7	59.6	57.3	52.3	49.4	46.8	46.1	45.1
Hourly Summary													
Night	0	57.8	86.9	43.9	63.0	60.0	56.0	54.0	50.0	48.0	46.0	45.0	44.0
	1	54.0	79.5	42.4	65.0	62.0	57.0	55.0	50.0	47.0	45.0	44.0	43.0
	2	51.6	76.2	42.3	62.0	59.0	55.0	52.0	49.0	47.0	45.0	44.0	43.0
	3	53.2	77.4	43.9	62.0	60.0	56.0	54.0	49.0	48.0	46.0	45.0	44.0
	4	56.5	82.9	45.1	65.0	63.0	59.0	56.0	50.0	48.0	46.0	46.0	45.0
	5	56.5	77.0	46.7	66.0	64.0	61.0	59.0	54.0	51.0	48.0	47.0	47.0
	6	65.0	90.4	50.4	74.0	71.0	67.0	66.0	61.0	57.0	53.0	52.0	51.0
Day	7	62.6	85.4	49.4	72.0	70.0	67.0	66.0	62.0	57.0	52.0	51.0	50.0
	8	63.3	86.2	47.3	73.0	71.0	68.0	67.0	62.0	58.0	51.0	50.0	48.0
	9	62.6	81.1	48.3	73.0	71.0	68.0	66.0	61.0	58.0	53.0	51.0	50.0
	10	62.7	79.2	50.8	72.0	70.0	68.0	67.0	62.0	59.0	54.0	53.0	52.0
	11	64.5	91.5	53.0	73.0	71.0	68.0	67.0	63.0	60.0	55.0	55.0	54.0
	12	62.2	80.3	52.0	71.0	70.0	67.0	66.0	61.0	59.0	54.0	54.0	53.0
	13	64.8	83.7	52.4	76.0	74.0	70.0	67.0	62.0	59.0	55.0	54.0	53.0
	14	62.4	85.9	52.6	71.0	70.0	66.0	65.0	61.0	58.0	55.0	55.0	54.0
	15	62.7	76.4	53.1	71.0	70.0	68.0	66.0	62.0	60.0	56.0	56.0	54.0
	16	62.9	82.6	51.1	72.0	70.0	67.0	66.0	63.0	60.0	56.0	55.0	52.0
	17	65.2	87.4	52.5	74.0	73.0	70.0	68.0	64.0	60.5	56.0	55.0	53.0
	18	64.8	94.6	51.7	72.0	70.0	67.0	65.0	61.0	58.0	55.0	54.0	53.0
	19	63.0	82.2	51.0	73.0	71.0	69.0	67.0	61.0	57.0	54.0	53.0	52.0
	20	61.4	82.4	48.6	72.0	70.0	66.0	64.0	59.0	55.0	51.0	51.0	49.0
	21	62.1	86.5	48.9	72.0	71.0	68.0	66.0	59.0	55.0	51.0	50.0	49.0
Night	22	62.6	91.7	46.0	73.0	71.0	66.0	63.1	57.0	52.0	48.0	48.0	46.0
	23	54.3	76.2	42.4	66.0	63.0	59.0	57.0	51.0	47.0	44.0	44.0	43.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L7 - Located within Development Area 6 adjacent to mixed-use-designated uses and existing commercial/office use.	*Date:*	4/13-4/14/2017	63.9	59.4	67.4

Hourly Leq dBA Readings (unadjusted)



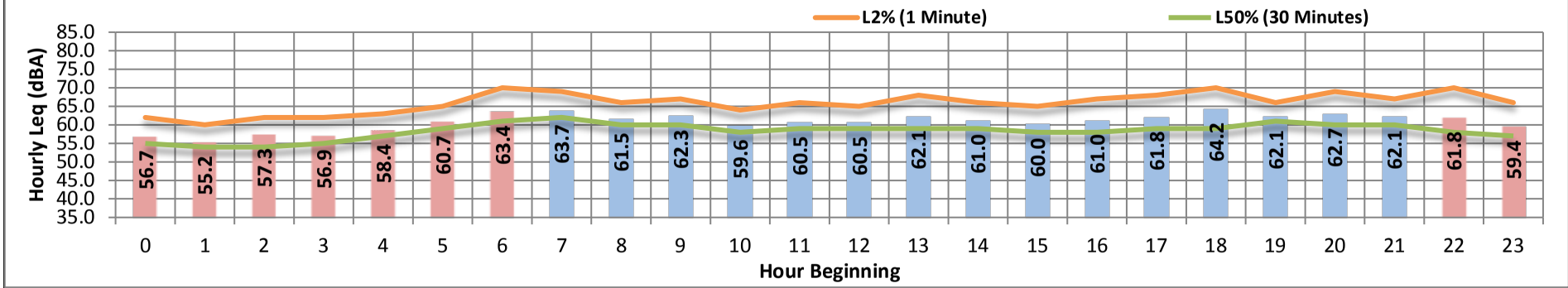
Time Period	Hour	Leq	Lmax	Lmin	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	62.4	74.8	55.6	70.0	67.0	65.0	63.0	61.0	60.0	58.0	58.0	57.0
	Max	65.5	88.8	59.2	74.0	72.0	70.0	68.0	64.0	63.0	61.0	60.0	60.0
Energy Average:		63.9	Average:		72.5	70.9	67.9	65.9	62.6	61.3	59.3	58.9	58.0
Night	Min	56.1	69.3	47.9	61.0	61.0	59.0	58.0	56.0	55.0	52.0	51.0	49.0
	Max	62.1	80.7	57.7	71.0	69.0	65.0	63.0	62.0	61.0	59.0	59.0	58.0
Energy Average:		59.4	Average:		64.9	63.6	61.6	60.6	58.6	57.4	55.0	54.3	53.2
Hourly Summary													
Night	0	57.2	70.6	49.6	62.0	61.0	60.0	59.0	57.0	56.0	53.0	52.0	51.0
	1	56.1	69.3	47.9	61.0	61.0	59.0	58.0	56.0	55.0	52.0	51.0	49.0
	2	56.8	70.3	49.7	62.0	61.0	60.0	59.0	57.0	55.0	53.0	52.0	51.0
	3	57.2	70.1	49.9	63.0	62.0	60.0	60.0	57.0	56.0	53.0	52.0	51.0
	4	60.1	78.7	52.8	68.0	65.0	62.0	61.0	59.0	58.0	55.0	54.0	53.0
	5	60.7	72.1	55.9	64.0	64.0	63.0	62.0	61.0	60.0	58.0	58.0	57.0
	6	62.1	80.7	57.7	69.0	66.0	64.0	63.0	62.0	61.0	59.0	59.0	58.0
Day	7	62.7	77.8	57.7	70.0	67.0	65.0	64.0	62.0	61.0	60.0	59.0	59.0
	8	63.8	77.3	56.3	74.0	72.0	69.0	67.0	62.0	60.0	58.0	58.0	57.0
	9	63.6	81.1	55.8	73.0	72.0	68.0	65.0	61.0	60.0	58.0	58.0	57.0
	10	64.2	77.3	57.2	73.0	72.0	70.0	67.0	63.0	61.0	59.0	59.0	57.0
	11	64.7	76.7	57.4	73.0	72.0	69.0	67.0	64.0	62.0	60.0	60.0	59.0
	12	64.1	77.4	58.1	72.0	71.0	68.0	67.0	63.0	62.0	60.0	59.0	58.0
	13	63.8	77.6	57.3	73.0	71.0	68.0	65.0	63.0	61.0	59.0	59.0	58.0
	14	63.3	76.7	58.1	71.0	69.0	65.0	64.0	63.0	62.0	60.0	60.0	59.0
	15	65.5	88.8	59.2	73.0	72.0	69.0	68.0	64.0	63.0	61.0	60.0	60.0
	16	63.0	77.9	56.2	72.0	70.0	67.0	65.0	62.0	61.0	58.0	58.0	57.0
	17	64.3	77.7	56.2	74.0	72.0	70.0	68.0	62.0	61.0	58.0	58.0	57.0
	18	63.7	74.8	58.4	71.0	69.0	67.0	66.0	63.0	62.0	60.0	60.0	59.0
	19	64.9	76.8	58.2	73.0	72.0	69.0	67.0	64.0	63.0	61.0	60.0	59.0
	20	62.4	76.1	55.9	72.0	70.0	65.0	63.0	61.0	60.0	58.0	58.0	57.0
	21	63.7	75.7	55.6	73.0	72.0	69.0	66.1	62.0	61.0	59.0	58.0	57.0
Night	22	61.5	75.8	54.7	71.0	69.0	65.0	63.0	60.0	59.0	57.0	57.0	56.0
	23	58.4	75.4	50.5	64.0	63.0	61.0	60.0	58.0	57.0	55.0	54.0	53.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Tustin DCCSP	*JN:*	10951	*Energy Average Leq*		*24-Hour*
		Analyst:	A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L8 - Located in Development Area 5 north of the intersection of Newport Avenue and El Camino Real near existing commercial uses.	*Date:*	4/13-4/14/2017	61.9	59.6	66.9

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	59.6	74.9	51.6	65.0	64.0	63.0	62.0	59.0	58.0	55.0	55.0	54.0
	Max	64.2	90.5	57.6	73.0	70.0	67.0	66.0	63.0	62.0	60.0	59.0	58.0
Energy Average:		61.9	Average:		68.7	66.9	64.7	63.7	60.9	59.4	57.2	56.5	55.7
Night	Min	55.2	70.2	47.5	61.0	60.0	58.0	57.0	55.0	54.0	51.0	50.0	49.0
	Max	63.4	80.9	56.6	72.0	70.0	66.0	65.0	63.0	61.0	59.0	59.0	58.0
Energy Average:		59.6	Average:		66.3	64.4	62.0	60.5	58.4	56.7	54.3	53.8	52.6
Hourly Summary													
Night	0	56.7	75.1	48.3	64.0	62.0	60.0	58.0	57.0	55.0	52.0	51.0	49.0
	1	55.2	70.2	47.5	61.0	60.0	58.0	57.0	55.0	54.0	51.0	50.0	49.0
	2	57.3	78.0	48.6	66.0	62.0	59.0	58.0	56.0	54.0	52.0	51.0	49.0
	3	56.9	72.3	50.4	64.0	62.0	60.0	59.0	57.0	55.0	53.0	52.0	51.0
	4	58.4	72.1	51.4	65.0	63.0	61.0	60.0	58.0	57.0	55.0	54.0	53.0
	5	60.7	74.2	55.4	66.0	65.0	63.0	62.0	61.0	59.0	57.0	57.0	56.0
	6	63.4	78.9	56.6	72.0	70.0	66.0	65.0	63.0	61.0	59.0	59.0	58.0
Day	7	63.7	76.4	57.6	71.0	69.0	67.0	66.0	63.0	62.0	60.0	59.0	58.0
	8	61.5	75.0	54.2	68.0	66.0	65.0	64.0	62.0	60.0	57.0	56.0	55.0
	9	62.3	83.5	55.9	69.0	67.0	65.0	64.0	62.0	60.0	58.0	57.0	57.0
	10	59.6	78.8	51.6	65.0	64.0	63.0	62.0	59.0	58.0	55.0	55.0	54.0
	11	60.5	75.8	54.7	67.0	66.0	64.0	63.0	60.0	59.0	57.0	56.0	55.0
	12	60.5	80.0	54.9	66.0	65.0	63.0	62.0	60.0	59.0	57.0	57.0	56.0
	13	62.1	84.5	54.6	70.0	68.0	64.0	63.0	60.0	59.0	57.0	56.0	56.0
	14	61.0	79.9	54.2	68.0	66.0	64.0	63.0	61.0	59.0	57.0	56.0	55.0
	15	60.0	75.1	54.3	66.0	65.0	63.0	62.0	60.0	58.0	56.0	56.0	55.0
	16	61.0	80.8	53.8	70.0	67.0	64.0	63.0	60.0	58.0	56.0	55.0	54.0
	17	61.8	78.8	53.3	70.0	68.0	65.0	64.0	61.0	59.0	56.0	56.0	54.0
	18	64.2	90.5	54.9	73.0	70.0	66.0	65.0	61.0	59.0	57.0	56.0	56.0
	19	62.1	81.3	56.6	68.0	66.0	65.0	64.0	62.0	61.0	59.0	58.0	57.0
	20	62.7	83.0	56.4	71.0	69.0	66.0	66.0	61.0	60.0	58.0	57.0	57.0
	21	62.1	74.9	56.2	69.0	67.0	66.0	65.0	62.0	60.0	58.0	58.0	57.0
Night	22	61.8	80.9	53.5	72.0	70.0	66.0	63.1	60.0	58.0	56.0	56.0	55.0
	23	59.4	74.8	51.2	67.0	66.0	65.0	62.0	59.0	57.0	54.0	54.0	53.0

URBAN CROSSROADS

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: B St.
Road Segment: s/o First St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	270 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.08	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.32	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.28	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	55.1	53.3	47.3	55.9	56.5
Medium Trucks:	51.9	50.4	44.0	42.5	50.9	51.2
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	59.9	58.2	54.3	50.4	58.9	59.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	21	45
CNEL:	5	10	22	48

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: B St.
Road Segment: s/o Main St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	270 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.08	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.32	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.28	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	55.1	53.3	47.3	55.9	56.5
Medium Trucks:	51.9	50.4	44.0	42.5	50.9	51.2
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	59.9	58.2	54.3	50.4	58.9	59.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	21	45
CNEL:	5	10	22	48

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: C St.
Road Segment: s/o First St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	280 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.93	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.17	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.12	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.2	55.3	53.5	47.4	56.1	56.7
Medium Trucks:	52.0	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	60.1	58.4	54.5	50.6	59.1	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	47
CNEL:	5	11	23	49

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: C St.
Road Segment: s/o 2nd St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	280 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.93	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.17	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.12	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.2	55.3	53.5	47.4	56.1	56.7
Medium Trucks:	52.0	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	60.1	58.4	54.5	50.6	59.1	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	47
CNEL:	5	11	23	49

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: C St.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	280 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.93	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.17	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.12	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.2	55.3	53.5	47.4	56.1	56.7
Medium Trucks:	52.0	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	60.1	58.4	54.5	50.6	59.1	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	47
CNEL:	5	11	23	49

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Camino Real
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	590 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.69	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.93	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.88	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.3	49.2	57.9	58.5
Medium Trucks:	53.8	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	57.0	55.6	46.5	47.8	56.1	56.3
Vehicle Noise:	61.8	60.2	56.3	52.3	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	21	46	98
CNEL:	10	22	48	104

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Camino Real
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	590 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.69	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.93	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.88	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.3	49.2	57.9	58.5
Medium Trucks:	53.8	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	57.0	55.6	46.5	47.8	56.1	56.3
Vehicle Noise:	61.8	60.2	56.3	52.3	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	21	46	98
CNEL:	10	22	48	104

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Camino Real
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	590 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.69	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.93	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.88	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.3	49.2	57.9	58.5
Medium Trucks:	53.8	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	57.0	55.6	46.5	47.8	56.1	56.3
Vehicle Noise:	61.8	60.2	56.3	52.3	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	21	46	98
CNEL:	10	22	48	104

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Camino Real
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,130	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.13	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-16.11	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-20.06	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	56.6	55.1	48.8	47.2	55.7	55.9
Heavy Trucks:	59.8	58.4	49.4	50.6	59.0	59.1
Vehicle Noise:	64.7	63.0	59.1	55.2	63.7	64.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	70	151
CNEL:	16	35	75	161

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Camino Real
Road Segment: n/o Newport Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,130	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.13	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-16.11	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-20.06	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	56.6	55.1	48.8	47.2	55.7	55.9
Heavy Trucks:	59.8	58.4	49.4	50.6	59.0	59.1
Vehicle Noise:	64.7	63.0	59.1	55.2	63.7	64.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	70	151
CNEL:	16	35	75	161

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Prospect Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	360	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-4.63	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-21.87	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-25.82	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	53.5	52.0	45.7	44.1	52.6	52.8
Heavy Trucks:	56.0	54.6	45.5	46.8	55.2	55.3
Vehicle Noise:	61.5	59.8	56.2	52.0	60.5	60.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	20	43	94
CNEL:	10	21	46	100

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Prospect Av.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	360	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-4.63	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-21.87	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-25.82	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	53.5	52.0	45.7	44.1	52.6	52.8
Heavy Trucks:	56.0	54.6	45.5	46.8	55.2	55.3
Vehicle Noise:	61.5	59.8	56.2	52.0	60.5	60.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	20	43	94
CNEL:	10	21	46	100

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Prospect Av.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	360 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-4.63	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-21.87	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-25.82	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	53.5	52.0	45.7	44.1	52.6	52.8
Heavy Trucks:	56.0	54.6	45.5	46.8	55.2	55.3
Vehicle Noise:	61.5	59.8	56.2	52.0	60.5	60.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	20	43	94
CNEL:	10	21	46	100

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Newport Av.
Road Segment: s/o Irvine Bl.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,660 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.81	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.43	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.38	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.8	62.8
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	71.5	69.8	66.5	62.0	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	69	149	322	693

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Newport Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,660 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.81	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.43	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.38	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	71.5	69.8	66.5	62.0	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	69	149	322	693

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Newport Av.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,660 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.81	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.43	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.38	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	71.5	69.8	66.5	62.0	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	69	149	322	693

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Newport Av.
Road Segment: s/o El Camino Real

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,870	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	3.72	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	75.75	-13.52	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	81.57	-17.47	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	62.4	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	64.3	62.9	53.8	55.1	63.4	63.5
Vehicle Noise:	70.4	68.7	65.3	60.9	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	118	255	549
CNEL:	59	126	272	586

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Irvine Bl.
Road Segment: w/o Yorba St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,490	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.99	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.25	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-17.21	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.8	70.5	71.1
Medium Trucks:	65.5	64.0	57.7	56.1	64.6	64.8
Heavy Trucks:	66.8	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	73.6	71.8	68.6	64.0	72.5	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	159	343	738
CNEL:	79	170	367	791

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Irvine Bl.
Road Segment: e/o Yorba St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,660	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.81	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-14.43	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-18.38	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	64.4	62.9	56.5	54.9	63.4	63.6
Heavy Trucks:	65.7	64.2	55.2	56.5	64.8	64.9
Vehicle Noise:	72.4	70.7	67.4	62.8	71.4	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	286	616
CNEL:	66	142	306	660

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Irvine Bl.
Road Segment: e/o Prospect Av.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,780	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.00	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-14.24	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-18.19	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.6	68.7	66.9	60.8	69.5	70.1
Medium Trucks:	64.6	63.0	56.7	55.1	63.6	63.8
Heavy Trucks:	65.9	64.4	55.4	56.6	65.0	65.1
Vehicle Noise:	72.6	70.8	67.6	63.0	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	137	295	635
CNEL:	68	146	315	679

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: First St.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,010	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	2.17	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.07	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.02	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.1	67.3	65.5	59.4	68.1	68.7
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	65.2	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	71.4	69.7	66.2	61.8	70.4	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	349
CNEL:	37	80	173	373

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: First St.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,710	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.47	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.77	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.72	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.8	58.7	67.4	68.0
Medium Trucks:	62.7	61.2	54.8	53.3	61.7	62.0
Heavy Trucks:	64.5	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	70.7	69.0	65.5	61.1	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	68	145	313
CNEL:	33	72	155	335

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: First St.
Road Segment: w/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,710	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.47	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.77	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.72	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.8	58.7	67.4	68.0
Medium Trucks:	62.7	61.2	54.8	53.3	61.7	62.0
Heavy Trucks:	64.5	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	70.7	69.0	65.5	61.1	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	68	145	313
CNEL:	33	72	155	335

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: First St.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,390	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.57	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.67	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.62	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.9	57.8	66.5	67.1
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	69.8	68.1	64.6	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	59	127	273
CNEL:	29	63	135	292

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 2nd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	80 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-10.37	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-27.61	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-31.56	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.7	49.8	48.1	42.0	50.6	51.2
Medium Trucks:	46.6	45.1	38.7	37.2	45.6	45.9
Heavy Trucks:	49.8	48.3	39.3	40.6	48.9	49.0
Vehicle Noise:	54.6	52.9	49.0	45.1	53.6	54.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	20
CNEL:	2	5	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 2nd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	80 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-10.37	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-27.61	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-31.56	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.7	49.8	48.1	42.0	50.6	51.2
Medium Trucks:	46.6	45.1	38.7	37.2	45.6	45.9
Heavy Trucks:	49.8	48.3	39.3	40.6	48.9	49.0
Vehicle Noise:	54.6	52.9	49.0	45.1	53.6	54.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	20
CNEL:	2	5	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 3rd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	90 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-9.86	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-27.09	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-31.05	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.2	50.3	48.6	42.5	51.1	51.7
Medium Trucks:	47.1	45.6	39.2	37.7	46.1	46.4
Heavy Trucks:	50.3	48.9	39.8	41.1	49.4	49.6
Vehicle Noise:	55.1	53.4	49.5	45.6	54.1	54.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	10	22
CNEL:	2	5	11	23

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 3rd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	90 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-9.86	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-27.09	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-31.05	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.2	50.3	48.6	42.5	51.1	51.7
Medium Trucks:	47.1	45.6	39.2	37.7	46.1	46.4
Heavy Trucks:	50.3	48.9	39.8	41.1	49.4	49.6
Vehicle Noise:	55.1	53.4	49.5	45.6	54.1	54.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	10	22
CNEL:	2	5	11	23

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Main St.
Road Segment: w/o B St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,160	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.45	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.78	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.74	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.5	58.7
Heavy Trucks:	61.9	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	67.4	65.7	62.1	57.9	66.4	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	88	189
CNEL:	20	43	94	202

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Main St.
Road Segment: e/o B St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,160	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.45	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.78	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.74	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.5	58.7
Heavy Trucks:	61.9	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	67.4	65.7	62.1	57.9	66.4	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	88	189
CNEL:	20	43	94	202

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Main St.
Road Segment: e/o El Camino Real

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,110	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.26	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.98	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.93	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.7	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	59.2	57.7	51.3	49.8	58.3	58.5
Heavy Trucks:	61.7	60.2	51.2	52.5	60.8	60.9
Vehicle Noise:	67.2	65.5	61.9	57.7	66.2	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	40	85	184
CNEL:	20	42	91	196

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: 6th St.
Road Segment: e/o B St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	190	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.61	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.85	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.80	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.5	53.6	51.8	45.8	54.4	55.0
Medium Trucks:	50.3	48.8	42.5	40.9	49.4	49.6
Heavy Trucks:	53.5	52.1	43.1	44.3	52.7	52.8
Vehicle Noise:	58.4	56.7	52.8	48.9	57.4	57.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	36
CNEL:	4	8	18	38

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: B St.
Road Segment: s/o First St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	220 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.97	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.21	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.17	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.1	54.2	52.5	46.4	55.0	55.6
Medium Trucks:	51.0	49.5	43.1	41.6	50.0	50.3
Heavy Trucks:	54.2	52.7	43.7	45.0	53.3	53.4
Vehicle Noise:	59.0	57.3	53.4	49.5	58.0	58.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	18	40
CNEL:	4	9	20	42

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: B St.
Road Segment: s/o Main St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	220 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.97	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.21	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.17	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.1	54.2	52.5	46.4	55.0	55.6
Medium Trucks:	51.0	49.5	43.1	41.6	50.0	50.3
Heavy Trucks:	54.2	52.7	43.7	45.0	53.3	53.4
Vehicle Noise:	59.0	57.3	53.4	49.5	58.0	58.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	18	40
CNEL:	4	9	20	42

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: C St.
Road Segment: s/o First St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	230 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.78	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.02	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.98	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.3	54.4	52.6	46.6	55.2	55.8
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	54.4	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	59.2	57.5	53.6	49.7	58.2	58.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	41
CNEL:	4	9	20	43

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: C St.
Road Segment: s/o 2nd St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	260 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.25	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.49	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.44	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.8	54.9	53.2	47.1	55.7	56.4
Medium Trucks:	51.7	50.2	43.8	42.3	50.8	51.0
Heavy Trucks:	54.9	53.5	44.4	45.7	54.0	54.2
Vehicle Noise:	59.7	58.1	54.1	50.2	58.7	59.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	10	21	44
CNEL:	5	10	22	47

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: C St.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	290	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.77	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.01	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.97	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.3	55.4	53.7	47.6	56.2	56.8
Medium Trucks:	52.2	50.7	44.3	42.8	51.2	51.5
Heavy Trucks:	55.4	53.9	44.9	46.2	54.5	54.6
Vehicle Noise:	60.2	58.5	54.6	50.7	59.2	59.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	48
CNEL:	5	11	24	51

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: El Camino Real
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	410	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.27	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-20.51	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-24.46	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.4	55.5	53.7	47.7	56.3	56.9
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	55.4	54.0	45.0	46.2	54.6	54.7
Vehicle Noise:	60.3	58.6	54.7	50.8	59.3	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	17	36	77
CNEL:	8	18	38	82

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: El Camino Real
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	420	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.17	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-20.40	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-24.36	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.8	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.1	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	17	36	78
CNEL:	8	18	39	83

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: El Camino Real
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	420	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.17	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-20.40	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-24.36	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.8	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.1	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	17	36	78
CNEL:	8	18	39	83

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: El Camino Real
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,090 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	0.98	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-16.26	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-20.22	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.6	59.7	58.0	51.9	60.5	61.1
Medium Trucks:	56.5	55.0	48.6	47.1	55.5	55.7
Heavy Trucks:	59.7	58.2	49.2	50.5	58.8	58.9
Vehicle Noise:	64.5	62.8	58.9	55.0	63.5	63.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	69	148
CNEL:	16	34	73	157

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: El Camino Real
Road Segment: n/o Newport Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,270 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.64	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.60	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.55	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	57.1	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	60.3	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	65.2	63.5	59.6	55.7	64.2	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	164
CNEL:	17	37	81	174

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Prospect Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	310 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-5.28	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-22.51	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-26.47	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.4	56.5	54.7	48.7	57.3	57.9
Medium Trucks:	52.9	51.4	45.0	43.5	51.9	52.2
Heavy Trucks:	55.4	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	60.9	59.2	55.6	51.4	59.9	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	18	39	85
CNEL:	9	19	42	90

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Prospect Av.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	310 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-5.28	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-22.51	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-26.47	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.4	56.5	54.7	48.7	57.3	57.9
Medium Trucks:	52.9	51.4	45.0	43.5	51.9	52.2
Heavy Trucks:	55.4	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	60.9	59.2	55.6	51.4	59.9	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	18	39	85
CNEL:	9	19	42	90

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Prospect Av.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	310	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-5.28	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-22.51	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-26.47	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.4	56.5	54.7	48.7	57.3	57.9
Medium Trucks:	52.9	51.4	45.0	43.5	51.9	52.2
Heavy Trucks:	55.4	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	60.9	59.2	55.6	51.4	59.9	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	18	39	85
CNEL:	9	19	42	90

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Newport Av.
Road Segment: s/o Irvine Bl.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,600	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.71	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.53	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.48	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	64.7	63.3	54.2	55.5	63.8	64.0
Vehicle Noise:	71.4	69.7	66.4	61.9	70.4	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	296	637
CNEL:	68	147	317	682

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Newport Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,800	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.03	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.21	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.16	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.1	60.0	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.3	62.8	63.0
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	71.7	70.0	66.7	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	311	669
CNEL:	72	154	333	717

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Newport Av.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,790	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.02	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.22	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.18	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	71.7	70.0	66.7	62.2	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	310	668
CNEL:	72	154	332	715

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Newport Av.
Road Segment: s/o El Camino Real

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,060	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	4.00	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	75.75	-13.24	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	81.57	-17.20	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.7	61.2	54.8	53.3	61.8	62.0
Heavy Trucks:	64.6	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	70.7	69.0	65.6	61.2	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	123	266	572
CNEL:	61	132	284	612

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Irvine Bl.
Road Segment: w/o Yorba St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,620	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.15	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.09	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-17.05	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.7	69.8	68.0	62.0	70.6	71.2
Medium Trucks:	65.7	64.2	57.8	56.3	64.7	65.0
Heavy Trucks:	67.0	65.6	56.5	57.8	66.1	66.3
Vehicle Noise:	73.7	72.0	68.7	64.2	72.7	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	163	351	757
CNEL:	81	175	376	810

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Irvine Bl.
Road Segment: e/o Yorba St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,820	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.06	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-14.18	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-18.13	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.6	68.7	67.0	60.9	69.5	70.1
Medium Trucks:	64.6	63.1	56.7	55.2	63.7	63.9
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	72.6	70.9	67.6	63.1	71.6	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	641
CNEL:	69	148	318	686

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Irvine Bl.
Road Segment: e/o Prospect Av.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,810	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.05	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-14.19	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-18.15	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.6	68.7	66.9	60.9	69.5	70.1
Medium Trucks:	64.6	63.1	56.7	55.2	63.6	63.9
Heavy Trucks:	65.9	64.5	55.4	56.7	65.0	65.2
Vehicle Noise:	72.6	70.9	67.6	63.1	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	639
CNEL:	68	147	318	684

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: First St.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,580	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.13	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.11	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.07	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	62.3	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	64.2	62.8	53.7	55.0	63.3	63.4
Vehicle Noise:	70.3	68.6	65.2	60.8	69.3	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	138	297
CNEL:	32	68	147	318

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: First St.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,360	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.48	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.76	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.72	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	69.7	68.0	64.5	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	125	269
CNEL:	29	62	133	287

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: First St.
Road Segment: w/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,490	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.87	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.37	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.32	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	66.0	64.2	58.1	66.8	67.4
Medium Trucks:	62.1	60.6	54.2	52.7	61.1	61.4
Heavy Trucks:	63.9	62.5	53.5	54.7	63.1	63.2
Vehicle Noise:	70.1	68.4	64.9	60.5	69.1	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	62	133	286
CNEL:	31	66	142	305

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: First St.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,370	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.51	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.73	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.69	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	63.6	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	69.7	68.0	64.6	60.2	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	58	125	270
CNEL:	29	62	134	289

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: 2nd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	50	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-12.41	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-29.65	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-33.60	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.8	46.0	40.0	48.6	49.2
Medium Trucks:	44.5	43.0	36.7	35.1	43.6	43.8
Heavy Trucks:	47.7	46.3	37.3	38.5	46.9	47.0
Vehicle Noise:	52.6	50.9	47.0	43.1	51.6	52.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	1	3	7	15
CNEL:	2	3	7	16

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: 2nd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	60	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-11.62	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-28.86	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-32.81	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	48.6	46.8	40.8	49.4	50.0
Medium Trucks:	45.3	43.8	37.5	35.9	44.4	44.6
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	53.4	51.7	47.8	43.9	52.4	52.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	8	17
CNEL:	2	4	8	18

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: 3rd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	60	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-11.62	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-28.86	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-32.81	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	48.6	46.8	40.8	49.4	50.0
Medium Trucks:	45.3	43.8	37.5	35.9	44.4	44.6
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	53.4	51.7	47.8	43.9	52.4	52.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	8	17
CNEL:	2	4	8	18

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: 3rd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	60	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-11.62	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-28.86	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-32.81	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	48.6	46.8	40.8	49.4	50.0
Medium Trucks:	45.3	43.8	37.5	35.9	44.4	44.6
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	53.4	51.7	47.8	43.9	52.4	52.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	8	17
CNEL:	2	4	8	18

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Main St.
Road Segment: w/o B St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,220	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.67	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.56	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.52	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	62.1	60.7	51.6	52.9	61.2	61.3
Vehicle Noise:	67.6	65.9	62.3	58.1	66.6	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	42	91	196
CNEL:	21	45	97	209

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Main St.
Road Segment: e/o B St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,210	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.64	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.60	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.56	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.4	55.3	64.0	64.6
Medium Trucks:	59.6	58.1	51.7	50.2	58.6	58.9
Heavy Trucks:	62.0	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	67.6	65.9	62.2	58.1	66.6	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	42	90	195
CNEL:	21	45	96	208

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: Main St.
Road Segment: e/o El Camino Real

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,050	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.02	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-17.22	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-21.17	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.4	62.5	60.8	54.7	63.4	64.0
Medium Trucks:	59.0	57.5	51.1	49.6	58.0	58.3
Heavy Trucks:	61.4	60.0	51.0	52.2	60.6	60.7
Vehicle Noise:	67.0	65.3	61.6	57.4	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	82	177
CNEL:	19	41	88	189

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Project
Road Name: 6th St.
Road Segment: e/o B St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	180	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.85	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-24.08	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-28.04	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.2	53.3	51.6	45.5	54.1	54.8
Medium Trucks:	50.1	48.6	42.2	40.7	49.2	49.4
Heavy Trucks:	53.3	51.9	42.8	44.1	52.4	52.6
Vehicle Noise:	58.1	56.5	52.5	48.6	57.1	57.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	16	35
CNEL:	4	8	17	37

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: B St.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	230 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.78	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.02	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.98	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.3	54.4	52.6	46.6	55.2	55.8
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	54.4	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	59.2	57.5	53.6	49.7	58.2	58.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	41
CNEL:	4	9	20	43

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: B St.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	230 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.78	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.02	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.98	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.3	54.4	52.6	46.6	55.2	55.8
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	54.4	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	59.2	57.5	53.6	49.7	58.2	58.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	41
CNEL:	4	9	20	43

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: C St.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	240 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.60	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.83	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.79	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.5	54.6	52.8	46.8	55.4	56.0
Medium Trucks:	51.4	49.9	43.5	41.9	50.4	50.6
Heavy Trucks:	54.5	53.1	44.1	45.3	53.7	53.8
Vehicle Noise:	59.4	57.7	53.8	49.9	58.4	58.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	20	42
CNEL:	4	10	21	45

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: C St.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	270 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.08	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.32	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.28	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	55.1	53.3	47.3	55.9	56.5
Medium Trucks:	51.9	50.4	44.0	42.5	50.9	51.2
Heavy Trucks:	55.0	53.6	44.6	45.8	54.2	54.3
Vehicle Noise:	59.9	58.2	54.3	50.4	58.9	59.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	21	45
CNEL:	5	10	22	48

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: C St.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	300	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.63	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.87	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.82	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.7	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	49
CNEL:	5	11	24	52

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: El Camino Real
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	470	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.68	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-19.92	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-23.87	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	56.1	54.3	48.2	56.9	57.5
Medium Trucks:	52.8	51.3	44.9	43.4	51.9	52.1
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	60.8	59.2	55.3	51.4	59.9	60.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	18	39	84
CNEL:	9	19	42	89

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: El Camino Real
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	470	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.68	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-19.92	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-23.87	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	56.1	54.3	48.2	56.9	57.5
Medium Trucks:	52.8	51.3	44.9	43.4	51.9	52.1
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	60.8	59.2	55.3	51.4	59.9	60.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	18	39	84
CNEL:	9	19	42	89

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: El Camino Real
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	470	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.68	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-19.92	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-23.87	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	56.1	54.3	48.2	56.9	57.5
Medium Trucks:	52.8	51.3	44.9	43.4	51.9	52.1
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	60.8	59.2	55.3	51.4	59.9	60.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	8	18	39	84
CNEL:	9	19	42	89

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: El Camino Real
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,190 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.36	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.88	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.84	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.0	60.1	58.3	52.3	60.9	61.5
Medium Trucks:	56.8	55.3	49.0	47.4	55.9	56.1
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	64.9	63.2	59.3	55.4	63.9	64.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	73	157
CNEL:	17	36	77	166

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: El Camino Real
Road Segment: n/o Newport Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,360 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.94	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.30	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.26	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.6	60.7	58.9	52.9	61.5	62.1
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	65.5	63.8	59.9	56.0	64.5	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	171
CNEL:	18	39	84	182

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Prospect Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	330 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-5.00	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-22.24	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-26.20	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	48.9	57.6	58.2
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.5
Heavy Trucks:	55.6	54.2	45.2	46.4	54.8	54.9
Vehicle Noise:	61.2	59.5	55.8	51.6	60.2	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	19	41	88
CNEL:	9	20	44	94

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Prospect Av.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	330 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-5.00	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-22.24	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-26.20	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	48.9	57.6	58.2
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.5
Heavy Trucks:	55.6	54.2	45.2	46.4	54.8	54.9
Vehicle Noise:	61.2	59.5	55.8	51.6	60.2	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	19	41	88
CNEL:	9	20	44	94

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Prospect Av.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	360	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-4.63	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-21.87	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-25.82	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	53.5	52.0	45.7	44.1	52.6	52.8
Heavy Trucks:	56.0	54.6	45.5	46.8	55.2	55.3
Vehicle Noise:	61.5	59.8	56.2	52.0	60.5	60.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	20	43	94
CNEL:	10	21	46	100

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Newport Av.
Road Segment: s/o Irvine Bl.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,610	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.73	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.51	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.47	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.8	59.7	68.3	68.9
Medium Trucks:	63.4	61.9	55.5	54.0	62.5	62.7
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	71.4	69.7	66.4	61.9	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	639
CNEL:	68	147	317	684

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Newport Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,800	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.03	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.21	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.16	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.1	60.0	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.3	62.8	63.0
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	71.7	70.0	66.7	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	311	669
CNEL:	72	154	333	717

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Newport Av.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,790	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.02	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.22	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.18	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	71.7	70.0	66.7	62.2	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	310	668
CNEL:	72	154	332	715

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Newport Av.
Road Segment: s/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,090 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	4.04	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	75.75	-13.20	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	81.57	-17.15	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	62.8	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	64.6	63.2	54.1	55.4	63.7	63.9
Vehicle Noise:	70.8	69.0	65.6	61.2	69.7	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	124	267	576
CNEL:	62	133	286	616

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Irvine Bl.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,660 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.20	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.04	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-17.00	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.1	62.0	70.7	71.3
Medium Trucks:	65.7	64.2	57.9	56.3	64.8	65.0
Heavy Trucks:	67.0	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	73.8	72.0	68.8	64.2	72.7	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	164	354	762
CNEL:	82	176	379	816

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Irvine Bl.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,850 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.11	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-14.13	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-18.09	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.7	68.8	67.0	61.0	69.6	70.2
Medium Trucks:	64.7	63.2	56.8	55.2	63.7	63.9
Heavy Trucks:	66.0	64.5	55.5	56.8	65.1	65.2
Vehicle Noise:	72.7	71.0	67.7	63.1	71.7	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	299	645
CNEL:	69	149	321	691

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Irvine Bl.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,860 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.12	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-14.11	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-18.07	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.7	68.8	67.0	61.0	69.6	70.2
Medium Trucks:	64.7	63.2	56.8	55.3	63.7	64.0
Heavy Trucks:	66.0	64.6	55.5	56.8	65.1	65.2
Vehicle Noise:	72.7	71.0	67.7	63.1	71.7	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	69	149	321	692

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: First St.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,630	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.26	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.98	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.93	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	62.5	61.0	54.6	53.1	61.5	61.8
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	70.5	68.8	65.3	60.9	69.5	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	141	303
CNEL:	32	70	150	324

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: First St.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,420	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.66	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.57	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.53	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	69.9	68.2	64.7	60.3	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	60	128	277
CNEL:	30	64	137	296

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: First St.
Road Segment: w/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,540	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.02	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.22	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.18	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	62.2	60.7	54.4	52.8	61.3	61.5
Heavy Trucks:	64.1	62.6	53.6	54.9	63.2	63.3
Vehicle Noise:	70.2	68.5	65.1	60.7	69.2	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	136	292
CNEL:	31	67	145	312

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: First St.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,390	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	0.57	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.67	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.62	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.9	57.8	66.5	67.1
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	69.8	68.1	64.6	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	59	127	273
CNEL:	29	63	135	292

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: 2nd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	60	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-11.62	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-28.86	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-32.81	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	48.6	46.8	40.8	49.4	50.0
Medium Trucks:	45.3	43.8	37.5	35.9	44.4	44.6
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	53.4	51.7	47.8	43.9	52.4	52.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	8	17
CNEL:	2	4	8	18

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: 2nd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	60	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-11.62	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-28.86	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-32.81	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.5	48.6	46.8	40.8	49.4	50.0
Medium Trucks:	45.3	43.8	37.5	35.9	44.4	44.6
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	53.4	51.7	47.8	43.9	52.4	52.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	8	17
CNEL:	2	4	8	18

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: 3rd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	70	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-10.95	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-28.19	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-32.14	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.1	49.2	47.5	41.4	50.0	50.7
Medium Trucks:	46.0	44.5	38.1	36.6	45.1	45.3
Heavy Trucks:	49.2	47.8	38.7	40.0	48.3	48.5
Vehicle Noise:	54.0	52.4	48.4	44.5	53.0	53.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	18
CNEL:	2	4	9	20

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: 3rd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	80	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-10.37	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-27.61	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-31.56	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.7	49.8	48.1	42.0	50.6	51.2
Medium Trucks:	46.6	45.1	38.7	37.2	45.6	45.9
Heavy Trucks:	49.8	48.3	39.3	40.6	48.9	49.0
Vehicle Noise:	54.6	52.9	49.0	45.1	53.6	54.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	20
CNEL:	2	5	10	21

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Main St.
Road Segment: w/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,270	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.85	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.39	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.35	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.6	55.6	64.2	64.8
Medium Trucks:	59.8	58.3	51.9	50.4	58.8	59.1
Heavy Trucks:	62.2	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	67.8	66.1	62.4	58.3	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	93	201
CNEL:	21	46	100	214

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Main St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,270	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.85	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.39	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.35	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.6	55.6	64.2	64.8
Medium Trucks:	59.8	58.3	51.9	50.4	58.8	59.1
Heavy Trucks:	62.2	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	67.8	66.1	62.4	58.3	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	93	201
CNEL:	21	46	100	214

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: Main St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,090	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.18	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-17.05	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-21.01	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.6	62.7	60.9	54.9	63.5	64.1
Medium Trucks:	59.1	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	61.6	60.2	51.1	52.4	60.7	60.9
Vehicle Noise:	67.1	65.4	61.8	57.6	66.1	66.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	182
CNEL:	19	42	90	194

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Transferability
Road Name: 6th St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	200	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.39	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.63	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.58	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	50.6	49.1	42.7	41.2	49.6	49.8
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	58.6	56.9	53.0	49.1	57.6	58.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: B St.
Road Segment: s/o First St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	400	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.38	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-20.62	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-24.57	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	49.0	57.6	58.2
Medium Trucks:	53.6	52.1	45.7	44.2	52.6	52.9
Heavy Trucks:	56.8	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	61.6	59.9	56.0	52.1	60.6	61.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	27	59
CNEL:	6	14	29	63

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: B St.
Road Segment: s/o Main St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	400	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.38	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-20.62	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-24.57	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	49.0	57.6	58.2
Medium Trucks:	53.6	52.1	45.7	44.2	52.6	52.9
Heavy Trucks:	56.8	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	61.6	59.9	56.0	52.1	60.6	61.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	27	59
CNEL:	6	14	29	63

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: C St.
Road Segment: s/o First St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	400	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.38	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-20.62	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-24.57	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	49.0	57.6	58.2
Medium Trucks:	53.6	52.1	45.7	44.2	52.6	52.9
Heavy Trucks:	56.8	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	61.6	59.9	56.0	52.1	60.6	61.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	27	59
CNEL:	6	14	29	63

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: C St.
Road Segment: s/o 2nd St.

Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	300	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.63	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.87	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.82	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.7	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	49
CNEL:	5	11	24	52

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: C St.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.39	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.63	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.58	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	50.6	49.1	42.7	41.2	49.6	49.8
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	58.6	56.9	53.0	49.1	57.6	58.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: El Camino Real
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	800 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-0.37	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-17.61	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-21.56	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.3	58.4	56.6	50.6	59.2	59.8
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	58.3	56.9	47.9	49.1	57.5	57.6
Vehicle Noise:	63.2	61.5	57.6	53.7	62.2	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	12	26	56	120
CNEL:	13	27	59	128

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: El Camino Real
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	700 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-0.95	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.19	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.14	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	57.8	56.0	50.0	58.6	59.2
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	57.7	56.3	47.3	48.5	56.9	57.0
Vehicle Noise:	62.6	60.9	57.0	53.1	61.6	62.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	24	51	110
CNEL:	12	25	54	117

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: El Camino Real
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	700 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-0.95	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.19	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.14	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	57.8	56.0	50.0	58.6	59.2
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	57.7	56.3	47.3	48.5	56.9	57.0
Vehicle Noise:	62.6	60.9	57.0	53.1	61.6	62.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	24	51	110
CNEL:	12	25	54	117

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: El Camino Real
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,400 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	2.06	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.18	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.13	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	57.6	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	60.7	59.3	50.3	51.5	59.9	60.0
Vehicle Noise:	65.6	63.9	60.0	56.1	64.6	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	38	81	174
CNEL:	19	40	86	185

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: El Camino Real
Road Segment: n/o Newport Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,300 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.74	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.50	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.45	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.4	60.5	58.7	52.7	61.3	61.9
Medium Trucks:	57.2	55.7	49.4	47.8	56.3	56.5
Heavy Trucks:	60.4	59.0	50.0	51.2	59.6	59.7
Vehicle Noise:	65.3	63.6	59.7	55.8	64.3	64.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	36	77	166
CNEL:	18	38	82	176

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Prospect Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	700 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-1.74	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-18.98	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-22.93	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	56.4	54.9	48.6	47.0	55.5	55.7
Heavy Trucks:	58.9	57.5	48.4	49.7	58.0	58.2
Vehicle Noise:	64.4	62.7	59.1	54.9	63.4	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	31	68	146
CNEL:	16	33	72	155

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Prospect Av.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	700 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-1.74	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-18.98	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-22.93	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	56.4	54.9	48.6	47.0	55.5	55.7
Heavy Trucks:	58.9	57.5	48.4	49.7	58.0	58.2
Vehicle Noise:	64.4	62.7	59.1	54.9	63.4	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	31	68	146
CNEL:	16	33	72	155

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Prospect Av.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	900	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-0.65	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-17.89	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-21.84	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.0	61.1	59.3	53.3	61.9	62.5
Medium Trucks:	57.5	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	60.0	58.6	49.5	50.8	59.1	59.3
Vehicle Noise:	65.5	63.8	60.2	56.0	64.5	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	80	172
CNEL:	18	40	85	184

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Newport Av.
Road Segment: s/o Irvine Bl.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,700	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.87	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.36	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.32	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.8	68.5	69.1
Medium Trucks:	63.6	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	64.9	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	71.6	69.8	66.6	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	141	303	653
CNEL:	70	151	325	700

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Newport Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,800	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.03	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.21	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.16	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.1	60.0	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.3	62.8	63.0
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	71.7	70.0	66.7	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	144	311	669
CNEL:	72	154	333	717

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Newport Av.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,700	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.87	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.36	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.32	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.8	68.5	69.1
Medium Trucks:	63.6	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	64.9	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	71.6	69.8	66.6	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	141	303	653
CNEL:	70	151	325	700

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Newport Av.
Road Segment: s/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,600 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	4.70	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	75.75	-12.53	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	81.57	-16.49	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.2	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	63.4	61.9	55.5	54.0	62.5	62.7
Heavy Trucks:	65.3	63.8	54.8	56.1	64.4	64.5
Vehicle Noise:	71.4	69.7	66.3	61.9	70.4	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	296	638
CNEL:	68	147	316	682

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Irvine Bl.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,100 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.69	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-12.55	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-16.51	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.6	62.5	71.2	71.8
Medium Trucks:	66.2	64.7	58.4	56.8	65.3	65.5
Heavy Trucks:	67.5	66.1	57.1	58.3	66.7	66.8
Vehicle Noise:	74.3	72.5	69.3	64.7	73.2	73.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	177	382	822
CNEL:	88	190	409	880

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Irvine Bl.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,100 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.47	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.76	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-17.72	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.0	69.1	67.4	61.3	69.9	70.5
Medium Trucks:	65.0	63.5	57.2	55.6	64.1	64.3
Heavy Trucks:	66.3	64.9	55.9	57.1	65.5	65.6
Vehicle Noise:	73.0	71.3	68.0	63.5	72.0	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	147	317	682
CNEL:	73	157	339	731

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Irvine Bl.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.24	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.00	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-16.95	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.1	62.1	70.7	71.3
Medium Trucks:	65.8	64.3	57.9	56.4	64.8	65.1
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	73.8	72.1	68.8	64.3	72.8	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	356	768
CNEL:	82	177	382	822

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: First St.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,100	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	2.36	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-14.88	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-18.83	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.7	59.6	68.2	68.8
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	65.4	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	71.6	69.9	66.4	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	77	167	359
CNEL:	38	83	178	384

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: First St.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,100	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	2.36	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-14.88	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-18.83	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.7	59.6	68.2	68.8
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	65.4	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	71.6	69.9	66.4	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	77	167	359
CNEL:	38	83	178	384

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: First St.
Road Segment: w/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,800	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.69	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.55	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.50	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.9	61.4	55.0	53.5	62.0	62.2
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	70.9	69.2	65.7	61.4	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	324
CNEL:	35	75	161	346

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: First St.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,700	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.44	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.79	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.75	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	62.7	61.2	54.8	53.3	61.7	61.9
Heavy Trucks:	64.5	63.1	54.0	55.3	63.6	63.8
Vehicle Noise:	70.7	68.9	65.5	61.1	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	145	312
CNEL:	33	72	155	333

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: 2nd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	100 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-9.40	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-26.64	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-30.59	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.7	50.8	49.0	43.0	51.6	52.2
Medium Trucks:	47.6	46.1	39.7	38.1	46.6	46.8
Heavy Trucks:	50.7	49.3	40.3	41.5	49.9	50.0
Vehicle Noise:	55.6	53.9	50.0	46.1	54.6	55.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	11	23
CNEL:	2	5	12	25

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: 2nd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.39	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.63	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.58	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	50.6	49.1	42.7	41.2	49.6	49.8
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	58.6	56.9	53.0	49.1	57.6	58.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: 3rd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.39	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.63	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.58	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	50.6	49.1	42.7	41.2	49.6	49.8
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	58.6	56.9	53.0	49.1	57.6	58.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: 3rd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.39	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.63	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.58	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	50.6	49.1	42.7	41.2	49.6	49.8
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	58.6	56.9	53.0	49.1	57.6	58.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Main St.
Road Segment: w/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,300	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	0.95	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.29	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.24	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	63.5	61.7	55.7	64.3	64.9
Medium Trucks:	59.9	58.4	52.0	50.5	58.9	59.2
Heavy Trucks:	62.4	60.9	51.9	53.1	61.5	61.6
Vehicle Noise:	67.9	66.2	62.5	58.4	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	204
CNEL:	22	47	101	218

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Main St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,600	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.85	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.39	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.34	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.4	62.6	56.6	65.2	65.8
Medium Trucks:	60.8	59.3	52.9	51.4	59.8	60.1
Heavy Trucks:	63.3	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	68.8	67.1	63.4	59.3	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	51	109	235
CNEL:	25	54	116	250

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Main St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,500	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.57	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.67	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.62	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	64.1	62.3	56.3	64.9	65.5
Medium Trucks:	60.5	59.0	52.7	51.1	59.6	59.8
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	68.5	66.8	63.2	59.0	67.5	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	48	104	225
CNEL:	24	52	111	240

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: 6th St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	300	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.63	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.87	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.82	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.7	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	49
CNEL:	5	11	24	52

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: B St.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	310 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.48	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.72	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.68	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.6	55.7	53.9	47.9	56.5	57.1
Medium Trucks:	52.5	51.0	44.6	43.1	51.5	51.8
Heavy Trucks:	55.6	54.2	45.2	46.4	54.8	54.9
Vehicle Noise:	60.5	58.8	54.9	51.0	59.5	59.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	50
CNEL:	5	11	25	53

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: B St.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	310 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.48	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.72	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.68	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.6	55.7	53.9	47.9	56.5	57.1
Medium Trucks:	52.5	51.0	44.6	43.1	51.5	51.8
Heavy Trucks:	55.6	54.2	45.2	46.4	54.8	54.9
Vehicle Noise:	60.5	58.8	54.9	51.0	59.5	59.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	50
CNEL:	5	11	25	53

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: C St.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	320 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.35	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.59	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.54	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.7	55.8	54.1	48.0	56.6	57.3
Medium Trucks:	52.6	51.1	44.7	43.2	51.7	51.9
Heavy Trucks:	55.8	54.4	45.3	46.6	54.9	55.1
Vehicle Noise:	60.6	59.0	55.0	51.1	59.6	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	24	51
CNEL:	5	12	25	54

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: C St.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	290 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.77	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.01	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.97	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.3	55.4	53.7	47.6	56.2	56.8
Medium Trucks:	52.2	50.7	44.3	42.8	51.2	51.5
Heavy Trucks:	55.4	53.9	44.9	46.2	54.5	54.6
Vehicle Noise:	60.2	58.5	54.6	50.7	59.2	59.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	48
CNEL:	5	11	24	51

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: C St.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	230 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.78	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.02	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.98	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.3	54.4	52.6	46.6	55.2	55.8
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	54.4	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	59.2	57.5	53.6	49.7	58.2	58.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	41
CNEL:	4	9	20	43

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: El Camino Real
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	620 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.47	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.71	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.67	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.2	57.3	55.5	49.4	58.1	58.7
Medium Trucks:	54.0	52.5	46.1	44.6	53.1	53.3
Heavy Trucks:	57.2	55.8	46.8	48.0	56.4	56.5
Vehicle Noise:	62.1	60.4	56.5	52.6	61.1	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	22	47	101
CNEL:	11	23	50	108

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: El Camino Real
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.16	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-19.39	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-23.35	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.5	56.6	54.8	48.8	57.4	58.0
Medium Trucks:	53.3	51.8	45.5	43.9	52.4	52.6
Heavy Trucks:	56.5	55.1	46.1	47.3	55.7	55.8
Vehicle Noise:	61.4	59.7	55.8	51.9	60.4	60.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	20	42	91
CNEL:	10	21	45	97

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: El Camino Real
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.16	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-19.39	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-23.35	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.5	56.6	54.8	48.8	57.4	58.0
Medium Trucks:	53.3	51.8	45.5	43.9	52.4	52.6
Heavy Trucks:	56.5	55.1	46.1	47.3	55.7	55.8
Vehicle Noise:	61.4	59.7	55.8	51.9	60.4	60.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	9	20	42	91
CNEL:	10	21	45	97

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: El Camino Real
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,360 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.94	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.30	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.26	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.6	60.7	58.9	52.9	61.5	62.1
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	65.5	63.8	59.9	56.0	64.5	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	171
CNEL:	18	39	84	182

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: El Camino Real
Road Segment: n/o Newport Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,440 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	2.19	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-15.05	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-19.01	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	60.9	59.2	53.1	61.7	62.3
Medium Trucks:	57.7	56.2	49.8	48.3	56.7	57.0
Heavy Trucks:	60.9	59.4	50.4	51.7	60.0	60.1
Vehicle Noise:	65.7	64.0	60.1	56.2	64.7	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	83	178
CNEL:	19	41	88	189

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Prospect Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	660 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-1.99	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-19.23	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-23.19	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.7	59.8	58.0	51.9	60.6	61.2
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	58.6	57.2	48.2	49.4	57.8	57.9
Vehicle Noise:	64.2	62.5	58.8	54.6	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	65	140
CNEL:	15	32	69	149

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Prospect Av.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	660 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-1.99	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-19.23	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-23.19	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.7	59.8	58.0	51.9	60.6	61.2
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	58.6	57.2	48.2	49.4	57.8	57.9
Vehicle Noise:	64.2	62.5	58.8	54.6	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	65	140
CNEL:	15	32	69	149

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Prospect Av.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	550 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-2.79	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-20.02	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-23.98	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.9	59.0	57.2	51.2	59.8	60.4
Medium Trucks:	55.4	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	57.8	56.4	47.4	48.6	57.0	57.1
Vehicle Noise:	63.4	61.7	58.0	53.9	62.4	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	12	27	58	124
CNEL:	13	28	61	132

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Newport Av.
Road Segment: s/o Irvine Bl.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,640 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.78	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.46	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.42	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	61.9	55.6	54.0	62.5	62.7
Heavy Trucks:	64.8	63.3	54.3	55.6	63.9	64.0
Vehicle Noise:	71.5	69.7	66.5	61.9	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	139	299	644
CNEL:	69	148	320	689

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Newport Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,940 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.24	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-13.99	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-17.95	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.9	68.0	66.3	60.2	68.8	69.4
Medium Trucks:	63.9	62.4	56.1	54.5	63.0	63.2
Heavy Trucks:	65.2	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	71.9	70.2	66.9	62.4	70.9	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	149	321	692
CNEL:	74	160	344	741

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Newport Av.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,820 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000
Medium Trucks:	4.000
Heavy Trucks:	8.006
Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.06	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.18	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.13	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.0	68.7	69.3
Medium Trucks:	63.7	62.2	55.9	54.3	62.8	63.0
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	71.8	70.0	66.8	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	312	673
CNEL:	72	155	334	720

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Newport Av.
Road Segment: s/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,790 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	90 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	4.93	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	75.75	-12.31	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	81.57	-16.27	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	63.6	62.1	55.8	54.2	62.7	62.9
Heavy Trucks:	65.5	64.1	55.0	56.3	64.6	64.8
Vehicle Noise:	71.6	69.9	66.5	62.1	70.6	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	306	660
CNEL:	71	152	327	705

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Irvine Bl.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,230 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.82	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-12.41	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-16.37	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.4	70.5	68.7	62.7	71.3	71.9
Medium Trucks:	66.4	64.9	58.5	57.0	65.4	65.7
Heavy Trucks:	67.7	66.3	57.2	58.5	66.8	66.9
Vehicle Noise:	74.4	72.7	69.4	64.8	73.4	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	181	390	839
CNEL:	90	194	417	899

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Irvine Bl.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,260 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.69	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.55	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-17.50	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.3	69.4	67.6	61.5	70.2	70.8
Medium Trucks:	65.2	63.7	57.4	55.8	64.3	64.5
Heavy Trucks:	66.5	65.1	56.1	57.3	65.7	65.8
Vehicle Noise:	73.3	71.5	68.3	63.7	72.2	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	152	328	706
CNEL:	76	163	351	756

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Irvine Bl.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,730 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.28	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-12.96	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-16.92	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	65.8	64.3	58.0	56.4	64.9	65.1
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	73.9	72.1	68.8	64.3	72.8	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	166	358	772
CNEL:	83	178	384	827

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: First St.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,670	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.37	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.87	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.83	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.7	58.6	67.2	67.9
Medium Trucks:	62.6	61.1	54.7	53.2	61.6	61.9
Heavy Trucks:	64.4	63.0	54.0	55.2	63.6	63.7
Vehicle Noise:	70.6	68.9	65.4	61.0	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	143	308
CNEL:	33	71	153	329

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: First St.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,750	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.57	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.67	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.62	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.9	58.8	67.5	68.1
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	64.6	63.2	54.2	55.4	63.8	63.9
Vehicle Noise:	70.8	69.1	65.6	61.2	69.8	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	148	318
CNEL:	34	73	158	340

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: First St.
Road Segment: w/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,580	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.13	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-16.11	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-20.07	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	62.3	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	64.2	62.8	53.7	55.0	63.3	63.4
Vehicle Noise:	70.3	68.6	65.2	60.8	69.3	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	138	297
CNEL:	32	68	147	318

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: First St.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,680	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	38	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	33.0	feet
Centerline Dist. to Observer:	33.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.39	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.84	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.80	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	62.6	61.1	54.7	53.2	61.7	61.9
Heavy Trucks:	64.4	63.0	54.0	55.2	63.6	63.7
Vehicle Noise:	70.6	68.9	65.4	61.1	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	144	310
CNEL:	33	71	154	331

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: 2nd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.61	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-25.84	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-29.80	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.5	51.6	49.8	43.8	52.4	53.0
Medium Trucks:	48.4	46.8	40.5	38.9	47.4	47.6
Heavy Trucks:	51.5	50.1	41.1	42.3	50.7	50.8
Vehicle Noise:	56.4	54.7	50.8	46.9	55.4	55.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: 2nd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	160 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.36	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-24.60	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-28.55	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.7	52.8	51.1	45.0	53.6	54.2
Medium Trucks:	49.6	48.1	41.7	40.2	48.6	48.9
Heavy Trucks:	52.8	51.4	42.3	43.6	51.9	52.1
Vehicle Noise:	57.6	55.9	52.0	48.1	56.6	57.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	32
CNEL:	3	7	16	34

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: 3rd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	140 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.94	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-25.18	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-29.13	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.2	52.3	50.5	44.4	53.1	53.7
Medium Trucks:	49.0	47.5	41.2	39.6	48.1	48.3
Heavy Trucks:	52.2	50.8	41.7	43.0	51.3	51.5
Vehicle Noise:	57.0	55.4	51.5	47.5	56.0	56.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	14	29
CNEL:	3	7	14	31

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: 3rd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-6.39	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.63	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.58	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.7	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	50.6	49.1	42.7	41.2	49.6	49.8
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	58.6	56.9	53.0	49.1	57.6	58.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Main St.
Road Segment: w/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,360 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.15	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-16.09	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-20.05	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	61.9	55.9	64.5	65.1
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	62.5	61.1	52.1	53.3	61.7	61.8
Vehicle Noise:	68.1	66.4	62.7	58.6	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	98	211
CNEL:	22	48	104	224

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Main St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,650 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.98	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.25	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.21	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.9	59.4	53.1	51.5	60.0	60.2
Heavy Trucks:	63.4	62.0	52.9	54.2	62.5	62.7
Vehicle Noise:	68.9	67.2	63.6	59.4	67.9	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	111	240
CNEL:	26	55	118	255

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Main St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,440 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.39	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.84	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.80	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.2	56.1	64.7	65.3
Medium Trucks:	60.3	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	68.3	66.6	63.0	58.8	67.3	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	102	219
CNEL:	23	50	108	233

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: 6th St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	280 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.93	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.17	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.12	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.2	55.3	53.5	47.4	56.1	56.7
Medium Trucks:	52.0	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	60.1	58.4	54.5	50.6	59.1	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	10	22	47
CNEL:	5	11	23	49

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: B St.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	320	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.35	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.59	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.54	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.7	55.8	54.1	48.0	56.6	57.3
Medium Trucks:	52.6	51.1	44.7	43.2	51.7	51.9
Heavy Trucks:	55.8	54.4	45.3	46.6	54.9	55.1
Vehicle Noise:	60.6	59.0	55.0	51.1	59.6	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	24	51
CNEL:	5	12	25	54

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: B St.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	320	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.35	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.59	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.54	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.7	55.8	54.1	48.0	56.6	57.3
Medium Trucks:	52.6	51.1	44.7	43.2	51.7	51.9
Heavy Trucks:	55.8	54.4	45.3	46.6	54.9	55.1
Vehicle Noise:	60.6	59.0	55.0	51.1	59.6	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	24	51
CNEL:	5	12	25	54

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: C St.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	330	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.21	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.45	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.41	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	56.0	54.2	48.2	56.8	57.4
Medium Trucks:	52.7	51.2	44.9	43.3	51.8	52.0
Heavy Trucks:	55.9	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	60.8	59.1	55.2	51.3	59.8	60.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	24	52
CNEL:	6	12	26	55

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: C St.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	300	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	25.0	feet
Centerline Dist. to Observer:	25.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.63	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.87	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.82	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.7	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	49
CNEL:	5	11	24	52

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: C St.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	250 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.42	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-22.66	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-26.61	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	51.5	50.0	43.7	42.1	50.6	50.8
Heavy Trucks:	54.7	53.3	44.3	45.5	53.9	54.0
Vehicle Noise:	59.6	57.9	54.0	50.1	58.6	59.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	20	43
CNEL:	5	10	21	46

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: El Camino Real
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	680 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.07	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.31	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.27	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.6	57.7	55.9	49.8	58.5	59.1
Medium Trucks:	54.4	52.9	46.5	45.0	53.5	53.7
Heavy Trucks:	57.6	56.2	47.2	48.4	56.8	56.9
Vehicle Noise:	62.5	60.8	56.9	53.0	61.5	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	23	50	108
CNEL:	11	25	53	114

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: El Camino Real
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	590 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.69	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.93	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.88	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.3	49.2	57.9	58.5
Medium Trucks:	53.8	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	57.0	55.6	46.5	47.8	56.1	56.3
Vehicle Noise:	61.8	60.2	56.3	52.3	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	21	46	98
CNEL:	10	22	48	104

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: El Camino Real
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	590 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-1.69	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-18.93	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-22.88	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.0	57.1	55.3	49.2	57.9	58.5
Medium Trucks:	53.8	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	57.0	55.6	46.5	47.8	56.1	56.3
Vehicle Noise:	61.8	60.2	56.3	52.3	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	10	21	46	98
CNEL:	10	22	48	104

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: El Camino Real
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	2.25	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-14.99	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-18.95	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.9	61.0	59.2	53.2	61.8	62.4
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	60.9	59.5	50.5	51.7	60.1	60.2
Vehicle Noise:	65.8	64.1	60.2	56.3	64.8	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	83	179
CNEL:	19	41	88	191

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: El Camino Real
Road Segment: n/o Newport Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,530 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	2.45	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	70.80	-14.79	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	77.97	-18.75	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.1	61.2	59.4	53.4	62.0	62.6
Medium Trucks:	57.9	56.4	50.1	48.5	57.0	57.2
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	66.0	64.3	60.4	56.5	65.0	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	86	185
CNEL:	20	42	91	197

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Prospect Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	670 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-1.93	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-19.17	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-23.12	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.7	59.8	58.1	52.0	60.6	61.2
Medium Trucks:	56.2	54.7	48.4	46.8	55.3	55.5
Heavy Trucks:	58.7	57.3	48.2	49.5	57.9	58.0
Vehicle Noise:	64.2	62.5	58.9	54.7	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	66	142
CNEL:	15	32	70	151

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Prospect Av.
Road Segment: s/o 2nd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	680 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-1.87	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-19.10	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-23.06	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	56.3	54.8	48.4	46.9	55.4	55.6
Heavy Trucks:	58.8	57.3	48.3	49.6	57.9	58.0
Vehicle Noise:	64.3	62.6	59.0	54.8	63.3	63.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	66	143
CNEL:	15	33	71	152

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Prospect Av.
Road Segment: s/o 3rd St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	610	vehicles
Vehicle Speed:	30	mph
Near/Far Lane Distance:	52	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	40.0	feet
Centerline Dist. to Observer:	40.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	30.545
Medium Trucks:	30.414
Heavy Trucks:	30.546

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	-2.34	3.11	-1.20	-4.83	0.000	0.000
Medium Trucks:	73.48	-19.58	3.14	-1.20	-5.08	0.000	0.000
Heavy Trucks:	79.92	-23.53	3.11	-1.20	-5.56	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.3	59.4	57.7	51.6	60.2	60.8
Medium Trucks:	55.8	54.3	48.0	46.4	54.9	55.1
Heavy Trucks:	58.3	56.9	47.8	49.1	57.4	57.6
Vehicle Noise:	63.8	62.1	58.5	54.3	62.8	63.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	29	62	133
CNEL:	14	31	66	142

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Newport Av.
Road Segment: s/o Irvine Bl.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,650	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.79	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.45	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.40	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.7
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.0
Vehicle Noise:	71.5	69.8	66.5	61.9	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	645
CNEL:	69	149	321	691

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Newport Av.
Road Segment: s/o First St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,940	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.24	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-13.99	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-17.95	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.9	68.0	66.3	60.2	68.8	69.4
Medium Trucks:	63.9	62.4	56.1	54.5	63.0	63.2
Heavy Trucks:	65.2	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	71.9	70.2	66.9	62.4	70.9	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	149	321	692
CNEL:	74	160	344	741

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Newport Av.
Road Segment: s/o Main St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,830	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.08	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	77.72	-14.16	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	82.99	-18.12	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	63.8	62.2	55.9	54.3	62.8	63.0
Heavy Trucks:	65.1	63.6	54.6	55.9	64.2	64.3
Vehicle Noise:	71.8	70.1	66.8	62.2	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	674
CNEL:	72	156	335	722

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Newport Av.
Road Segment: s/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,820	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	90	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	39.799
Medium Trucks:	39.699
Heavy Trucks:	39.800

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	4.96	1.38	-1.20	-4.85	0.000	0.000
Medium Trucks:	75.75	-12.28	1.40	-1.20	-5.01	0.000	0.000
Heavy Trucks:	81.57	-16.23	1.38	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.4	67.5	65.8	59.7	68.3	69.0
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	65.5	64.1	55.1	56.3	64.7	64.8
Vehicle Noise:	71.7	70.0	66.5	62.1	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	143	308	664
CNEL:	71	153	329	709

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Irvine Bl.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	42,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,270	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.86	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-12.37	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-16.33	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.4	70.5	68.8	62.7	71.3	71.9
Medium Trucks:	66.4	64.9	58.5	57.0	65.5	65.7
Heavy Trucks:	67.7	66.3	57.3	58.5	66.9	67.0
Vehicle Noise:	74.4	72.7	69.4	64.9	73.4	73.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	182	392	845
CNEL:	90	195	420	905

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Irvine Bl.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,290	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.73	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-13.51	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-17.46	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.3	69.4	67.6	61.6	70.2	70.8
Medium Trucks:	65.3	63.8	57.4	55.9	64.3	64.6
Heavy Trucks:	66.6	65.2	56.1	57.4	65.7	65.9
Vehicle Noise:	73.3	71.6	68.3	63.7	72.3	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	153	330	710
CNEL:	76	164	353	760

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Irvine Bl.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,780	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	34.828
Medium Trucks:	34.713
Heavy Trucks:	34.829

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.34	2.25	-1.20	-4.84	0.000	0.000
Medium Trucks:	77.72	-12.90	2.27	-1.20	-5.04	0.000	0.000
Heavy Trucks:	82.99	-16.86	2.25	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.9	70.0	68.2	62.2	70.8	71.4
Medium Trucks:	65.9	64.4	58.0	56.5	64.9	65.2
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	73.9	72.2	68.9	64.4	72.9	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	168	362	779
CNEL:	83	180	387	834

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: First St.
Road Segment: w/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,720 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.50	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.74	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.70	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.7	61.2	54.8	53.3	61.8	62.0
Heavy Trucks:	64.5	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	70.7	69.0	65.5	61.2	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	68	146	315
CNEL:	34	72	156	336

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: First St.
Road Segment: e/o Yorba St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,810 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.72	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.52	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.48	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.9	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	64.8	63.3	54.3	55.6	63.9	64.0
Vehicle Noise:	70.9	69.2	65.8	61.4	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	70	151	325
CNEL:	35	75	161	348

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: First St.
Road Segment: w/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,640 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.29	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.95	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.91	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.5	67.2	67.8
Medium Trucks:	62.5	61.0	54.6	53.1	61.6	61.8
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	70.5	68.8	65.3	61.0	69.5	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	141	305
CNEL:	33	70	151	326

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: First St.
Road Segment: e/o Prospect Av.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,700 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	1.44	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	75.75	-15.79	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	81.57	-19.75	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	62.7	61.2	54.8	53.3	61.7	61.9
Heavy Trucks:	64.5	63.1	54.0	55.3	63.6	63.8
Vehicle Noise:	70.7	68.9	65.5	61.1	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	145	312
CNEL:	33	72	155	333

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: 2nd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	130 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.26	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-25.50	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-29.45	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.8	51.9	50.2	44.1	52.7	53.3
Medium Trucks:	48.7	47.2	40.8	39.3	47.7	48.0
Heavy Trucks:	51.9	50.5	41.4	42.7	51.0	51.1
Vehicle Noise:	56.7	55.0	51.1	47.2	55.7	56.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	13	28
CNEL:	3	6	14	30

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: 2nd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	170 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.09	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-24.33	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-28.29	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.0	53.1	51.3	45.3	53.9	54.5
Medium Trucks:	49.9	48.4	42.0	40.4	48.9	49.1
Heavy Trucks:	53.0	51.6	42.6	43.8	52.2	52.3
Vehicle Noise:	57.9	56.2	52.3	48.4	56.9	57.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	16	33
CNEL:	4	8	16	35

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: 3rd St.
Road Segment: w/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	160 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.36	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-24.60	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-28.55	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.7	52.8	51.1	45.0	53.6	54.2
Medium Trucks:	49.6	48.1	41.7	40.2	48.6	48.9
Heavy Trucks:	52.8	51.4	42.3	43.6	51.9	52.1
Vehicle Noise:	57.6	55.9	52.0	48.1	56.6	57.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	32
CNEL:	3	7	16	34

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: 3rd St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	220 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-5.97	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-23.21	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-27.17	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.1	54.2	52.5	46.4	55.0	55.6
Medium Trucks:	51.0	49.5	43.1	41.6	50.0	50.3
Heavy Trucks:	54.2	52.7	43.7	45.0	53.3	53.4
Vehicle Noise:	59.0	57.3	53.4	49.5	58.0	58.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	18	40
CNEL:	4	9	20	42

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Main St.
Road Segment: w/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,410 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.30	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.94	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.89	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	63.8	62.1	56.0	64.6	65.2
Medium Trucks:	60.3	58.7	52.4	50.8	59.3	59.5
Heavy Trucks:	62.7	61.3	52.2	53.5	61.9	62.0
Vehicle Noise:	68.2	66.5	62.9	58.7	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	46	100	216
CNEL:	23	50	107	230

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Main St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,710 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	2.14	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.10	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.05	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	64.7	62.9	56.8	65.5	66.1
Medium Trucks:	61.1	59.6	53.2	51.7	60.1	60.4
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	69.1	67.4	63.7	59.6	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	53	114	245
CNEL:	26	56	121	261

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: Main St.
Road Segment: e/o El Camino Real
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,470 vehicles
Vehicle Speed:	30 mph
Near/Far Lane Distance:	38 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	33.0 feet
Centerline Dist. to Observer:	33.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	27.148
Medium Trucks:	27.000
Heavy Trucks:	27.148

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	61.75	1.48	3.88	-1.20	-4.82	0.000	0.000
Medium Trucks:	73.48	-15.76	3.91	-1.20	-5.11	0.000	0.000
Heavy Trucks:	79.92	-19.71	3.87	-1.20	-5.69	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.0	62.2	56.2	64.8	65.4
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	62.9	61.5	52.4	53.7	62.0	62.2
Vehicle Noise:	68.4	66.7	63.1	58.9	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	48	103	222
CNEL:	24	51	110	236

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Transferability
Road Name: 6th St.
Road Segment: e/o B St.
Project Name: Tustin DCCSP
Job Number: 10951

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	25.0 feet
Centerline Dist. to Observer:	25.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	24.454
Medium Trucks:	24.290
Heavy Trucks:	24.455

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-4.63	4.56	-1.20	-4.79	0.000	0.000
Medium Trucks:	70.80	-21.87	4.60	-1.20	-5.18	0.000	0.000
Heavy Trucks:	77.97	-25.82	4.56	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.5	55.6	53.8	47.7	56.4	57.0
Medium Trucks:	52.3	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	60.4	58.7	54.8	50.9	59.4	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	11	23	49
CNEL:	5	11	24	52

Thursday, June 22, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario:	Existing Without Project	*Project Name:*	Tustin DCCSP
Road Name:	I-5	*Job Number:*	10951
Road Segment:	s/o SR-55		

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	######	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	30,750	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	146	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	140.0	feet
Centerline Dist. to Observer:	140.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.50%
Medium Trucks:	84.8%	4.9%	10.3%	2.43%
Heavy Trucks:	86.5%	2.7%	10.8%	3.07%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	119.499
Medium Trucks:	119.465
Heavy Trucks:	119.499

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.77	10.88	-5.78	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	85.95	-5.02	-5.78	-1.20	*-4.94*	0.000	0.000
Heavy Trucks:	88.97	-4.01	-5.78	-1.20	*-5.08*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	79.7	77.8	76.0	69.9	78.6	79.2
Medium Trucks:	74.0	72.4	66.1	64.5	73.0	73.2
Heavy Trucks:	78.0	76.6	67.5	68.8	77.1	77.3
Vehicle Noise:	82.6	80.9	77.0	73.1	81.6	82.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	827	1,782	3,839	8,272
CNEL:	878	1,891	4,075	8,778

Tuesday, April 18, 2017

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario:	Existing Without Project	*Project Name:*	Tustin DCCSP
Road Name:	SR-55	*Job Number:*	10951
Road Segment:	e/o I-5		

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	###### vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	26,250 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	170 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	165.0 feet
Centerline Dist. to Observer:	165.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	92.30%
Medium Trucks:	84.8%	4.9%	10.3%	4.27%
Heavy Trucks:	86.5%	2.7%	10.8%	3.43%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	141.453
Medium Trucks:	141.425
Heavy Trucks:	141.453

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.77	10.09	-6.88	-1.20	*-4.88*	0.000	0.000
Medium Trucks:	85.95	-3.26	-6.88	-1.20	*-4.94*	0.000	0.000
Heavy Trucks:	88.97	-4.21	-6.88	-1.20	*-5.06*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	77.8	75.9	74.1	68.1	76.7	77.3
Medium Trucks:	74.6	73.1	66.7	65.2	73.7	73.9
Heavy Trucks:	76.7	75.3	66.2	67.5	75.8	76.0
Vehicle Noise:	81.3	79.7	75.4	71.8	80.3	80.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	807	1,738	3,745	8,068
CNEL:	853	1,837	3,958	8,528

Tuesday, April 18, 2017

APPENDIX E: TRAFFIC STUDY

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Tustin Downtown Commercial Core Specific Plan Traffic Study

Prepared for:

City of Tustin
300 Centennial Way
Tustin, CA 92780

Prepared by:

Stantec Consulting Services Inc.
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June 9, 2017

Sign-off Sheet

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Stantec

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1.0 INTRODUCTION

This report provides the results of a traffic study conducted for the Downtown Commercial Core Specific Plan (DCCSP) located in the City of Tustin. The proposed project allows the addition of residential and non-residential land uses to the downtown area based on specific allocations to six "Development Areas" (DA). Furthermore, transfer of units between DAs would be allowed up to a maximum increase of 25 percent for any given DA (the total number of units would not exceed the unit maximum). This traffic study has been prepared for inclusion in the project's Environmental Impact Report (EIR). The approach and methodology utilized for the traffic study were developed based on correspondence with City of Tustin staff. A study area was defined and includes 24 intersections (see **Figure 1**).

2.0 PROJECT DESCRIPTION

The DCCSP vision focuses on continuing to ensure an economically vital, walkable, bikeable, mixed-use center with a focus on active ground floor retail and office environments. The DCCSP allows for all previously allowed commercial and office intensity and introduces the option to include residential intensity (up to 887 residential units) as part of mixed-use and standalone residential projects to certain designated DAs within the Specific Plan. Non-residential buildout on vacant and underutilized parcels within the DCCSP area is estimated at 300,000 square feet. The amount of allowable residential units for each DA are shown in **Table 1**.

Table 1 Residential Units Allowed in Each Development Area

Development Area	Additional Dwelling Units	Maximum Allowable Increase (Transfer)[1]
DA-1	45	11
DA-2	92	23
DA-3	200	50
DA-4	150	38
DA-5	0	0
DA-6	400	100
Total	887	no change

[1]Allowable increase of up to 25% by transferring from other DA(s). The maximum total number of additional dwelling units in DCCSP area does not exceed 887 units.

The plan also includes modifications to roadway classifications specified in the Orange County Transportation Authority (OCTA) Master Plan of Arterial Highways (MPAH) and City of Tustin Circulation Element and/or configuration changes on Main Street, First Street, Second Street, and Third Street described as follows:

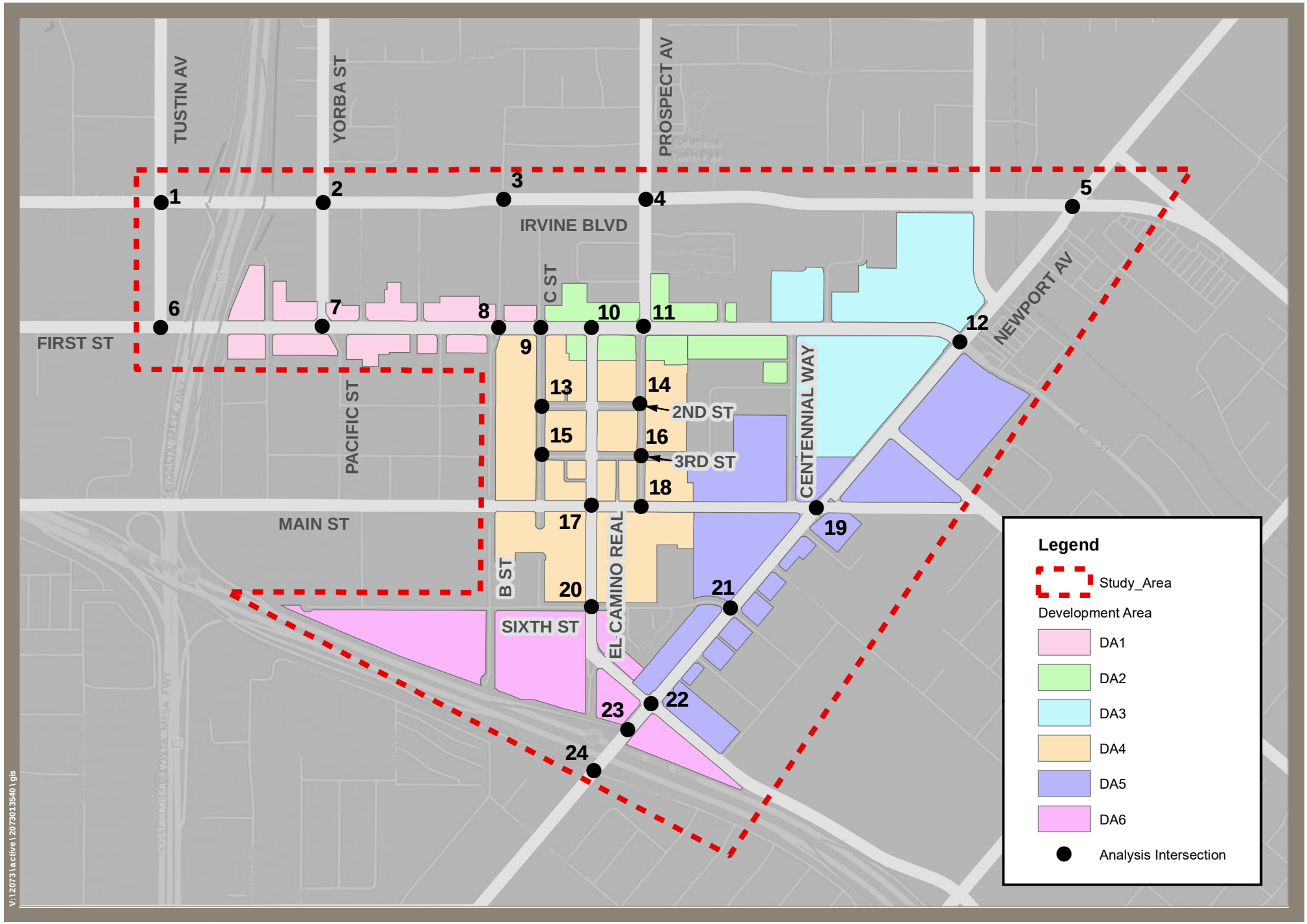

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Figure 1
Study Area Map

- First Street – Newport Avenue to just east of State Route 55 (SR-55) freeway bridge: Change from four travel lanes with on-street parking to two travel lanes with a median turn lane, diagonal parking and bike lanes. Change from Primary to Divided Collector, which requires an MPAH amendment. As part of the final process of the MPAH approval, the City General Plan Circulation Element will be revised to reflect the amendment.

- Second Street – C Street to Prospect Avenue: Change from a two-lane/two-way street with parallel parking to a single lane/one-way street (eastbound) with diagonal parking.

- Third Street – C Street to Prospect Avenue: Change from a two-lane/two-way street with parallel parking to a single lane/one-way street (westbound) with diagonal parking.

- Main Street – Newport Avenue to just west of Williams Street: Change from a two-lane street (west of Library) and a four-lane street (east of Library) with parallel parking to two travel lanes with a median, bike lanes and parallel and diagonal parking. Change from Primary to Divided Collector, which requires an MPAH amendment. As part of the final process of the MPAH approval, the City General Plan will be revised to reflect the amendment.

Trip generation estimates and trip distribution for the proposed project were based on an Orange County Transportation Analysis Model (OCTAM) model run (which was prepared by the City and modified by Stantec), in conjunction with Stantec's analysis of existing traffic conditions and expected sources and demands of traffic. This led to a recommended distribution of project traffic, which was subsequently approved by the City. Trip generation for the proposed project shown in **Table 2** is based on multi-family units and a mix of commercial retail, office and public facilities uses.

Table 2 Proposed Project Trip Generation - 887 Residential Units and 300 TSF Non-Residential Land Uses

Trip Generation Source	Daily Trips	AM Peak Hour Trips	PM Peak Hour Trips
From Travel Demand Model (2035 Model Run)	8,496	660	719
Source: Orange County Transportation Analysis Model Version 3.4, Orange County Transportation Authority			

The distribution of project trips as derived by the travel demand model is shown in **Figure 2** and is as follows:

- 5% to/from the north on Newport Avenue
- 10% to/from the north on Prospect Avenue
- 30% to/from the south on Newport Avenue
- 10% to/from the east on Main Street
- 10% to/from the east on Irvine Boulevard
- 15% to/from the north via SR-55
- 5% to/from the west on Main Street
- 5% to/from the west on First Street
- 10% to/from the west on Irvine Boulevard

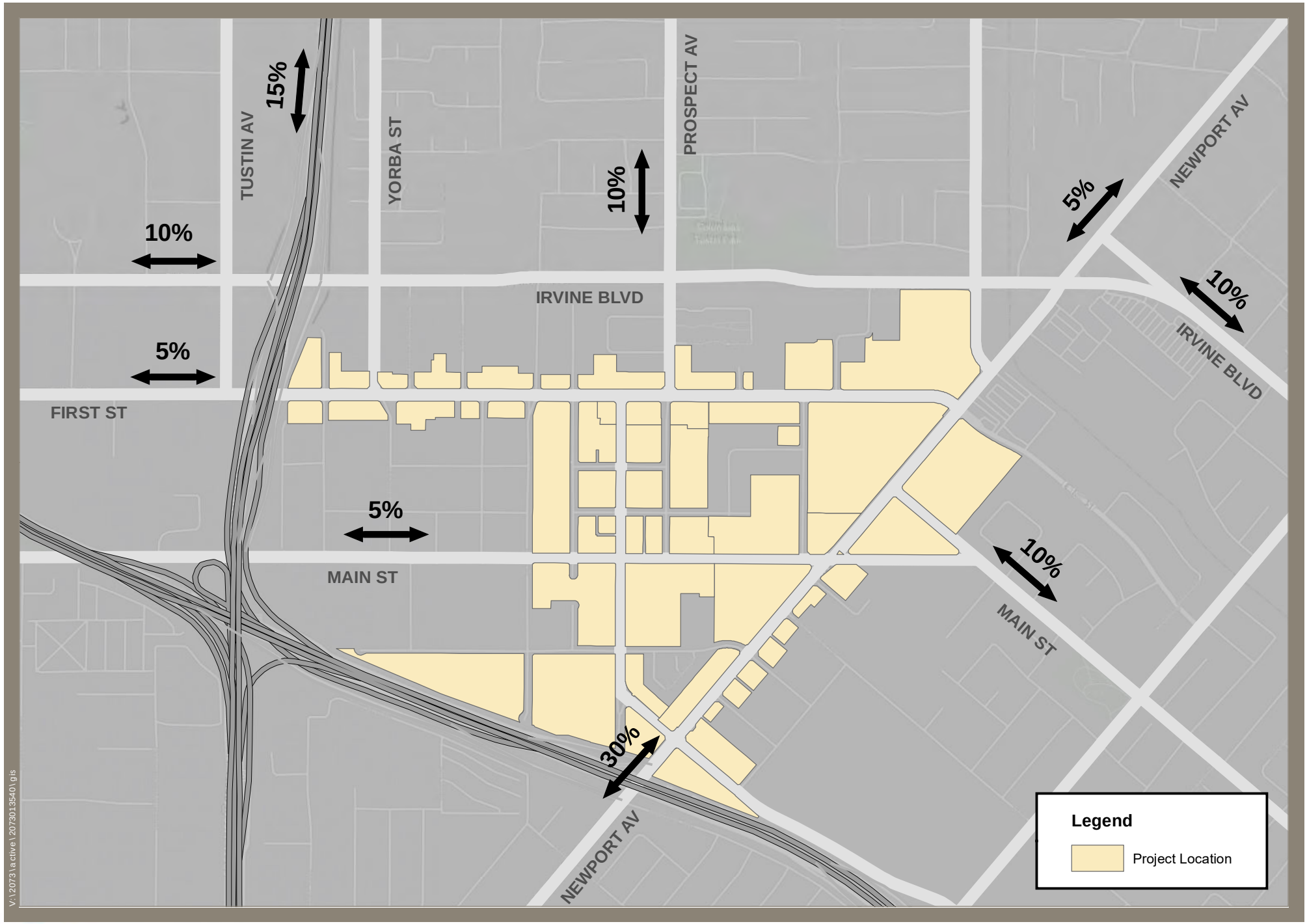

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Figure 2

Project Trip Distribution Percentages

3.0 TRAFFIC STUDY APPROACH AND METHODOLOGY

To identify potential significant project impacts, Stantec analyzed the following six scenarios:

- Existing Conditions
- Existing Conditions Plus Project
- Existing Conditions Plus Project Transferability Sensitivity Analysis
- Long-Range Cumulative No Project
- Long-Range Cumulative With Project
- Long-Range Cumulative With Project Transferability Sensitivity Analysis

For this traffic study, OCTAM Version 3.4 forecast data without the proposed project was prepared by the City, and forecast data with the proposed project land use and roadway modifications was prepared by Stantec, with input from City staff. Since OCTAM utilizes socio-economic projections, the 300,000 square feet of non-residential uses of the project was converted to employment using socio-economic data (SED) conversion factors from the Irvine Traffic Analysis Model (ITAM), which is a subarea model of OCTAM and is consistent with OCTAM. For purposes of this analysis, the mix of employment type (i.e., retail employment, service employment, other employment) was taken from the model run prepared by the City and applied to the with project scenario. Table 3 summarizes the non-residential land use to SED conversion and Table 4 summarizes the OCTAM SED summary for the general area of the Tustin DCSSP.

Table 3 DCCSP 300 TSF Non-Residential Land Use to SED Conversion

Description	Amount	Units	Retail EMP	Service EMP	Other EMP	Total
Mix of Commercial Retail, Office, and Community Facilities land uses	**300**	**TSF**				
SED Conversion Factors [1]			0.74	0.94	1.12	
Total Employees			223	282	335	840

EMP = employees; TSF = though square feet; SED = socio-economic data
[1] SED Conversion factors shown above were derived from a mix of land use to SED conversion factors from the Irvine Traffic Analysis Model (ITAM). Land Use to SED conversion factors for Commercial Retail, Office, and Community Facilities land uses were used.

Table 4 OCTAM SED Summary for DCCSP Area

Tustin DCCSP area	Total HH	Retail EMP	Service EMP	Other EMP	Total EMP
Existing Conditions (2010)[1]	2,384	2,031	3,550	3,710	9,291
% of Total Employment		22%	38%	40%	
2035 Baseline[1]	2,455	2,393	4,161	4,391	10,945
% of Total Employment		22%	38%	40%	
Tustin DCCSP	887	223	282	335	840
2035 with Tustin DCCSP	3,342	2,616	4,443	4,726	11,785
% of Total Employment		22%	38%	40%	

EMP = employees; HH = households
[1] Source: OCTAM

Forecast data from the OCTAM model was refined based on input from City Staff. Specifically, average daily traffic (ADT) growth was calculated from the OCTAM forecast data and applied to intersection peak hour turning movements counts to derive Long-Range Cumulative No Project and Long-Range Cumulative With Project conditions (year 2035) for each intersection. Since OCTAM is a regional model, forecast growth on the local roadways in the study area that are not in OCTAM were evaluated, and growth rates were applied based on the growth shown on similar adjacent roadways. Manual adjustments were made to select roadways that are not in OCTAM and where only one-way traffic would be allowed.

An additional analysis, referred to here as the Transferability Sensitivity Analysis, was also conducted. For this analysis, the OCTAM Version 3.4 model was used to derive a hypothetical worst-case scenario. In this scenario, a 25 percent increase in proposed project residential units were added to all the project area OCTAM traffic analysis zones (TAZs), and the study area intersections were analyzed to determine impacted locations with the residential unit transfer.

Lastly, an existing-plus-project analysis was conducted to identify any project-specific impacts at the study area intersections in accordance with the California Environmental Quality Act (CEQA) requirement for identification of project impacts based on existing conditions. For this, two scenarios were analyzed. The first analysis takes the project trips derived using the OCTAM model and adds those trips to existing intersection counts. The second analysis takes the project trips from the transferability sensitivity model run and applies those trips to existing intersection counts. Note that these are hypothetical scenarios that assume the immediate buildout of the project with no other future growth in the area.

To determine existing and future operating conditions without and with land use and transportation changes proposed in the DCCSP, level of service (LOS) analysis is conducted on the intersections within the planning area using the City's and Caltrans' standard LOS methodologies. Traffic LOS is designated "A" through "F" with LOS "A" representing free flow conditions and LOS "F" representing severe traffic congestion. General LOS descriptions for intersections are summarized in **Table 5.**

Table 5 Level of Service Descriptions – Intersections

LOS	Description
A	Minimal or no vehicle delay
B	Slight delay to vehicles
C	Moderate vehicle delays, traffic flow remains stable
D	More extensive delays at intersections
E	Long queues create lengthy delays
F	Severe delays and congestion
Source: Highway Capacity Manual 2010, Transportation Research Board, National Research Council	

The analysis of the arterial road system is based on intersection capacity since this is the defining capacity limitation on an arterial highway system. There can be exceptions where certain facilities have long distances between signalized intersections; however, that is not the case within the traffic analysis study area here, and, as such, peak hour intersection performance is the most representative measure for evaluating the study area arterial road system.

The intersection analysis involves the use of peak hour intersection capacity utilization (ICU) values. Peak hour ICU values were calculated using peak hour traffic volume data in combination with the lane configuration of each location. By practice, the ICU methodology assumes that intersections are signalized. The LOS for Caltrans freeway ramp intersections was determined based on Highway Capacity Manual (HCM) delay methodology in accordance with Caltrans guidelines. In the HCM intersection analysis methodology, the LOS at a signalized intersection location is determined based on the estimated average delay in seconds experienced by all traffic using the intersection.

The intersection of Newport Avenue at the Interstate 5 (I-5) Freeway northbound (NB) on-ramp is currently an uncontrolled intersection; however, northbound left-turning vehicles trying to access the I-5 NB on-ramp from Newport Avenue have to yield to the Newport Avenue southbound traffic, and it operates similarly to a two-way-stop controlled (TWSC) intersection where the major street is uncontrolled and the minor streets are controlled by stop signs. The LOS for a TWSC intersection is assigned for the minor street traffic only since the major street through traffic experiences zero delay.

Table 6 summarizes the ranges of ICU values and HCM methodology for signalized and unsignalized intersection average vehicle delays that correspond to LOS "A" through "F" for intersections. The ranges are those defined in the HCM 2010 and are used by the City of Tustin for estimating intersection LOS.

Per the City General Plan, the City seeks to achieve or maintain a LOS D standard at all intersections, except at designated Congestion Management Plan (CMP) facilities which have a LOS E threshold. Since none of the study area intersections are designated as a CMP intersection, the performance standard of LOS D would apply for all intersections in the study area. For an ICU

Table 6 Intersection Level of Service Ranges (ICU and HCM Delay)

Level of Service (LOS)	Intersection Capacity Utilization (ICU)	Highway Capacity Manual (HCM) Average Delay for Signalized Intersections	HCM Average Delay for Unsignalized Intersections
A	0.00 – 0.60	0.00 – 10.0 seconds	0.00 – 10.0 seconds
B	0.61 – 0.70	10.1 – 20.0 seconds	10.1 – 15.0 seconds
C	0.71 – 0.80	20.1 – 35.0 seconds	15.1 – 25.0 seconds
D	0.81 – 0.90	35.1 – 55.0 seconds	25.1 – 35.0 seconds
E	0.91 – 1.00	55.1 – 80.0 seconds	35.1 – 50.0 seconds
F	Above 1.00	Above 80.0 seconds	Above 50.0 seconds
Sources: Highway Capacity Manual 2010, Transportation Research Board, National Research Council and County of Orange Congestion Management Program (CMP)			

value greater than the acceptable level of service i.e., greater than an ICU of 0.90, mitigation of the project contribution is required to bring the intersection back to no-project conditions or better if the project contribution is 0.02 or greater. For ramp intersections maintained by Caltrans, no specific performance criteria has been set by Caltrans. In the "Caltrans Guide for the Preparation of Traffic Impact Studies (December 2002)", it is stated that Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities, however, Caltrans acknowledges that it may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. The Caltrans guidelines state that If an existing State highway facility is operating at less than the appropriate target LOS, the existing measure of effectiveness (MOE) should be maintained. For this analysis, the City's LOS D threshold is applied to the Caltrans intersections for consistency with the threshold used for the remainder of the study area.

4.0 EXISTING CONDITIONS

Existing roadway segment ADT volumes were obtained from the City of Tustin, and are shown in **Figure 3.** Existing intersection counts were obtained from the City of Tustin as well and consist of counts collected in March and December of 2016. The count data was reviewed and applicable adjustments were made to the counts collected in December to account for seasonal changes in traffic. Specifically, the AM peak hour and PM peak hour intersection counts were factored by three percent and one percent, respectively, to reflect typical conditions.

The results of the LOS analysis for study area intersections are shown in **Table 7**. As described in the previous section, ICU values were used to evaluate LOS for City intersections, and HCM delay (in seconds) were used for Caltrans freeway ramp intersections. Based on the intersection LOS performance criteria outlined earlier, every City intersection location analyzed in the study area currently operates at an acceptable LOS. For Caltrans freeway ramp intersections, the uncontrolled intersection of Newport Avenue at the I-5 NB on-ramp is operating at LOS F during the AM peak hour for the northbound left-turning vehicles trying to access the I-5 NB on-ramp from Newport Avenue. These left-turning vehicles have to yield to the Newport Avenue southbound traffic, which does not have to stop, and experiencing excessive delays.

5.0 CUMULATIVE IMPACT ANALYSIS

The Year 2035 version of OCTAM Version 3.4 was used to develop the future traffic volumes presented in this analysis. Intersection traffic performance for the with-project and the transferability sensitivity scenarios are compared with that of the no-project scenario to identify if the project results in any significant traffic impacts.

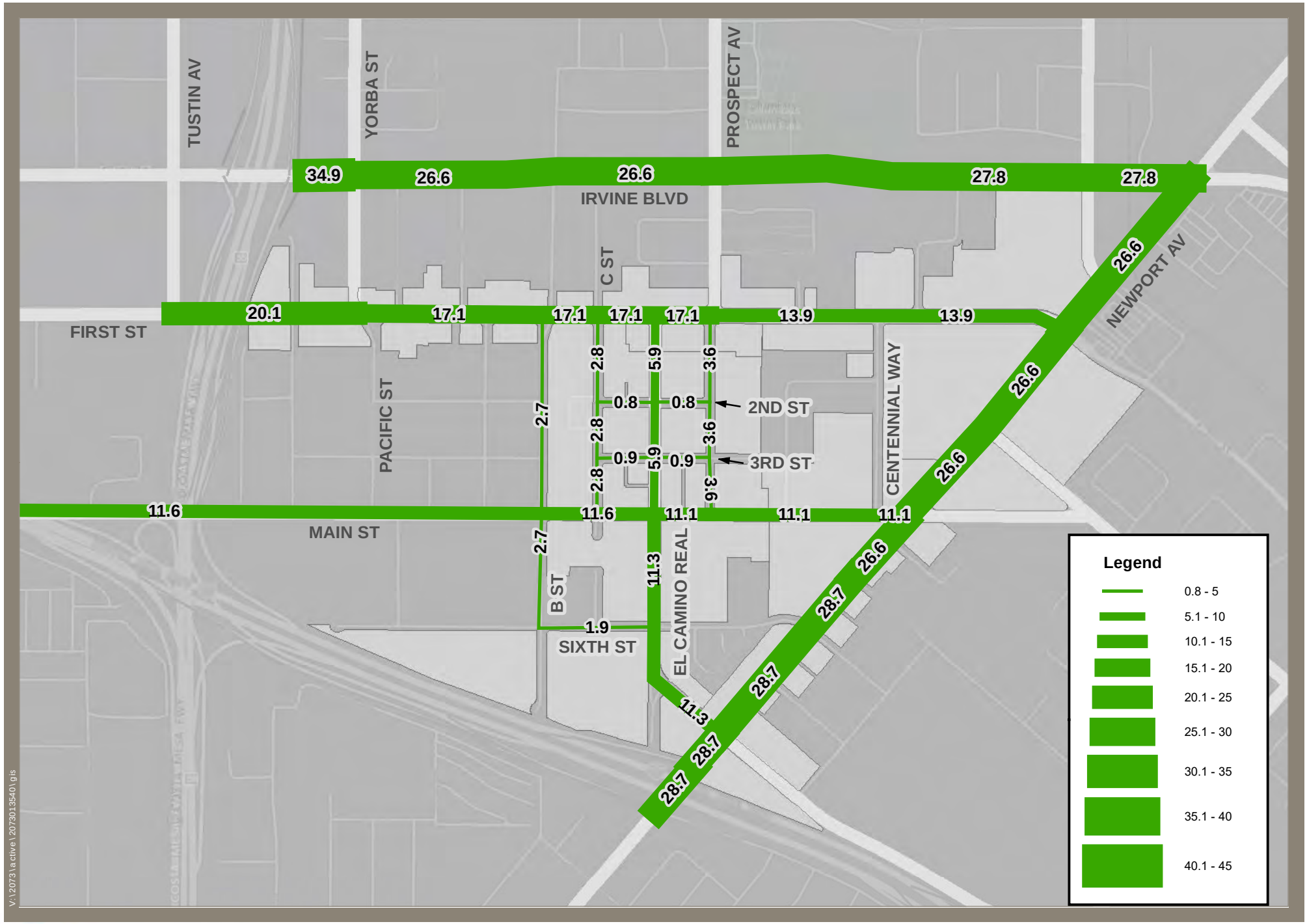

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Figure 3

Existing ADT Volumes (000s)

Table 7 Existing Conditions Intersection LOS Summary

Intersection	Jurisdiction	AM Peak Hour		PM Peak Hour	
		ICU/Delay (s)	LOS	ICU/Delay (s)	LOS
1. Tustin at 4th	Tustin	0.59	A	0.75	C
2. Yorba at Irvine	Tustin	0.58	A	0.57	A
3. B at Irvine	Tustin	0.55	A	0.43	A
4. Prospect at Irvine	Tustin	0.64	B	0.70	B
5. Newport at Irvine	Tustin	0.71	C	0.69	B
6. Tustin at 1st	Tustin	0.39	A	0.48	A
7. Yorba/Pacific at 1st	Tustin	0.40	A	0.51	A
8. B at 1st	Tustin	0.37	A	0.45	A
9. C at 1st	Tustin	0.34	A	0.41	A
10. El Camino Real at 1st	Tustin	0.37	A	0.45	A
11. Prospect at 1st	Tustin	0.45	A	0.54	A
12. Newport at 1st	Tustin	0.55	A	0.58	A
13. C at 2nd	Tustin	0.11	A	0.12	A
14. Prospect at 2nd	Tustin	0.17	A	0.23	A
15. C at 3rd	Tustin	0.08	A	0.22	A
16. Prospect at 3rd	Tustin	0.19	A	0.25	A
17. El Camino Real at Main	Tustin	0.57	A	0.61	B
18. Prospect at Main	Tustin	0.42	A	0.56	A
19. Newport at Main	Tustin	0.60	A	0.55	A
20. El Camino Real at 6th	Tustin	0.43	A	0.48	A
21. Newport at 6th	Tustin	0.49	A	0.37	A
22. Newport at El Camino Real	Tustin	0.72	C	0.60	A
23. Newport at I-5 NB On-Ramp	Caltrans	**124.8**	**F**	20.2	C
24. Newport at Nisson	Caltrans	17.3	B	19.9	B

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
NB – northbound
(s) – seconds

Bold denotes a peak hour deficiency.

Year 2035 no-project, with-project, and transferability analysis ADT volumes are illustrated in **Figure 4** through **Figure 6**, respectively. The results of the LOS analysis for study area intersections are shown in **Table 8**. Cumulative no-project condition intersection lane configurations were developed based on discussions with the City of Tustin staff. No roadway configuration changes have been assumed for the background long-range cumulative conditions in comparison to the existing condition.

For the cumulative with-project conditions and the transferability sensitivity analysis, roadway classification and configuration changes at First Street, Second Street, Third Street, and Main Street were applied as previously discussed above.

Under the cumulative with project transferability sensitivity conditions, one City of Tustin intersection is found to be significantly impacted by the project:

- **Newport Avenue at El Camino Real**

For Caltrans ramp intersections, the intersection of Newport Avenue at I-5 NB on-ramp is forecast to operate at LOS F under cumulative no-project, with-project, and with-project transferability sensitivity conditions during the AM peak hour, and LOS E in the PM peak hour under with-project and with-project transferability sensitively conditions. Furthermore, the average delay for the minor street movement is higher under the cumulative with-project and the cumulative with-project transferability sensitivity conditions than that under the cumulative no-project conditions. Therefore, the only Caltrans ramp intersection significantly impacted by the project is:

- **Newport Avenue at I-5 NB On-Ramp**

Roadway improvements are identified to mitigate the project impacts for the intersection of Newport Avenue at El Camino Real. **Table 9** lists the improvements to address the impacts identified for the cumulative scenario. If implemented, the identified improvements would fully mitigate the project's significant impacts under the cumulative scenario for this location as shown in **Table 10**. As explained in the previous sections, the transferability sensitivity analysis is a hypothetical worst-case scenario which assumes a 25 percent increase in proposed project residential units were added to the project area to determine potential impacted locations with the residential unit transfer. Since the Newport Avenue and El Camino Real intersection is significantly impacted by the project only in the transferability sensitivity scenario under the cumulative conditions, this location should be monitored over time if residential unit transfers between DAs do occur, and the improvements should be applied only when necessary.

Installing a traffic signal at the intersection of Newport Avenue at the I-5 NB on-ramp would reduce the delay at this location, and it would operate at an acceptable LOS as shown in **Table 11**. A traffic signal at this location is recommended in the Caltrans "Final Traffic Operations Report for State Route 55 (I-5 to I-405) PR/ED," published in October 2015, as a mitigation for two of the alternatives analyzed in that report. However, since this intersection is under Caltrans jurisdiction and the City does not have the authority to install a traffic signal there, the impact at this intersection is considered significant and unavoidable unless Caltrans goes forward with the installation of a traffic signal at this location.

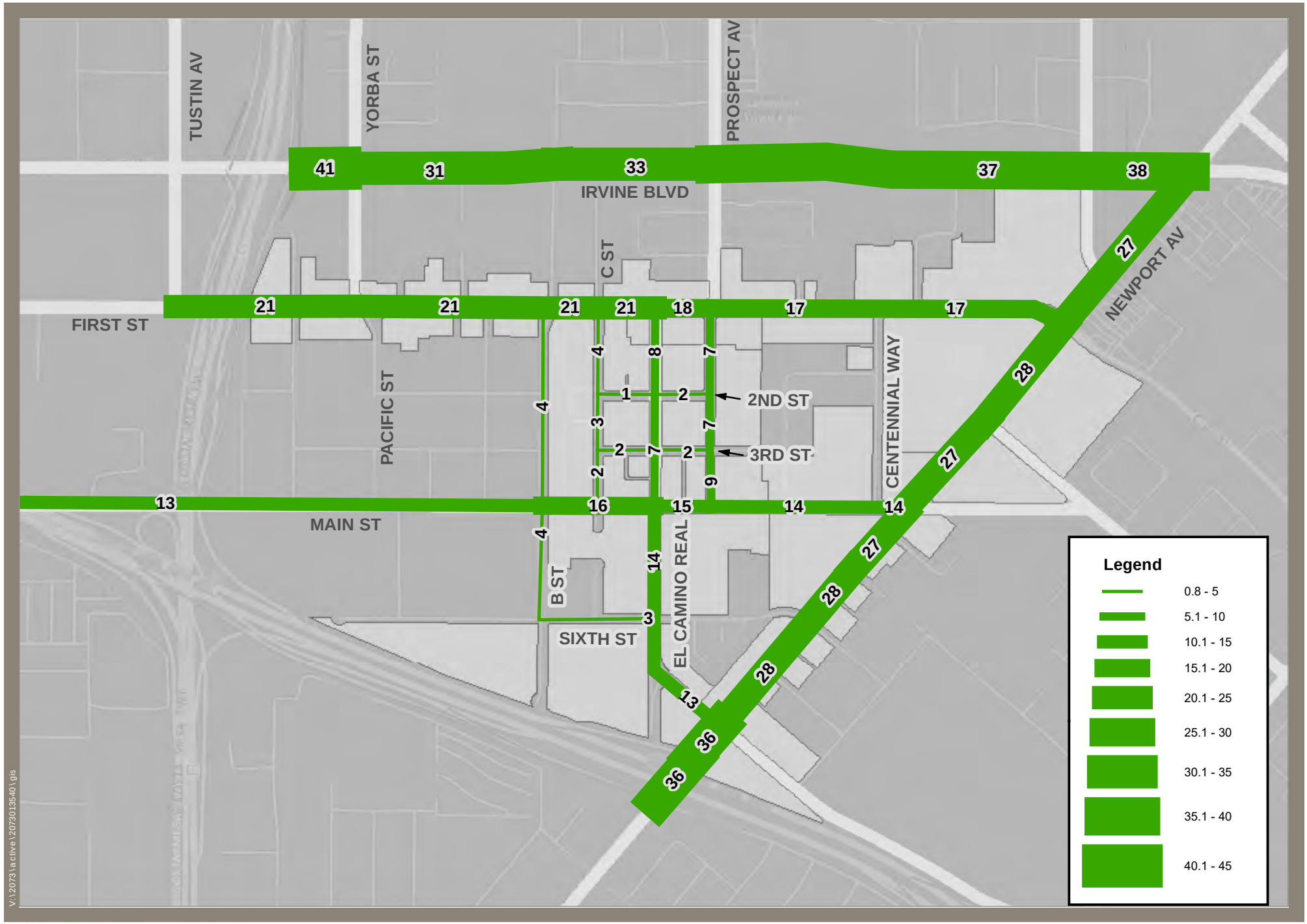

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Figure 4

2035 No Project ADT Volumes

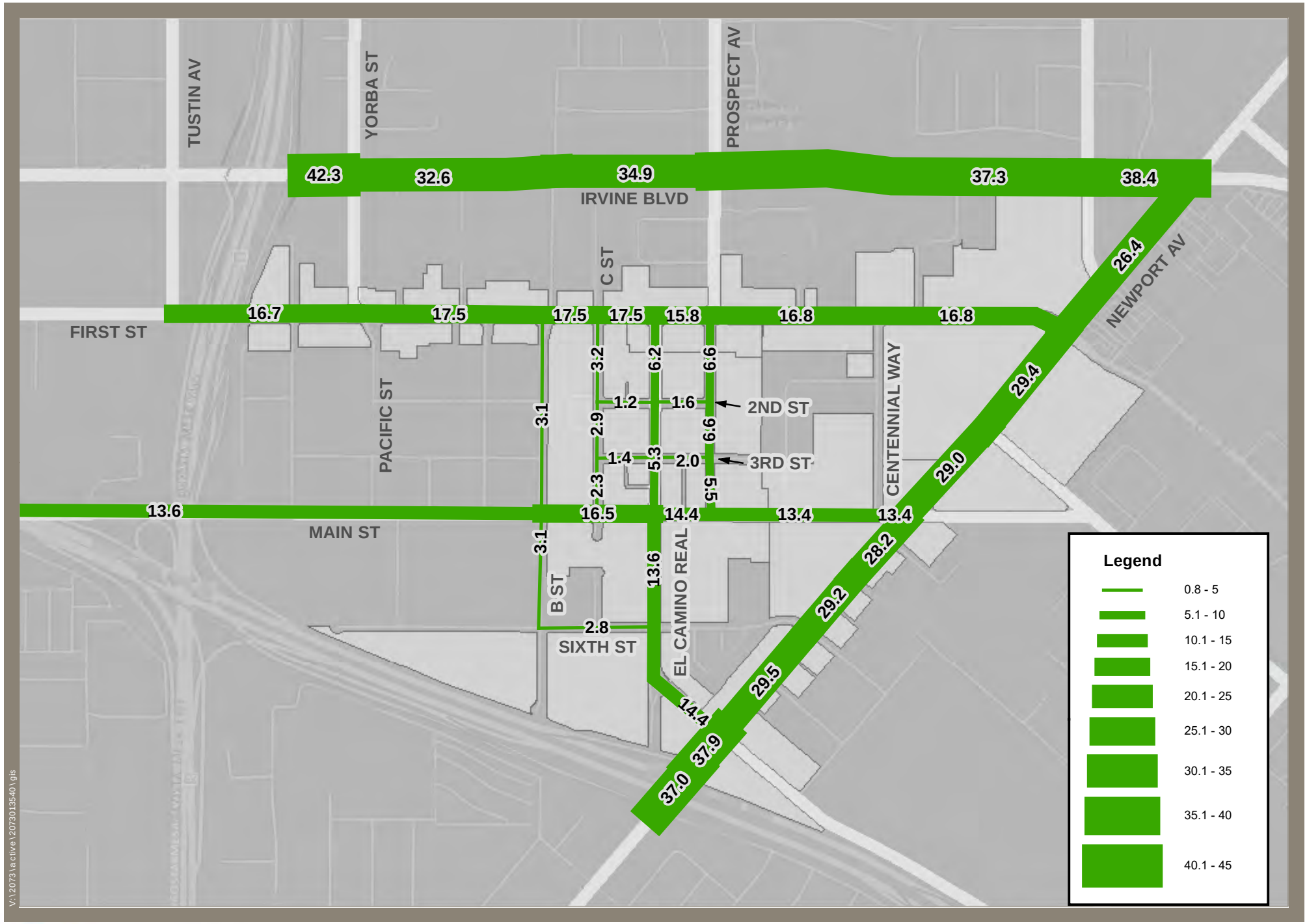

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Figure 5

2035 With Project ADT Volumes

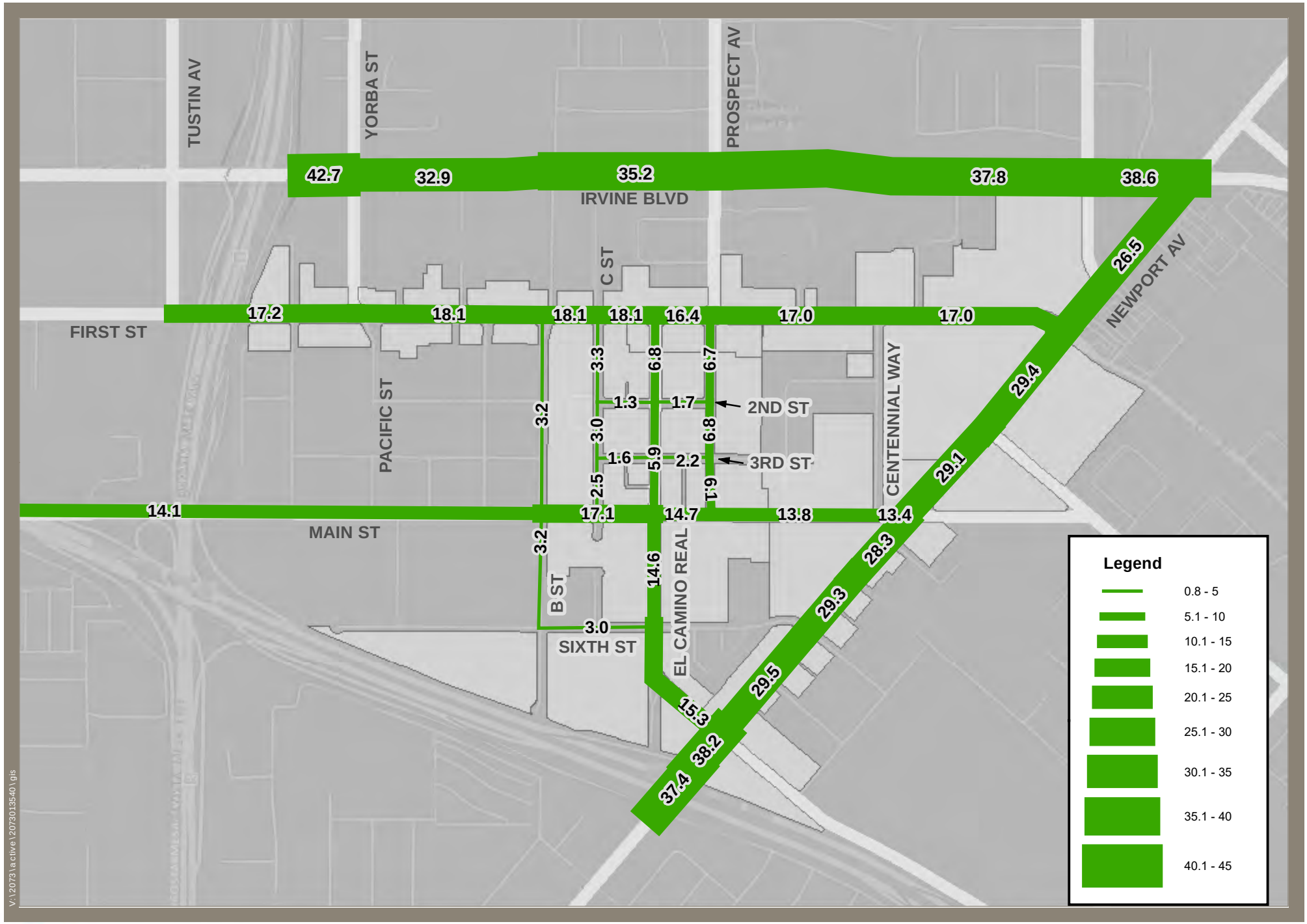

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Figure 6

2035 With Project Transferability Sensitivity Analysis ADT Volumes

Table 8 Cumulative Conditions Intersection LOS Summary

Intersection	Jurisdiction	2035 No-Project				2035 With-Project				2035 With-Project (Transferability Sensitivity Analysis)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS
1. Tustin at 4th	Tustin	0.67	B	0.83	D	0.63	B	0.87	D	0.63	B	0.87	D
2. Yorba at Irvine	Tustin	0.71	C	0.70	B	0.71	C	0.71	C	0.74	C	0.73	C
3. B at Irvine	Tustin	0.63	B	0.51	A	0.65	B	0.55	A	0.66	B	0.55	A
4. Prospect at Irvine	Tustin	0.82	D	0.86	D	0.85	D	0.89	D	0.85	D	0.89	D
5. Newport at Irvine	Tustin	**0.91**	**E**	0.90	D	0.89	D	0.89	D	0.90	D	0.89	D
6. Tustin at 1st	Tustin	0.44	A	0.65	B	0.38	A	0.53	A	0.39	A	0.53	A
7. Yorba/Pacific at 1st	Tustin	0.45	A	0.61	B	0.60	A	0.76	C	0.61	B	0.78	C
8. B at 1st	Tustin	0.43	A	0.53	A	0.59	A	0.74	C	0.60	A	0.76	C
9. C at 1st	Tustin	0.39	A	0.46	A	0.56	A	0.72	C	0.58	A	0.74	C
10. El Camino Real at 1st	Tustin	0.36	A	0.55	A	0.46	A	0.70	B	0.48	A	0.72	C
11. Prospect at 1st	Tustin	0.52	A	0.67	B	0.67	B	0.88	D	0.68	B	0.89	D
12. Newport at 1st	Tustin	0.64	B	0.67	B	0.69	B	0.67	B	0.69	B	0.69	B
13. C at 2nd	Tustin	0.14	A	0.15	A	0.12	A	0.16	A	0.13	A	0.16	A
14. Prospect at 2nd	Tustin	0.21	A	0.28	A	0.21	A	0.27	A	0.22	A	0.28	A
15. C at 3rd	Tustin	0.12	A	0.27	A	0.12	A	0.25	A	0.12	A	0.27	A
16. Prospect at 3rd	Tustin	0.25	A	0.29	A	0.22	A	0.28	A	0.23	A	0.29	A
17. El Camino Real at Main	Tustin	0.82	D	0.85	D	0.82	D	0.79	C	0.86	D	0.82	D
18. Prospect at Main	Tustin	0.63	B	0.81	D	0.58	A	0.74	C	0.60	A	0.75	C
19. Newport at Main	Tustin	0.77	C	0.70	B	0.78	C	0.72	C	0.78	C	0.72	C

Table 8 Cumulative Conditions Intersection LOS Summary (continued)

Intersection	Jurisdiction	2035 No-Project				2035 With-Project				2035 With-Project (Transferability Sensitivity Analysis)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS
20. El Camino Real at 6th	Tustin	0.47	A	0.55	A	0.50	A	0.58	A	0.51	A	0.61	B
21. Newport at 6th	Tustin	0.53	A	0.39	A	0.57	A	0.41	A	0.57	A	0.41	A
22. Newport at El Camino Real	Tustin	0.87	D	0.72	C	0.90	D	0.76	C	**0.92**	**E**	0.76	C
23. Newport at I-5 NB On-Ramp	Caltrans	**218.1**	**F**	30.0	D	**312.7**	**F**	**38.3**	**E**	**337.0**	**F**	**39.7**	**E**
24. Newport at Nisson	Caltrans	16.8	B	24.6	C	17.7	B	25.2	C	17.7	B	25.3	C

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
NB – northbound
(s) – seconds

Bold denotes a peak hour deficiency.

Table 9 Cumulative Improvements

Location	Improvements
22. Newport Avenue & El Camino Real	Restripe the eastbound through lane to a shared through/right-turn lane so the eastbound approach would consist of one left-turn lane, one shared through/right-turn lane, and one right-turn lane. Include necessary modifications to maintain accessibility for pedestrians.

Table 10 Cumulative Conditions Mitigated Intersection LOS Summary

Intersection	2035 With Project (Transferability Sensitivity Analysis) w/Mitigation			
	AM Peak Hour		PM Peak Hour	
	ICU	LOS	ICU	LOS
22. Newport Avenue & El Camino Real	0.88	D	0.76	C
ICU = intersection capacity utilization; LOS = level of service				

Table 11 Cumulative Conditions Newport Avenue at I-5 NB On-Ramp with Traffic Signal LOS Summary

Intersection	Traffic Control	2035 With Project w/Traffic Signal				2035 With Project (Transferability Sensitivity Analysis) w/Traffic Signal			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
23. Newport at I-5 NB On-Ramp	Traffic Signal	13.4	B	8.7	A	13.7	B	8.6	A
(s) = seconds; LOS = level of service									

6.0 EXISTING PLUS PROJECT IMPACT ANALYSIS

Existing plus project and existing plus project transferability analysis ADT volumes are illustrated in **Figure 7** and **Figure 8**, respectively. The results of the LOS analysis for study area intersections are shown in **Table 12**.

Under the existing plus project and the existing plus project transferability analysis conditions, all City of Tustin intersections are forecast to operate at LOS C or better, and there is no significant impact on the City of Tustin intersections.

For Caltrans ramp intersections, the intersection of Newport Avenue at I-5 NB on-ramp is forecast to operate at LOS F under existing, existing plus project, and existing plus project transferability sensitivity conditions during the AM peak hour, and the average delay for the minor street movement is higher under the existing plus project and the existing plus project transferability

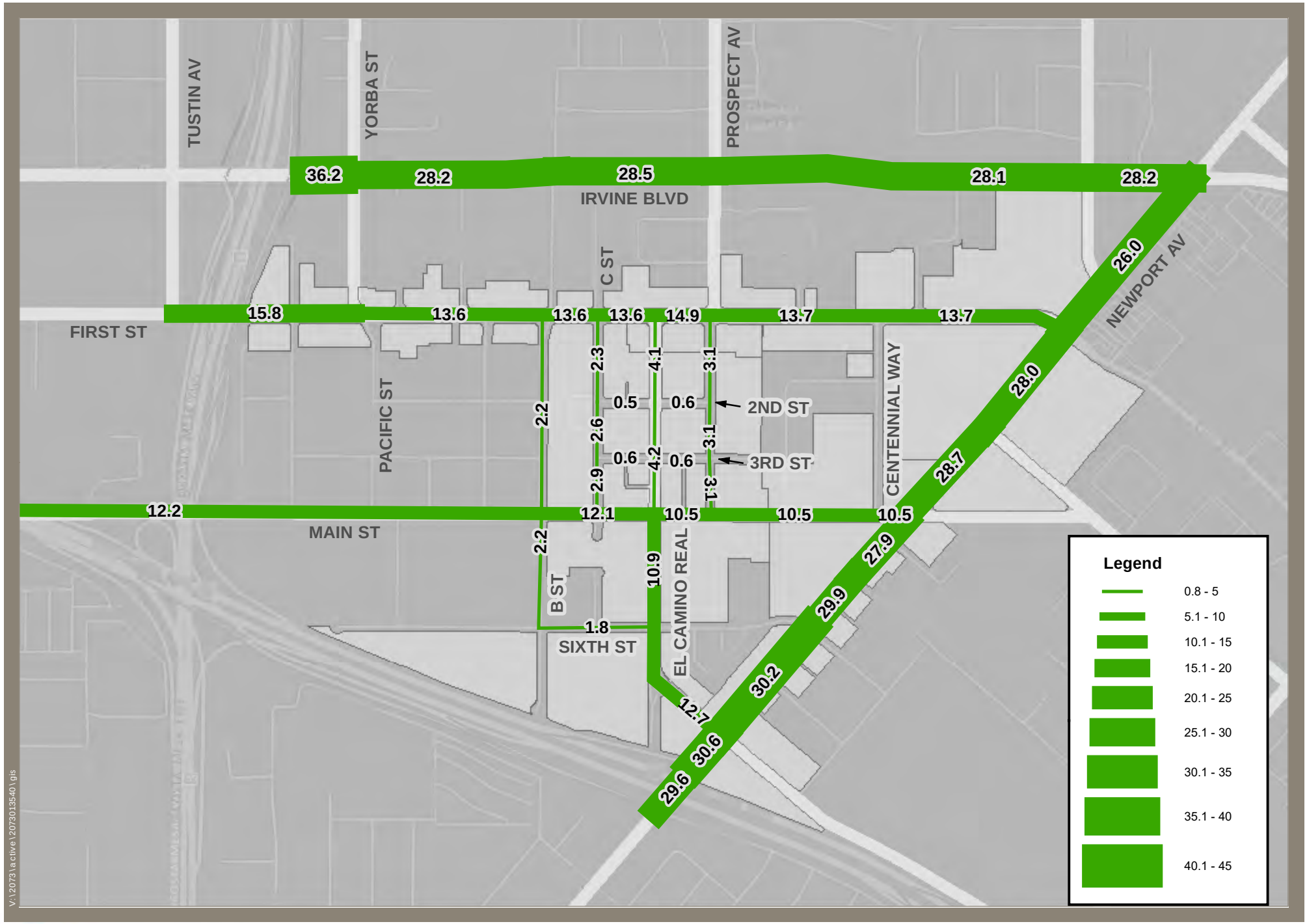

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Figure 7

Existing Plus Project ADT Volumes (000s)

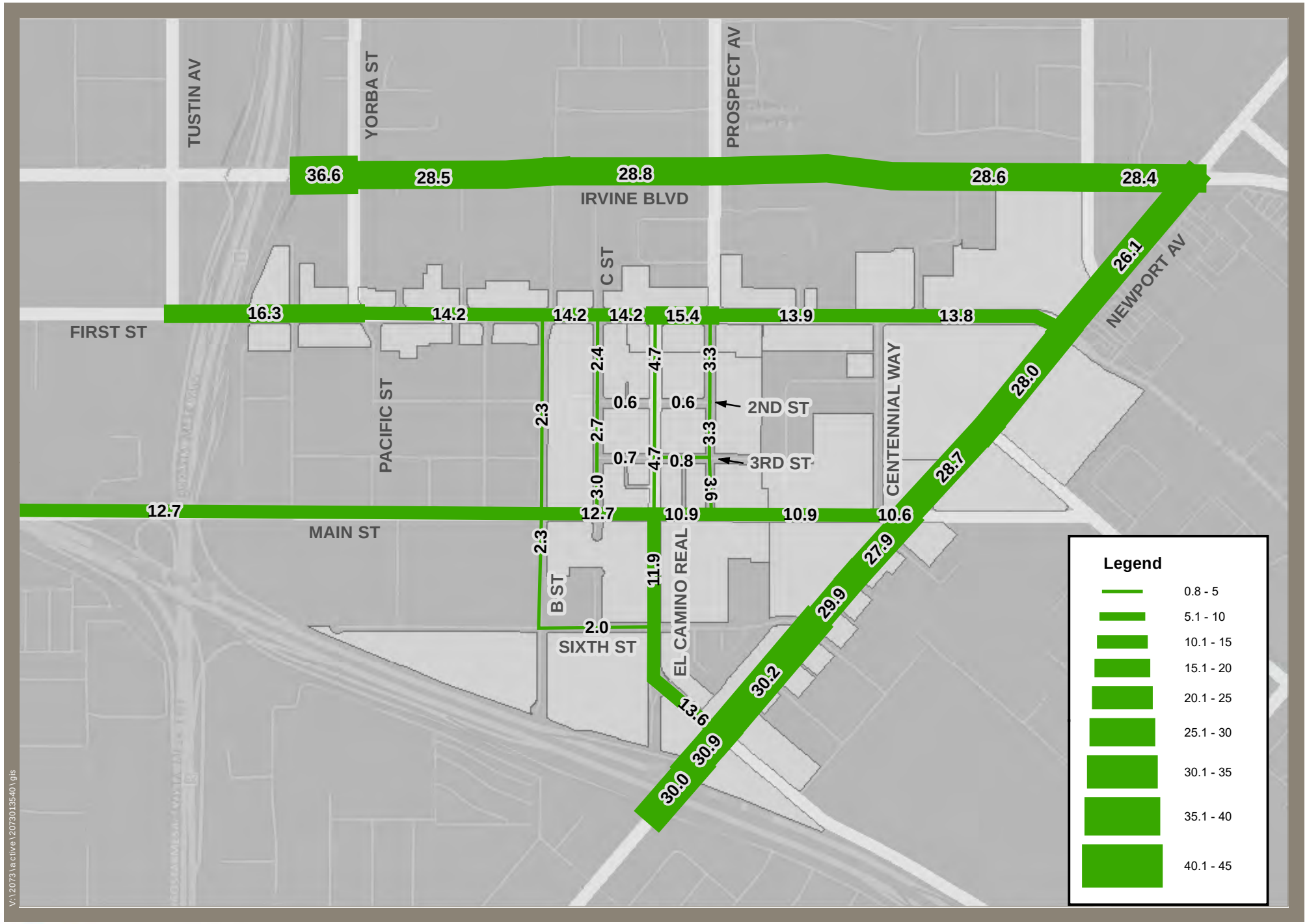

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Figure 8

Existing Plus Project Transferability Sensitivity Analysis ADT Volumes (000s)

Table 12 Existing Plus Project Conditions Intersection LOS Summary

Intersection	Jurisdiction	Existing Count (2016)				Existing Plus Project				Existing Plus Project Transferability Sensitivity Analysis)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS
1. Tustin at 4th	Tustin	0.59	A	0.75	C	0.56	A	0.79	C	0.56	A	0.80	C
2. Yorba at Irvine	Tustin	0.58	A	0.57	A	0.60	A	0.58	A	0.62	B	0.61	B
3. B at Irvine	Tustin	0.55	A	0.43	A	0.57	A	0.44	A	0.57	A	0.44	A
4. Prospect at Irvine	Tustin	0.64	B	0.70	B	0.68	B	0.72	C	0.69	B	0.73	C
5. Newport at Irvine	Tustin	0.71	C	0.69	B	0.69	B	0.70	B	0.71	C	0.71	C
6. Tustin at 1st	Tustin	0.39	A	0.48	A	0.35	A	0.39	A	0.36	A	0.40	A
7. Yorba/Pacific at 1st	Tustin	0.40	A	0.51	A	0.51	A	0.59	A	0.52	A	0.60	A
8. B at 1st	Tustin	0.37	A	0.45	A	0.51	A	0.62	B	0.52	A	0.64	B
9. C at 1st	Tustin	0.34	A	0.41	A	0.48	A	0.61	B	0.49	A	0.63	B
10. El Camino Real at 1st	Tustin	0.37	A	0.45	A	0.45	A	0.60	A	0.46	A	0.63	B
11. Prospect at 1st	Tustin	0.45	A	0.54	A	0.57	A	0.68	B	0.59	A	0.69	B
12. Newport at 1st	Tustin	0.55	A	0.58	A	0.58	A	0.58	A	0.58	A	0.58	A
13. C at 2nd	Tustin	0.11	A	0.12	A	0.11	A	0.12	A	0.12	A	0.13	A
14. Prospect at 2nd	Tustin	0.17	A	0.23	A	0.16	A	0.22	A	0.16	A	0.23	A
15. C at 3rd	Tustin	0.08	A	0.22	A	0.08	A	0.20	A	0.08	A	0.21	A
16. Prospect at 3rd	Tustin	0.19	A	0.25	A	0.18	A	0.22	A	0.19	A	0.24	A
17. El Camino Real at Main	Tustin	0.57	A	0.61	B	0.56	A	0.58	A	0.61	B	0.62	B
18. Prospect at Main	Tustin	0.42	A	0.56	A	0.38	A	0.49	A	0.39	A	0.50	A
19. Newport at Main	Tustin	0.60	A	0.55	A	0.61	B	0.57	A	0.61	B	0.57	A

Table 12 Existing Plus Project Conditions Intersection LOS Summary (continued)

Intersection	Juri	Existing Count (2016)				Existing Plus Project				Existing Plus Project Transferability Sensitivity Analysis)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS	ICU/ Delay (s)	LOS
20. El Camino Real at 6th	Tustin	0.43	A	0.48	A	0.44	A	0.50	A	0.45	A	0.54	A
21. Newport at 6th	Tustin	0.49	A	0.37	A	0.53	A	0.40	A	0.53	A	0.40	A
22. Newport at El Camino Real	Tustin	0.72	C	0.60	A	0.76	C	0.63	B	0.77	C	0.65	B
23. Newport at I-5 NB On-Ramp	Caltrans	**124.8**	**F**	20.2	C	**191.8**	**F**	20.6	C	**208.4**	**F**	21.0	C
24. Newport at Nisson	Caltrans	17.3	B	19.9	B	17.6	B	19.9	B	14.2	B	20.6	C

Abbreviations: ICU – intersection capacity utilization
LOS – level of service
NB – northbound
(s) – seconds

Bold denotes a peak hour deficiency.

sensitivity conditions than that under the existing conditions. Therefore, the only Caltrans ramp intersection significantly impacted by the project is:

- **Newport Avenue at I-5 NB On-Ramp**

As discussed in the previous section, installing a traffic signal at the intersection of Newport Avenue at the I-5 NB on-ramp would allow this location to operate at an acceptable LOS. However, since the intersection is under Caltrans jurisdiction, the City does not have the authority to install a signal at this location. Therefore, the impact at this intersection is considered significant and unavoidable unless Caltrans goes forward with the traffic signal installation as discussed in Caltrans' October 2015 PR/ED. The LOS for the Newport Avenue at I-5 NB on-ramp intersection with a traffic signal installed is shown in Error! Not a valid bookmark self-reference..

Table 13 Existing Plus Project Conditions Newport Avenue at I-5 NB On-Ramp with Traffic Signal LOS Summary

Intersection	Traffic Control	Existing Plus Project w/Traffic Signal				Existing Plus Project (Transferability Sensitivity Analysis) w/Traffic Signal			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
23. Newport at I-5 NB on-ramp	Traffic Signal	11.6	B	7.7	A	11.9	B	7.6	A
(s) = seconds; LOS = level of service									

7.0 CONCLUSION

The traffic impacts of the Tustin DCCSP's proposed allowance for residential intensity as well as the proposed amendments to the MPAH classifications on First Street and Main Street were identified by analyzing the traffic conditions for the study area intersections based on existing and cumulative traffic conditions. In addition, transferability sensitivity analyses were conducted for both existing and cumulative with project settings where the project residential units were increased by 25 percent overall to account for a worst-case scenario to determine impacted locations due to the proposed residential unit transfer allowance between project DAs.

The results of the impact analyses indicate that the intersection of Newport Avenue at El Camino Real would be significantly impacted by the proposed project under the cumulative with project transferability conditions, and improvements have been identified which would fully mitigate the project's significant impacts for this location. Since the Newport Avenue and El Camino Real intersection is significantly impacted by the project only in the transferability sensitivity scenario under the cumulative conditions, this location should be monitored over time

if residential unit transfers between DAs do occur, and the improvements should be applied only when necessary.

The intersection of Newport Avenue at I-5 NB on-ramp would also be significantly impacted under both the existing and the cumulative with project conditions. While adding a traffic signal to this location would improve the LOS to be acceptable, the City does not have the authority to install a traffic signal here since the intersection is under Caltrans jurisdiction, and the impact to this location is considered significant and unavoidable unless Caltrans goes forward with the installation of a traffic signal at this location as previously identified in the Caltrans "Final Traffic Operations Report for State Route 55 (I-5 to I-405) PR/ED" published in October 2015.

The findings of this traffic study also demonstrate that First Street and Main Street would not be significantly impacted by the proposed MPAH amendments for their roadway reclassifications.

Appendix A TRAFFIC COUNT WORKSHEETS

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

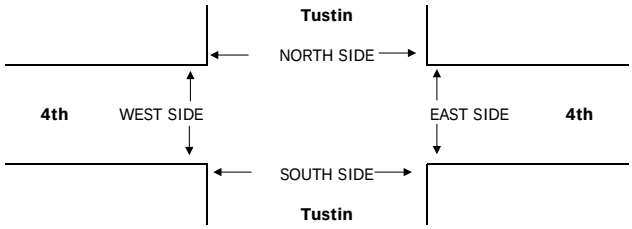
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Wed, Dec 7, 16	NORTH & SOUTH:	Tustin	LOCATION #:	1
	EAST & WEST:	4th	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

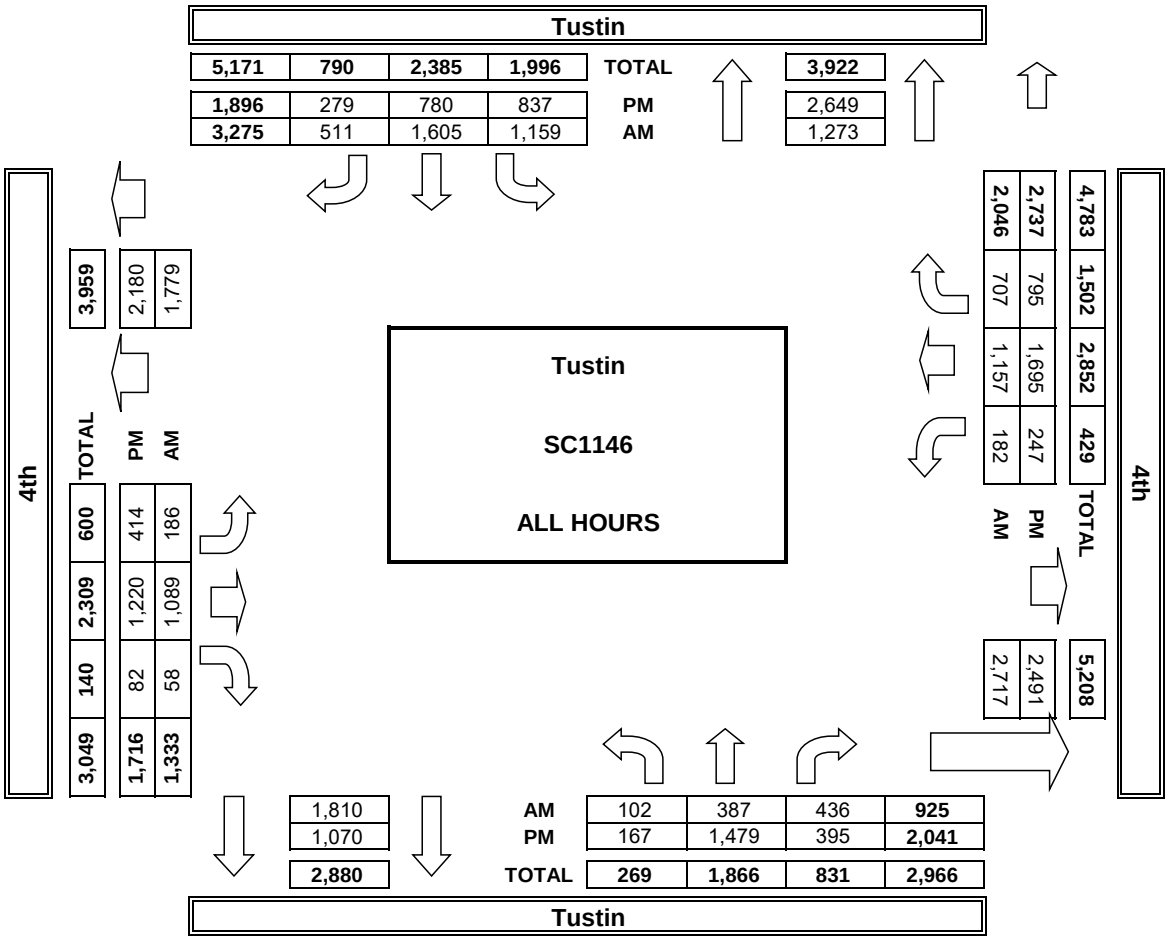
		NORTHBOUND Tustin			SOUTHBOUND Tustin			EASTBOUND 4th			WESTBOUND 4th				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 2	ST 2	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	5	38	63	96	223	55	14	132	3	14	85	70	798	0	2	1	1	4
	7:15 AM	11	21	49	182	175	53	20	138	0	17	118	50	834	0	0	2	4	6
	7:30 AM	10	33	56	154	220	70	17	188	5	23	154	59	989	0	0	0	7	7
	7:45 AM	20	48	60	139	247	72	17	146	9	23	179	67	1,027	0	0	0	6	6
	8:00 AM	19	61	48	167	192	63	28	152	9	22	160	124	1,045	0	0	1	2	3
	8:15 AM	8	73	51	164	166	64	36	108	5	31	174	132	1,012	0	0	2	7	9
	8:30 AM	13	49	55	147	206	76	24	109	9	24	158	96	966	0	0	0	3	3
	8:45 AM	16	64	54	110	176	58	30	116	18	28	129	109	908	0	0	3	5	8
	VOLUMES	102	387	436	1,159	1,605	511	186	1,089	58	182	1,157	707	7,579	0	2	9	35	46
	APPROACH %	11%	42%	47%	35%	49%	16%	14%	82%	4%	9%	57%	35%						
	APP/DEPART	925	/	1,273	3,275	/	1,810	1,333	/	2,717	2,046	/	1,779	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	57	215	215	624	825	269	98	594	28	99	667	382	4,073					
	APPROACH %	12%	44%	44%	36%	48%	16%	14%	83%	4%	9%	58%	33%						
	PEAK HR FACTOR		0.922			0.938			0.857			0.852		0.974					
	APP/DEPART	487	/	692	1,718	/	930	720	/	1,455	1,148	/	996	0					
PM	4:00 PM	12	154	41	105	77	33	41	110	12	26	169	65	845	0	0	2	3	5
	4:15 PM	19	163	53	93	96	23	49	156	13	44	258	98	1,065	0	0	6	3	9
	4:30 PM	27	209	61	108	92	47	50	136	2	32	210	83	1,057	0	0	5	2	7
	4:45 PM	16	172	43	105	103	39	56	163	9	32	244	106	1,088	0	0	6	4	10
	5:00 PM	24	192	53	103	120	42	57	172	15	31	197	103	1,109	0	0	4	7	11
	5:15 PM	27	206	42	120	115	34	52	205	10	33	215	103	1,162	0	0	5	7	12
	5:30 PM	20	216	57	113	82	27	52	150	12	30	180	112	1,051	0	0	6	9	15
	5:45 PM	22	167	45	90	95	34	57	128	9	19	222	125	1,013	0	0	5	4	9
	VOLUMES	167	1,479	395	837	780	279	414	1,220	82	247	1,695	795	8,390	0	0	39	39	78
	APPROACH %	8%	72%	19%	44%	41%	15%	24%	71%	5%	9%	62%	29%						
	APP/DEPART	2,041	/	2,649	1,896	/	1,070	1,716	/	2,491	2,737	/	2,180	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	94	779	199	436	430	162	215	676	36	128	866	395	4,416					
	APPROACH %	9%	73%	19%	42%	42%	16%	23%	73%	4%	9%	62%	28%						
	PEAK HR FACTOR		0.902			0.955			0.868			0.909		0.950					
	APP/DEPART	1,072	/	1,369	1,028	/	574	927	/	1,331	1,389	/	1,142	0					

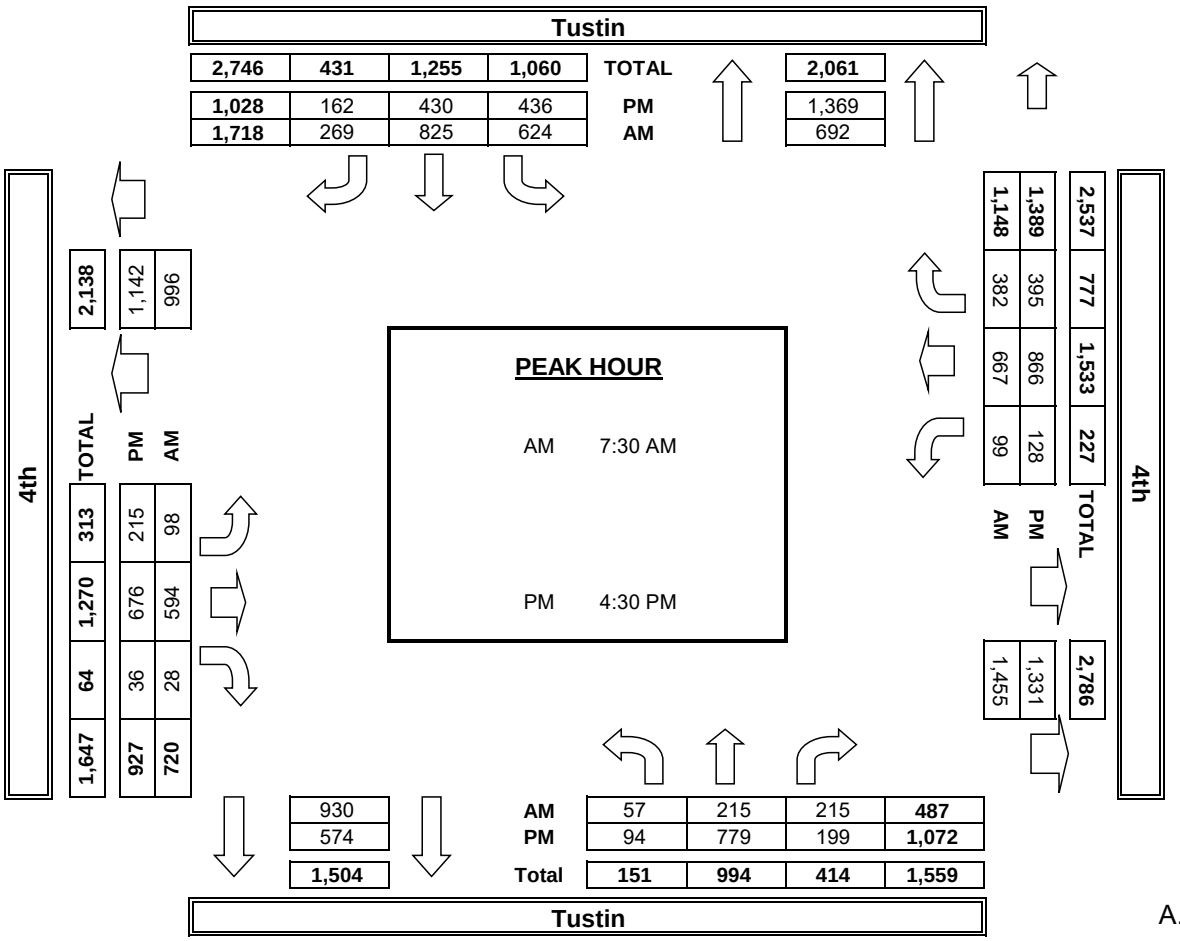


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

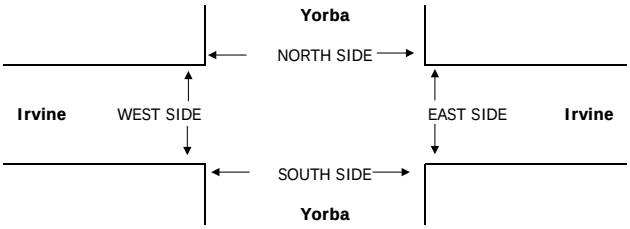
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Yorba	LOCATION #:	2
	EAST & WEST:	Irvine	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W, E ►, ▲ N, S ▼

☑ Add U-Turns to Left Turns

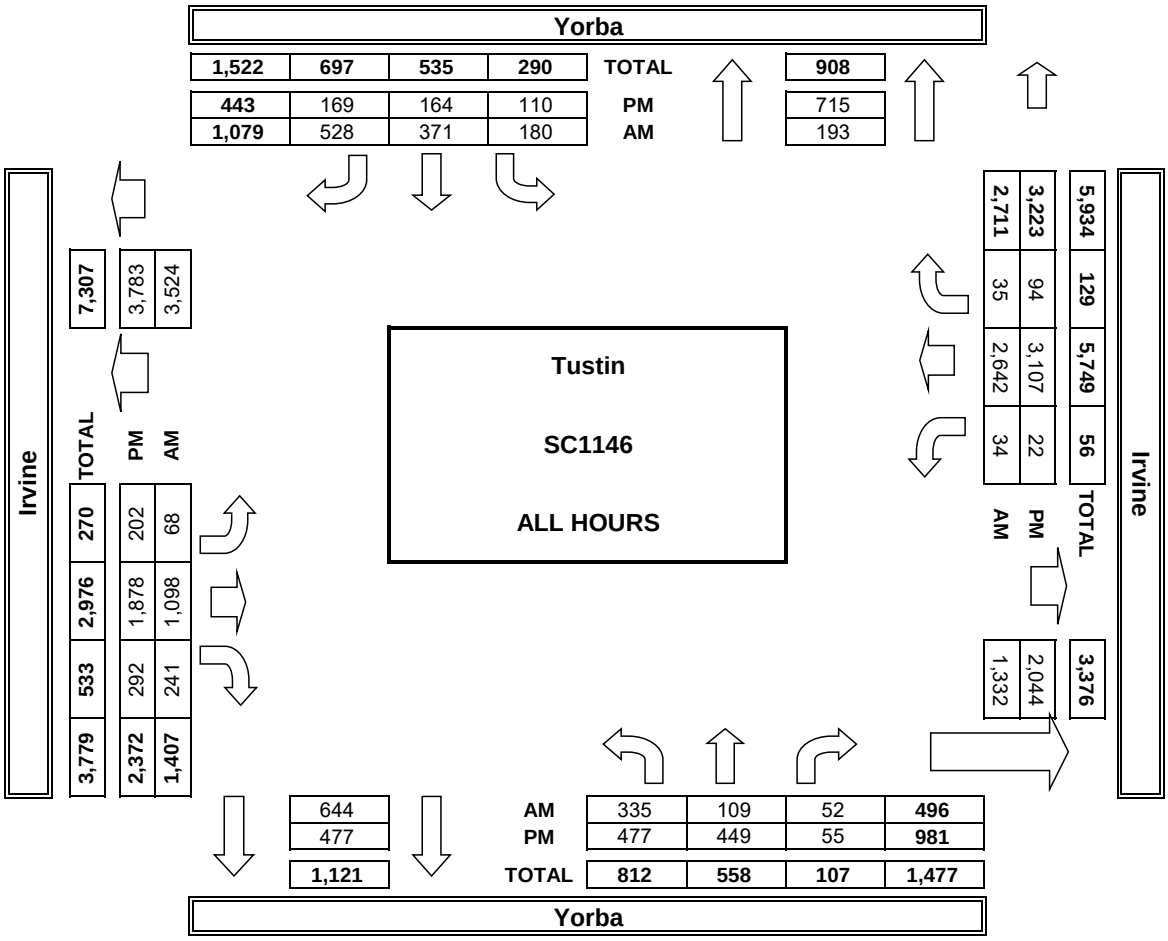
		NORTHBOUND Yorba			SOUTHBOUND Yorba			EASTBOUND Irvine			WESTBOUND Irvine				U-TURNS				
	LANES:	NL 1.5	NT 1.5	NR 0	SL 1	ST 1	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	41	11	2	20	31	67	8	100	26	3	225	2	536	0	0	2	0	2
	7:15 AM	39	14	8	14	49	71	4	149	28	2	309	2	689	0	0	0	0	0
	7:30 AM	60	15	15	26	41	64	10	157	26	4	382	5	805	0	0	2	1	3
	7:45 AM	46	14	9	26	52	72	8	142	44	7	355	4	779	0	0	2	0	2
	8:00 AM	42	16	5	17	59	71	11	137	24	3	378	3	766	0	0	3	0	3
	8:15 AM	34	16	4	30	53	63	9	148	27	6	397	5	792	0	0	2	1	3
	8:30 AM	36	11	7	23	41	69	7	129	27	4	313	8	675	0	0	2	0	2
	8:45 AM	37	12	2	24	45	51	11	136	39	5	283	6	651	0	0	6	0	6
	VOLUMES	335	109	52	180	371	528	68	1,098	241	34	2,642	35	5,693	0	0	19	2	21
	APPROACH %	68%	22%	10%	17%	34%	49%	5%	78%	17%	1%	97%	1%						
	APP/DEPART	496	/	193	1,079	/	644	1,407	/	1,332	2,711	/	3,524	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	182	61	33	99	205	270	38	584	121	20	1,512	17	3,142					
	APPROACH %	66%	22%	12%	17%	36%	47%	5%	79%	16%	1%	98%	1%						
	PEAK HR FACTOR		0.767			0.957			0.957			0.949		0.976					
	APP/DEPART	276	/	107	574	/	344	743	/	718	1,549	/	1,973	0					
PM	4:00 PM	55	37	5	8	16	9	10	200	34	3	437	10	824	0	0	1	0	1
	4:15 PM	36	46	3	15	21	20	11	231	52	4	432	13	884	0	0	2	0	2
	4:30 PM	59	59	2	10	23	31	22	247	43	2	399	13	910	0	0	3	0	3
	4:45 PM	56	49	6	7	15	18	26	239	43	1	363	11	834	0	0	5	0	5
	5:00 PM	79	62	10	18	17	24	28	272	36	1	378	14	939	0	0	4	0	4
	5:15 PM	66	66	14	13	25	28	32	269	26	2	390	17	948	0	0	6	0	6
	5:30 PM	83	64	9	25	21	22	41	210	25	1	348	7	856	0	0	3	0	3
	5:45 PM	43	66	6	14	26	17	32	210	33	8	360	9	824	0	0	6	1	7
	VOLUMES	477	449	55	110	164	169	202	1,878	292	22	3,107	94	7,019	0	0	30	1	31
	APPROACH %	49%	46%	6%	25%	37%	38%	9%	79%	12%	1%	96%	3%						
	APP/DEPART	981	/	715	443	/	477	2,372	/	2,044	3,223	/	3,783	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	260	236	32	48	80	101	108	1,027	148	6	1,530	55	3,631					
	APPROACH %	49%	45%	6%	21%	35%	44%	8%	80%	12%	0%	96%	3%						
	PEAK HR FACTOR		0.874			0.867			0.955			0.961		0.958					
	APP/DEPART	528	/	381	229	/	234	1,283	/	1,107	1,591	/	1,909	0					

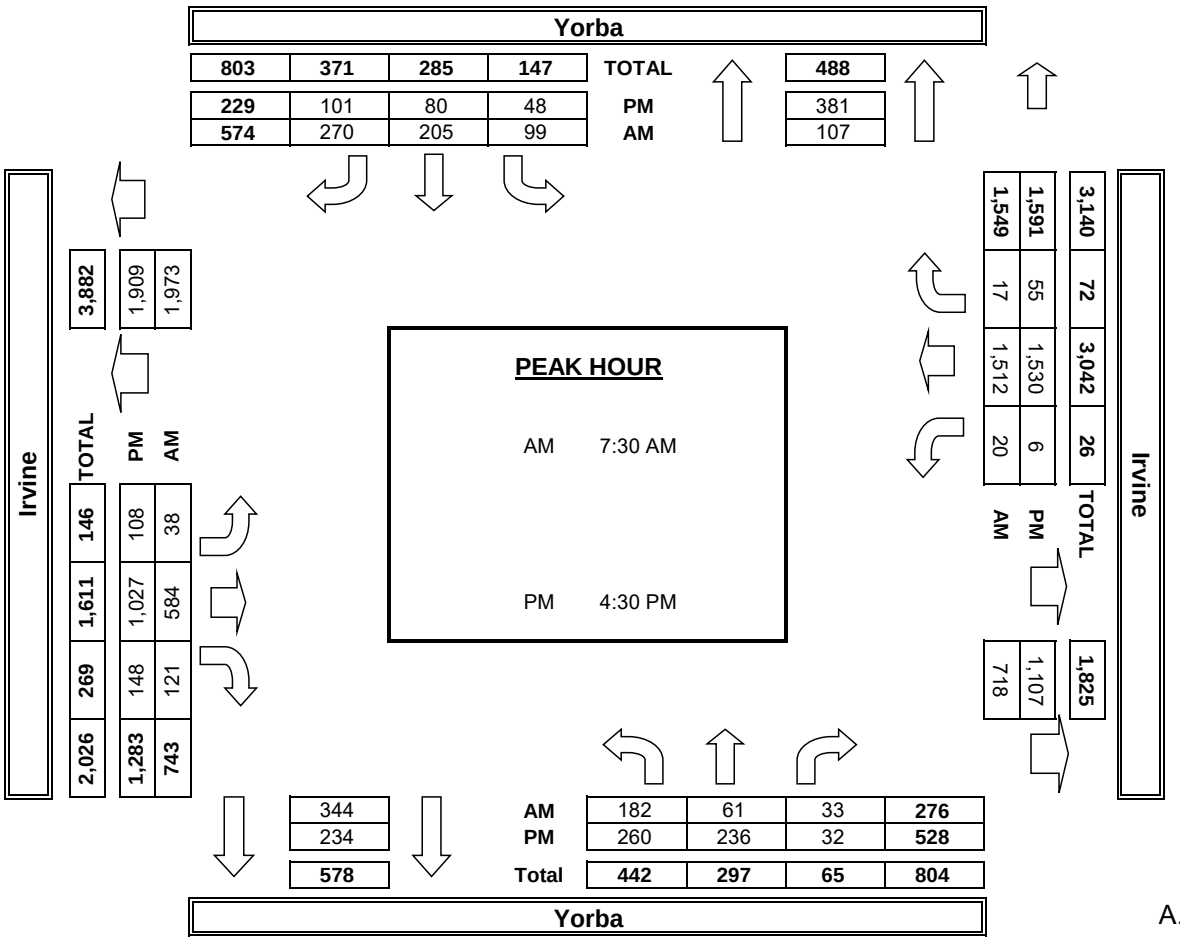


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	B	LOCATION #:	3
	EAST & WEST:	Irvine	CONTROL:	SIGNAL

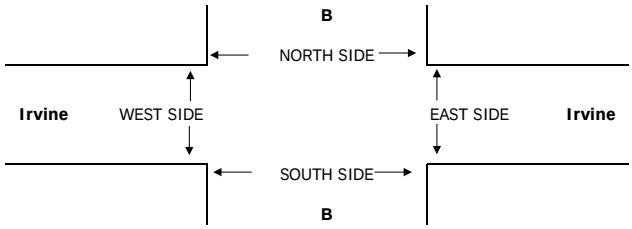
NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

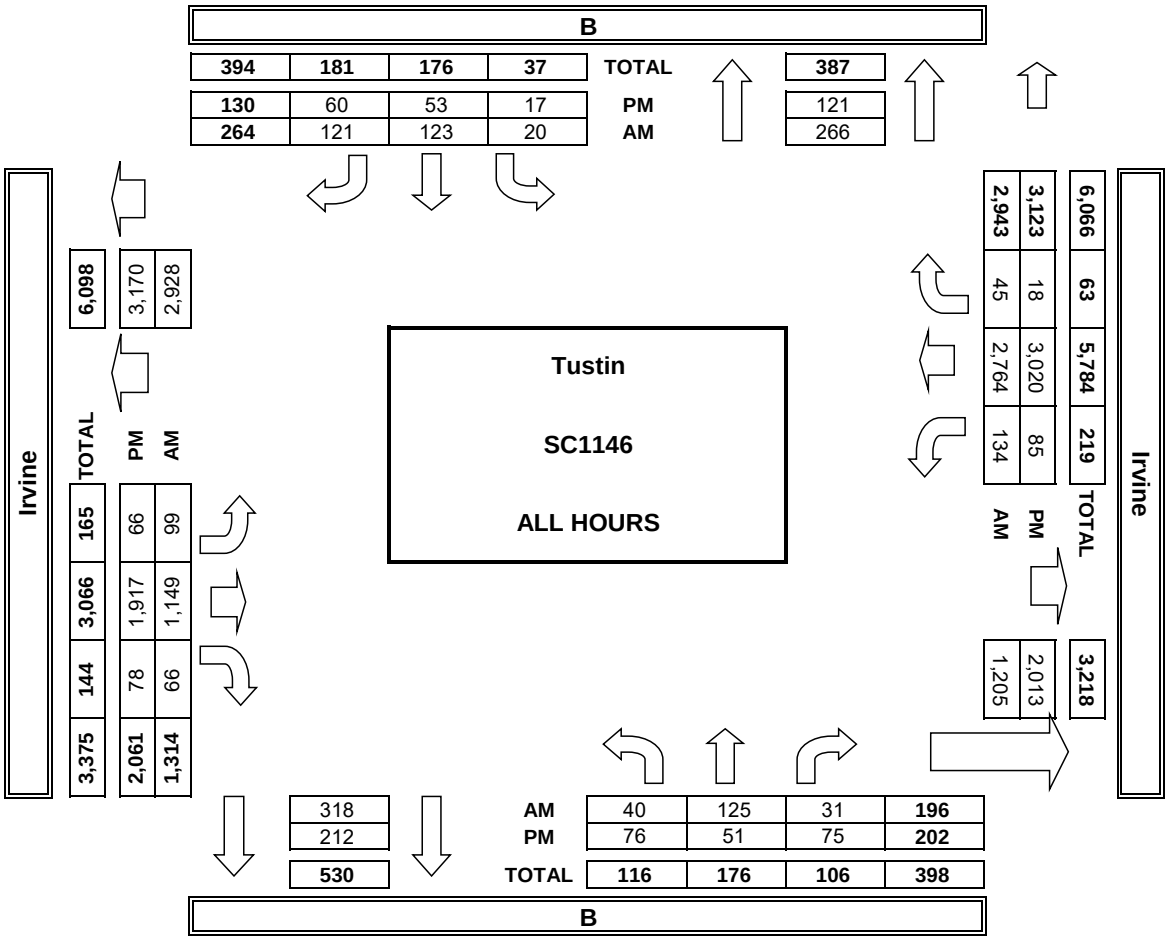
		NORTHBOUND B			SOUTHBOUND B			EASTBOUND Irvine			WESTBOUND Irvine				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	5	6	4	0	0	6	6	116	4	7	233	4	391	0	0	1	0	1
	7:15 AM	4	13	5	2	1	15	8	165	5	14	340	10	582	0	0	0	0	0
	7:30 AM	1	36	5	4	34	26	28	163	4	13	368	6	688	0	0	1	1	2
	7:45 AM	7	49	4	7	41	26	28	157	6	29	382	14	750	0	0	0	0	0
	8:00 AM	5	7	3	5	33	26	11	140	12	21	400	3	666	0	0	0	1	1
	8:15 AM	8	7	2	0	5	8	11	146	8	18	396	5	614	0	0	1	1	2
	8:30 AM	5	6	1	1	7	11	5	125	11	13	331	0	516	0	0	0	0	0
	8:45 AM	5	1	7	1	2	3	2	137	16	19	314	3	510	0	0	0	2	2
	VOLUMES	40	125	31	20	123	121	99	1,149	66	134	2,764	45	4,717	0	0	3	5	8
	APPROACH %	20%	64%	16%	8%	47%	46%	8%	87%	5%	5%	94%	2%						
	APP/DEPART	196	/	266	264	/	318	1,314	/	1,205	2,943	/	2,928	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	21	99	14	16	113	86	78	606	30	81	1,546	28	2,718					
	APPROACH %	16%	74%	10%	7%	53%	40%	11%	85%	4%	5%	93%	2%						
	PEAK HR FACTOR		0.558			0.726			0.915			0.974		0.906					
	APP/DEPART	134	/	203	215	/	221	714	/	639	1,655	/	1,655	0					
PM	4:00 PM	11	8	8	3	5	12	7	199	6	13	428	5	705	0	0	2	3	5
	4:15 PM	10	1	7	1	3	3	11	226	10	10	375	2	659	0	0	6	0	6
	4:30 PM	7	10	11	1	5	5	4	230	11	17	397	2	700	0	0	0	0	0
	4:45 PM	10	2	10	0	5	10	12	251	8	11	362	0	681	0	0	2	0	2
	5:00 PM	18	8	11	2	9	11	7	272	9	9	377	3	736	0	0	0	0	0
	5:15 PM	6	5	8	5	5	5	11	292	14	5	404	0	760	0	0	1	0	1
	5:30 PM	6	7	10	2	6	7	4	232	12	14	329	4	633	0	0	1	1	2
	5:45 PM	8	10	10	3	15	7	10	215	8	6	348	2	642	0	0	2	0	2
	VOLUMES	76	51	75	17	53	60	66	1,917	78	85	3,020	18	5,516	0	0	14	4	18
	APPROACH %	38%	25%	37%	13%	41%	46%	3%	93%	4%	3%	97%	1%						
	APP/DEPART	202	/	121	130	/	212	2,061	/	2,013	3,123	/	3,170	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	41	25	40	8	24	31	34	1,045	42	42	1,540	5	2,877					
	APPROACH %	39%	24%	38%	13%	38%	49%	3%	93%	4%	3%	97%	0%						
	PEAK HR FACTOR		0.716			0.716			0.884			0.954		0.946					
	APP/DEPART	106	/	61	63	/	108	1,121	/	1,093	1,587	/	1,615	0					

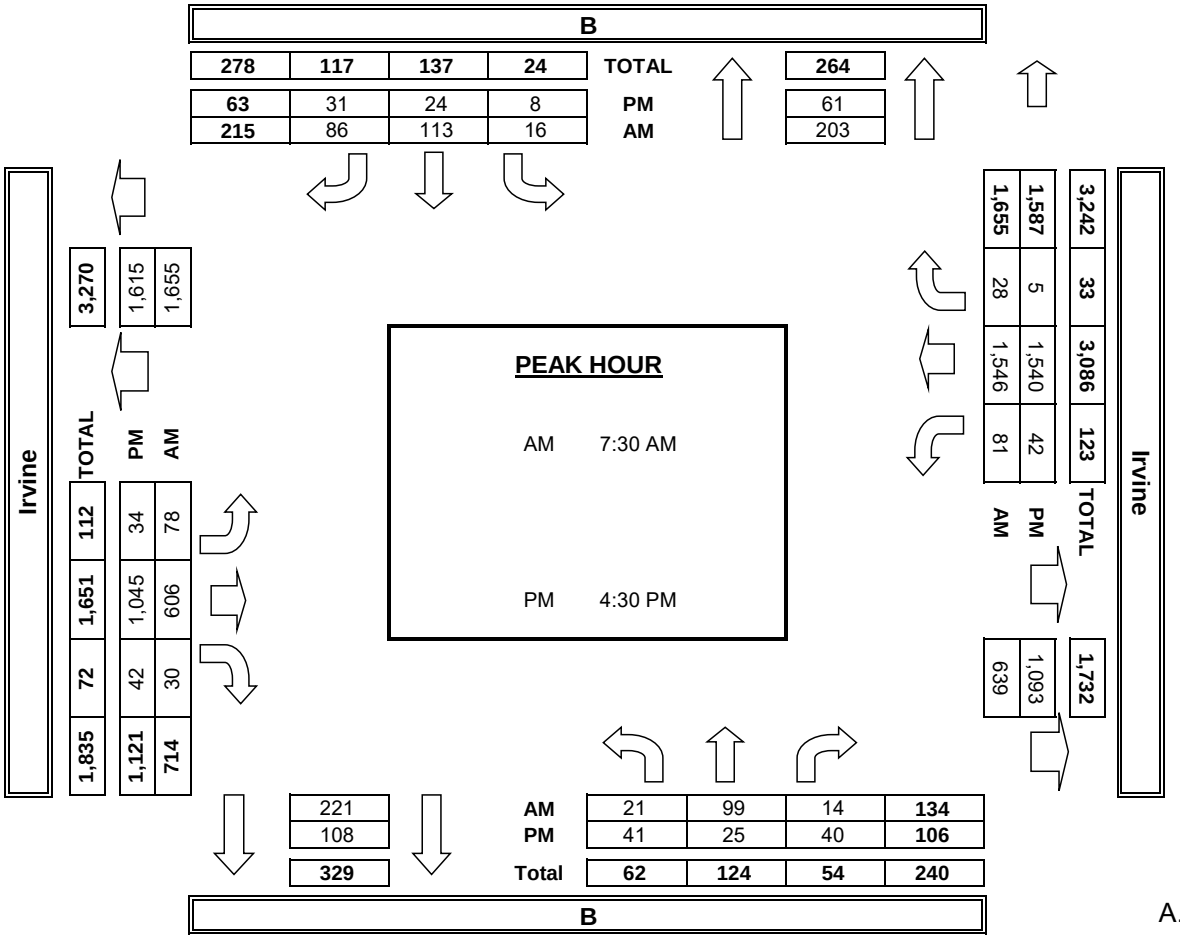


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Prospect	LOCATION #:	4
	EAST & WEST:	Irvine	CONTROL:	SIGNAL

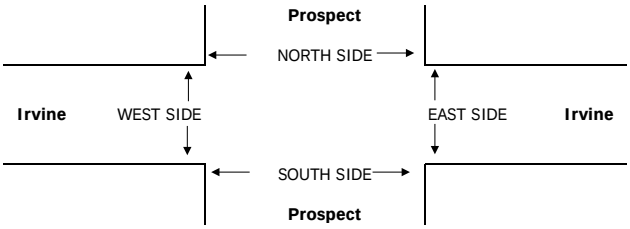
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

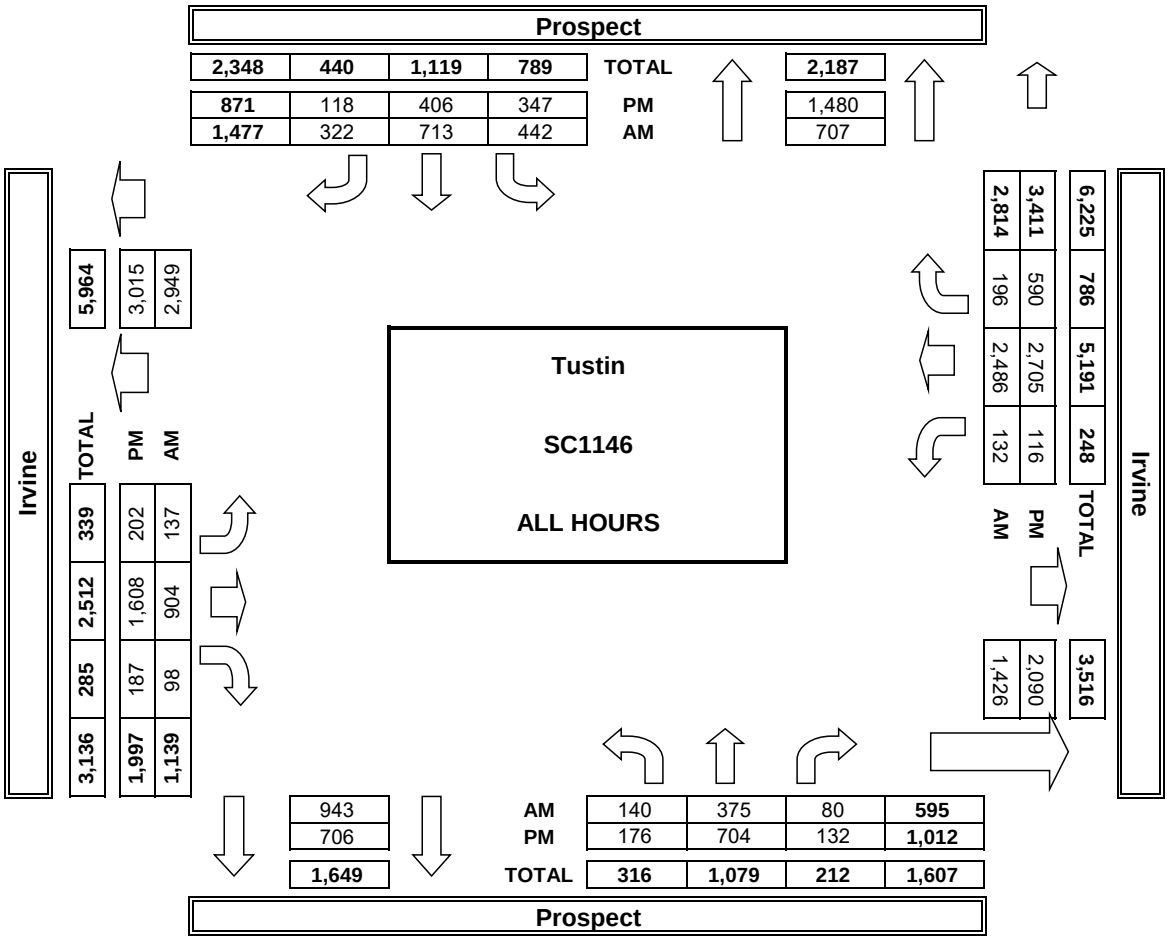
		NORTHBOUND Prospect			SOUTHBOUND Prospect			EASTBOUND Irvine			WESTBOUND Irvine				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	13	23	5	39	52	43	12	96	10	9	220	9	531	0	0	0	0	0
	7:15 AM	18	64	11	58	63	34	23	116	9	12	314	17	739	0	0	0	0	0
	7:30 AM	16	139	10	56	117	60	49	121	14	14	303	50	949	0	0	0	0	0
	7:45 AM	18	46	12	62	147	50	23	129	10	15	352	24	888	0	0	0	0	0
	8:00 AM	14	29	14	61	89	21	10	125	13	11	381	22	790	0	0	0	0	0
	8:15 AM	27	24	10	57	86	39	4	119	12	25	356	26	785	0	0	0	0	0
	8:30 AM	18	28	13	55	84	40	9	92	16	21	275	25	676	0	0	1	0	1
	8:45 AM	16	22	5	54	75	35	7	106	14	25	285	23	667	0	0	0	0	0
	VOLUMES	140	375	80	442	713	322	137	904	98	132	2,486	196	6,025	0	0	1	0	1
	APPROACH %	24%	63%	13%	30%	48%	22%	12%	79%	9%	5%	88%	7%						
	APP/DEPART	595	/	707	1,477	/	943	1,139	/	1,426	2,814	/	2,949	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	75	238	46	236	439	170	86	494	49	65	1,392	122	3,412					
	APPROACH %	21%	66%	13%	28%	52%	20%	14%	79%	8%	4%	88%	8%						
	PEAK HR FACTOR		0.544			0.816			0.855			0.954		0.899					
	APP/DEPART	359	/	446	845	/	553	629	/	776	1,579	/	1,637	0					
PM	4:00 PM	23	71	18	28	44	12	23	165	24	20	392	45	865	0	0	5	2	7
	4:15 PM	14	72	11	35	37	17	18	184	32	14	363	55	852	0	0	1	0	1
	4:30 PM	23	92	22	47	61	25	28	166	18	13	333	66	894	0	0	1	0	1
	4:45 PM	21	84	16	38	60	10	21	243	28	16	339	87	963	0	0	1	0	1
	5:00 PM	30	125	21	54	58	16	34	222	23	15	304	96	998	0	0	2	0	2
	5:15 PM	23	83	15	49	33	17	28	246	28	14	361	87	984	0	0	1	0	1
	5:30 PM	26	98	16	50	60	12	28	190	15	13	285	68	861	0	0	3	0	3
	5:45 PM	16	79	13	46	53	9	22	192	19	11	328	86	874	0	0	2	1	3
	VOLUMES	176	704	132	347	406	118	202	1,608	187	116	2,705	590	7,291	0	0	16	3	19
	APPROACH %	17%	70%	13%	40%	47%	14%	10%	81%	9%	3%	79%	17%						
	APP/DEPART	1,012	/	1,480	871	/	706	1,997	/	2,090	3,411	/	3,015	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	97	384	74	188	212	68	111	877	97	58	1,337	336	3,839					
	APPROACH %	17%	69%	13%	40%	45%	15%	10%	81%	9%	3%	77%	19%						
	PEAK HR FACTOR		0.788			0.880			0.898			0.937		0.962					
	APP/DEPART	555	/	826	468	/	367	1,085	/	1,139	1,731	/	1,507	0					

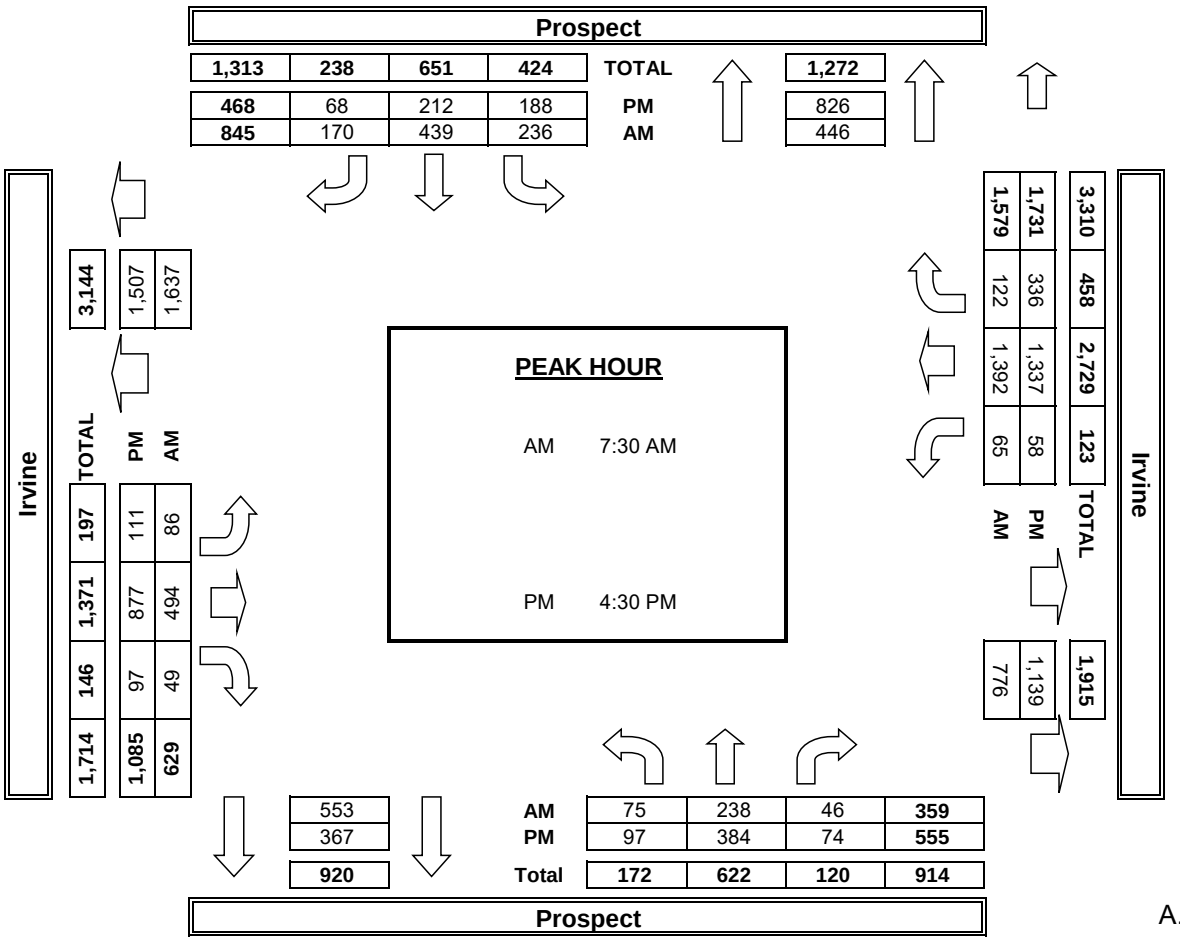


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

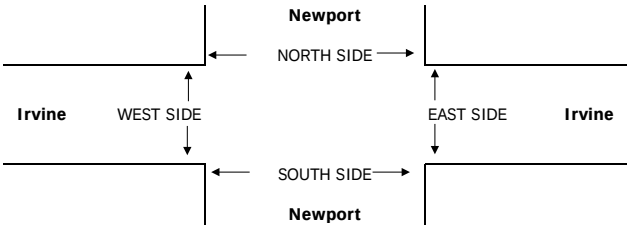
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	5
	EAST & WEST:	Irvine	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

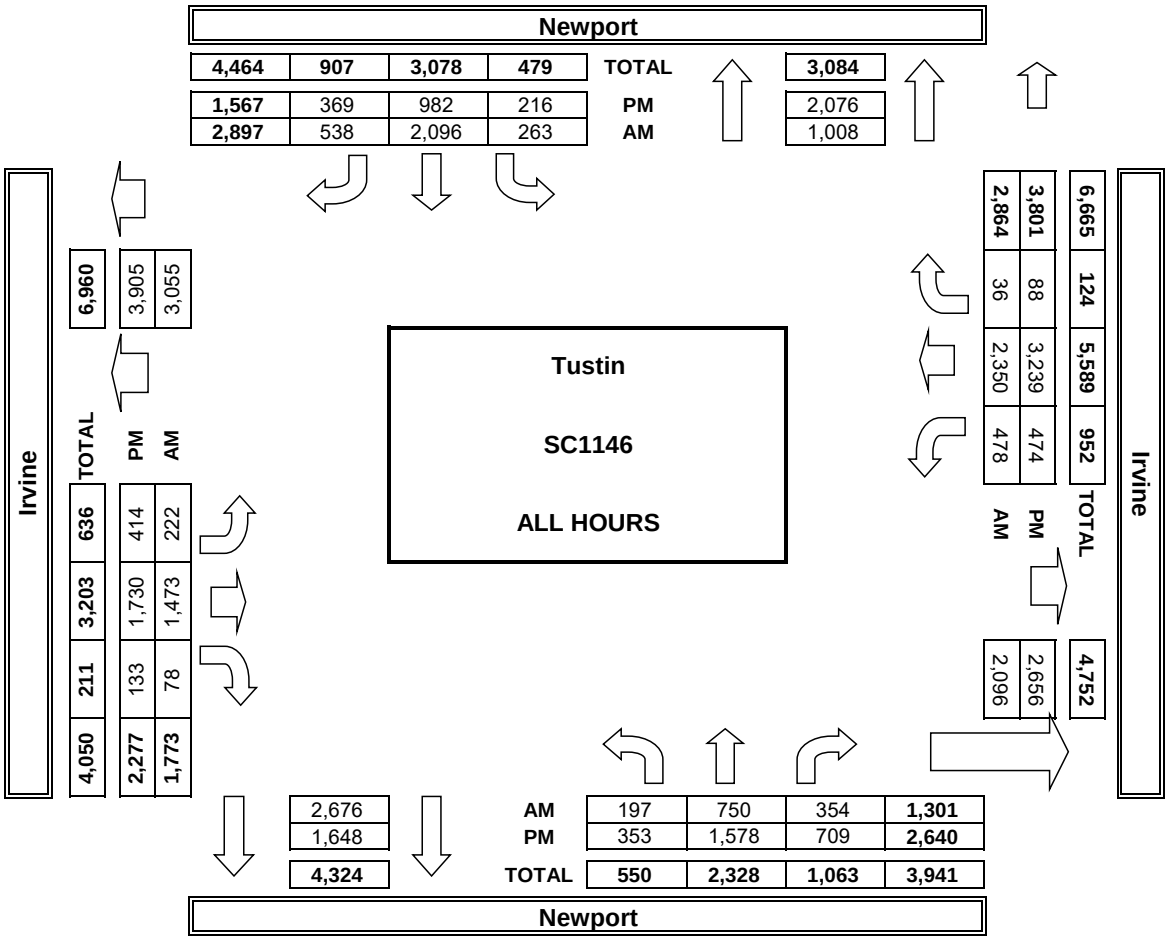
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND Irvine			WESTBOUND Irvine				U-TURNS				
	LANES:	NL 1	NT 3	NR 1	SL 1	ST 3	SR 0	EL 2	ET 3	ER 0	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	16	59	26	17	192	50	16	132	6	29	206	4	753	5	0	2	1	8
	7:15 AM	30	129	48	31	290	55	38	171	5	45	265	2	1,109	2	0	3	0	5
	7:30 AM	35	106	39	30	265	60	20	227	12	66	365	2	1,227	4	0	1	1	6
	7:45 AM	34	123	53	33	250	79	37	253	8	68	292	6	1,236	3	1	0	0	4
	8:00 AM	23	96	42	39	299	64	21	194	10	88	356	4	1,236	4	1	0	3	8
	8:15 AM	17	87	45	47	338	82	27	182	10	66	316	2	1,219	3	1	0	2	6
	8:30 AM	20	65	52	30	222	66	27	163	13	69	286	12	1,025	5	1	0	2	8
	8:45 AM	22	85	49	36	240	82	36	151	14	47	264	4	1,030	10	2	0	3	15
	VOLUMES	197	750	354	263	2,096	538	222	1,473	78	478	2,350	36	8,835	36	6	6	12	60
	APPROACH %	15%	58%	27%	9%	72%	19%	13%	83%	4%	17%	82%	1%						
	APP/DEPART	1,301	/	1,008	2,897	/	2,676	1,773	/	2,096	2,864	/	3,055	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	109	412	179	149	1,152	285	105	856	40	288	1,329	14	4,918					
	APPROACH %	16%	59%	26%	9%	73%	18%	10%	86%	4%	18%	81%	1%						
	PEAK HR FACTOR		0.833			0.849			0.840			0.910		0.995					
	APP/DEPART	700	/	533	1,586	/	1,488	1,001	/	1,187	1,631	/	1,710	0					
PM	4:00 PM	39	167	92	31	128	44	55	160	19	71	454	17	1,277	9	2	1	2	14
	4:15 PM	38	169	86	22	110	37	45	148	15	52	338	6	1,066	9	0	1	0	10
	4:30 PM	36	186	79	22	116	52	38	214	13	54	418	13	1,241	7	2	3	5	17
	4:45 PM	50	213	99	19	125	45	57	219	22	55	385	15	1,304	9	1	1	0	11
	5:00 PM	45	212	88	39	117	65	61	258	19	51	420	11	1,386	7	1	2	1	11
	5:15 PM	51	227	79	28	113	51	51	275	15	65	412	9	1,376	19	2	1	1	23
	5:30 PM	41	192	93	24	145	44	63	245	18	53	416	11	1,345	5	0	0	0	5
	5:45 PM	53	212	93	31	128	31	44	211	12	73	396	6	1,290	4	1	4	1	10
	VOLUMES	353	1,578	709	216	982	369	414	1,730	133	474	3,239	88	10,285	69	9	13	10	101
	APPROACH %	13%	60%	27%	14%	63%	24%	18%	76%	6%	12%	85%	2%						
	APP/DEPART	2,640	/	2,076	1,567	/	1,648	2,277	/	2,656	3,801	/	3,905	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	187	844	359	110	500	205	232	997	74	224	1,633	46	5,411					
	APPROACH %	13%	61%	26%	13%	61%	25%	18%	77%	6%	12%	86%	2%						
	PEAK HR FACTOR		0.960			0.922			0.955			0.979		0.976					
	APP/DEPART	1,390	/	1,122	815	/	836	1,303	/	1,464	1,903	/	1,989	0					

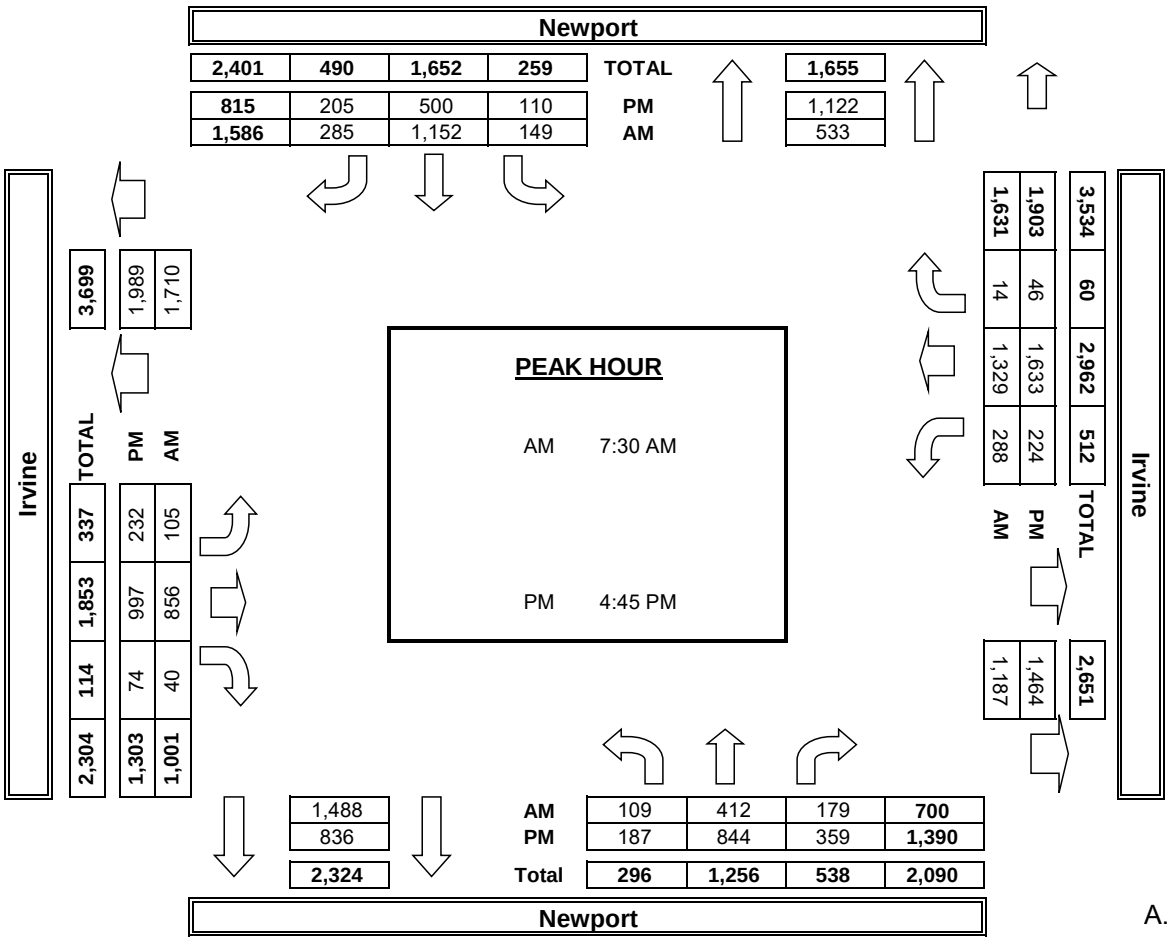


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

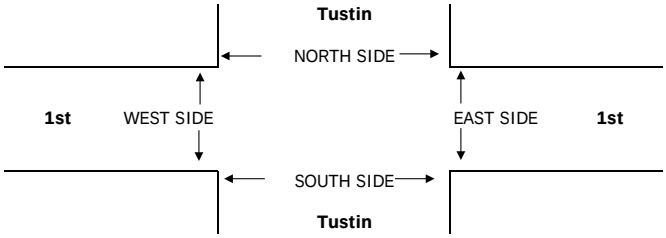
DATE:	LOCATION:	Tustin	PROJECT #:	SC0878
Tue, Mar 8, 16	NORTH & SOUTH:	Tustin	LOCATION #:	5
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W ▲ N S ▼ E ►

☑Add U-Turns to Left Turns

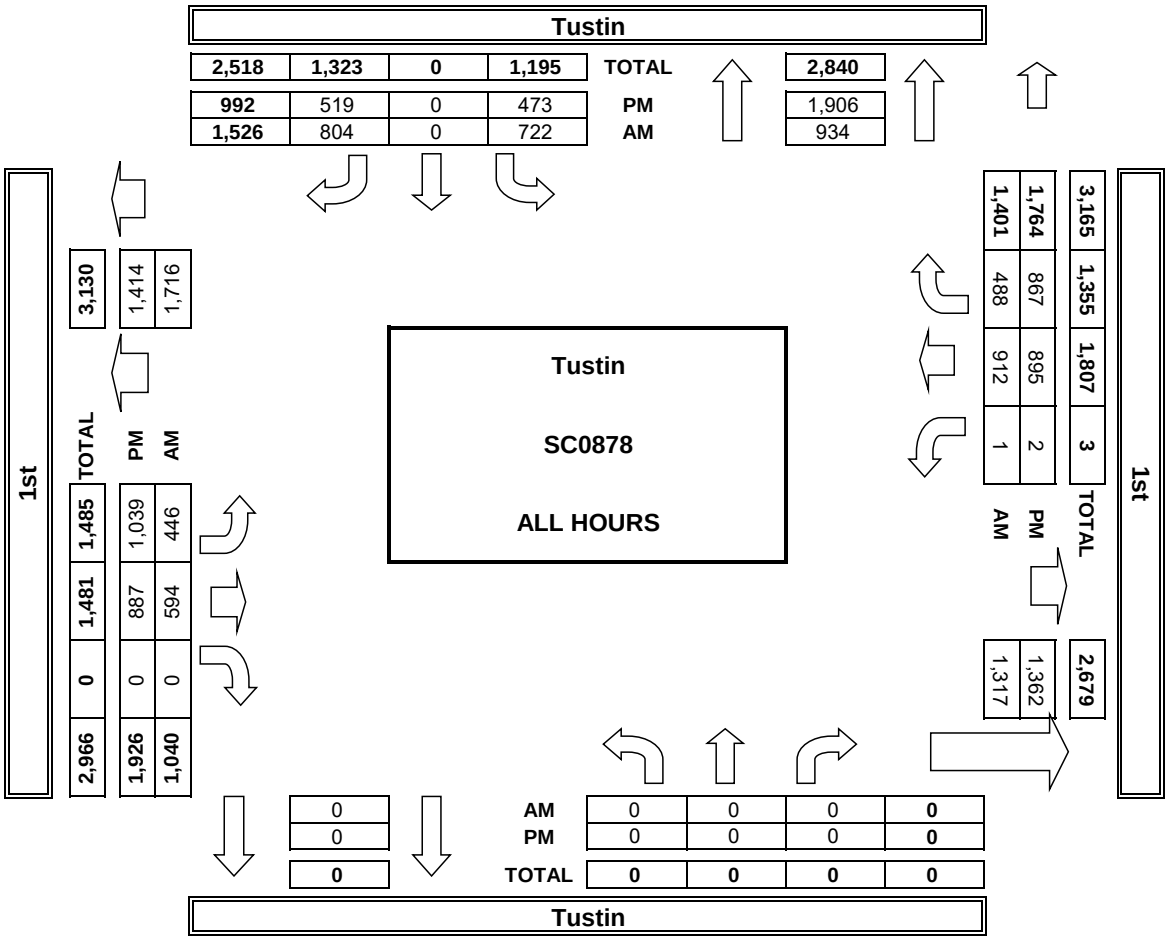
		NORTHBOUND Tustin			SOUTHBOUND Tustin			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 0.5	NT 0.5	NR 1	SL 1.5	ST 0.5	SR 2	EL 2	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	82	0	93	58	66	0	0	70	36	405	0	0	0	0	0
AM	7:15 AM	0	0	0	85	0	100	38	81	0	0	105	46	455	0	0	0	0	0
AM	7:30 AM	0	0	0	107	0	126	36	65	0	0	141	57	532	0	0	0	0	0
AM	7:45 AM	0	0	0	109	0	96	48	76	0	0	178	101	608	0	0	0	0	0
AM	8:00 AM	0	0	0	95	0	116	73	81	0	0	121	81	567	0	0	0	0	0
AM	8:15 AM	0	0	0	75	0	107	58	69	0	0	131	71	511	0	0	0	0	0
AM	8:30 AM	0	0	0	99	0	88	76	61	0	0	85	45	454	0	0	0	0	0
AM	8:45 AM	0	0	0	70	0	78	59	95	0	1	81	51	435	0	0	0	1	1
AM	VOLUMES	0	0	0	722	0	804	446	594	0	1	912	488	3,967	0	0	0	1	1
AM	APPROACH %	0%	0%	0%	47%	0%	53%	43%	57%	0%	0%	65%	35%						
AM	APP/DEPART	0	/	934	1,526	/	0	1,040	/	1,317	1,401	/	1,716	0					
AM	BEGIN PEAK HR		7:30 AM																
AM	VOLUMES	0	0	0	386	0	445	215	291	0	0	571	310	2,218					
AM	APPROACH %	0%	0%	0%	46%	0%	54%	42%	58%	0%	0%	65%	35%						
AM	PEAK HR FACTOR		0.000			0.892			0.821			0.789		0.912					
AM	APP/DEPART	0	/	525	831	/	0	506	/	677	881	/	1,016	0					
PM	4:00 PM	0	0	0	57	0	63	107	103	0	0	85	88	503	0	0	0	0	0
PM	4:15 PM	0	0	0	54	0	64	119	103	0	0	93	88	521	0	0	0	0	0
PM	4:30 PM	0	0	0	46	0	70	109	116	0	0	110	101	552	0	0	0	0	0
PM	4:45 PM	0	0	0	49	0	82	115	103	0	0	96	97	542	0	0	0	0	0
PM	5:00 PM	0	0	0	72	0	81	141	125	0	0	116	99	634	0	0	0	0	0
PM	5:15 PM	0	0	0	73	0	60	135	111	0	0	131	125	635	0	0	0	0	0
PM	5:30 PM	0	0	0	54	0	52	129	111	0	2	150	140	638	0	0	0	2	2
PM	5:45 PM	0	0	0	68	0	47	184	115	0	0	114	129	657	0	0	0	0	0
PM	VOLUMES	0	0	0	473	0	519	1,039	887	0	2	895	867	4,682	0	0	0	2	2
PM	APPROACH %	0%	0%	0%	48%	0%	52%	54%	46%	0%	0%	51%	49%						
PM	APP/DEPART	0	/	1,906	992	/	0	1,926	/	1,362	1,764	/	1,414	0					
PM	BEGIN PEAK HR		5:00 PM																
PM	VOLUMES	0	0	0	267	0	240	589	462	0	2	511	493	2,564					
PM	APPROACH %	0%	0%	0%	53%	0%	47%	56%	44%	0%	0%	51%	49%						
PM	PEAK HR FACTOR		0.000			0.828			0.879			0.861		0.976					
PM	APP/DEPART	0	/	1,082	507	/	0	1,051	/	731	1,006	/	751	0					

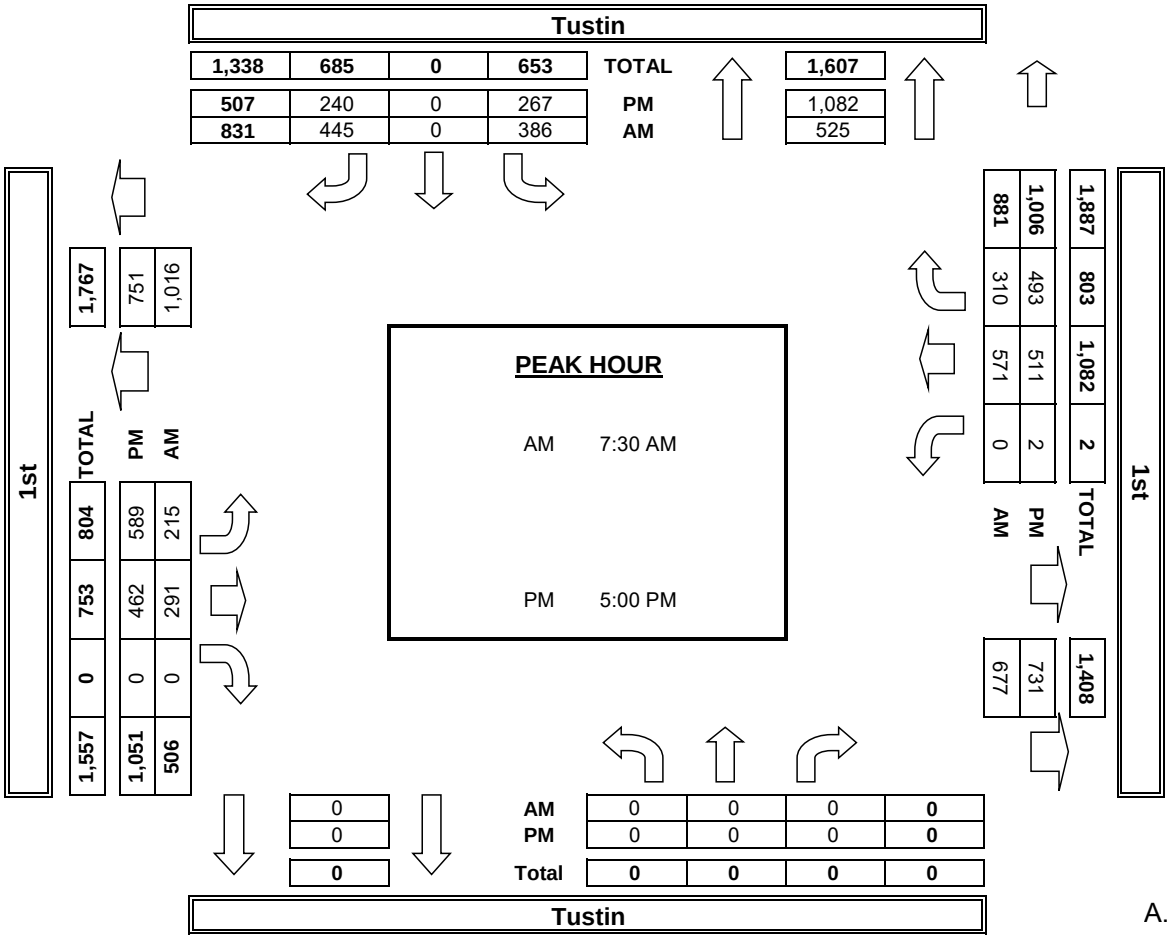


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	4	0	0	0	4	4	0	0	0	4	0	0	0	0	0
AM	7:15 AM	6	0	0	0	6	5	0	0	0	5	1	0	0	0	1
AM	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	7:45 AM	10	0	0	0	10	9	0	0	0	9	1	0	0	0	1
AM	8:00 AM	4	0	0	0	4	4	0	0	0	4	0	0	0	0	0
AM	8:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
AM	8:30 AM	3	0	0	0	3	3	0	0	0	3	0	0	0	0	0
AM	8:45 AM	4	0	0	0	4	3	0	0	0	3	1	0	0	0	1
AM	TOTAL	32	0	0	0	32	29	0	0	0	29	3	0	0	0	3
PM	4:00 PM	4	0	0	0	4	3	0	0	0	3	1	0	0	0	1
PM	4:15 PM	4	0	0	0	4	2	0	0	0	2	2	0	0	0	2
PM	4:30 PM	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2
PM	4:45 PM	7	0	0	0	7	6	0	0	0	6	1	0	0	0	1
PM	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:30 PM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
PM	5:45 PM	6	0	0	0	6	2	0	0	0	2	4	0	0	0	4
PM	TOTAL	25	0	0	0	25	15	0	0	0	15	10	0	0	0	10

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

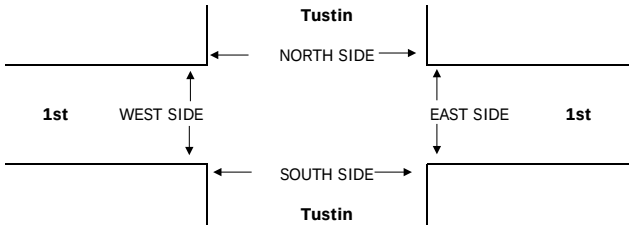
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Tustin	LOCATION #:	6
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W ▲ N S ▼ E ►

☑ Add U-Turns to Left Turns

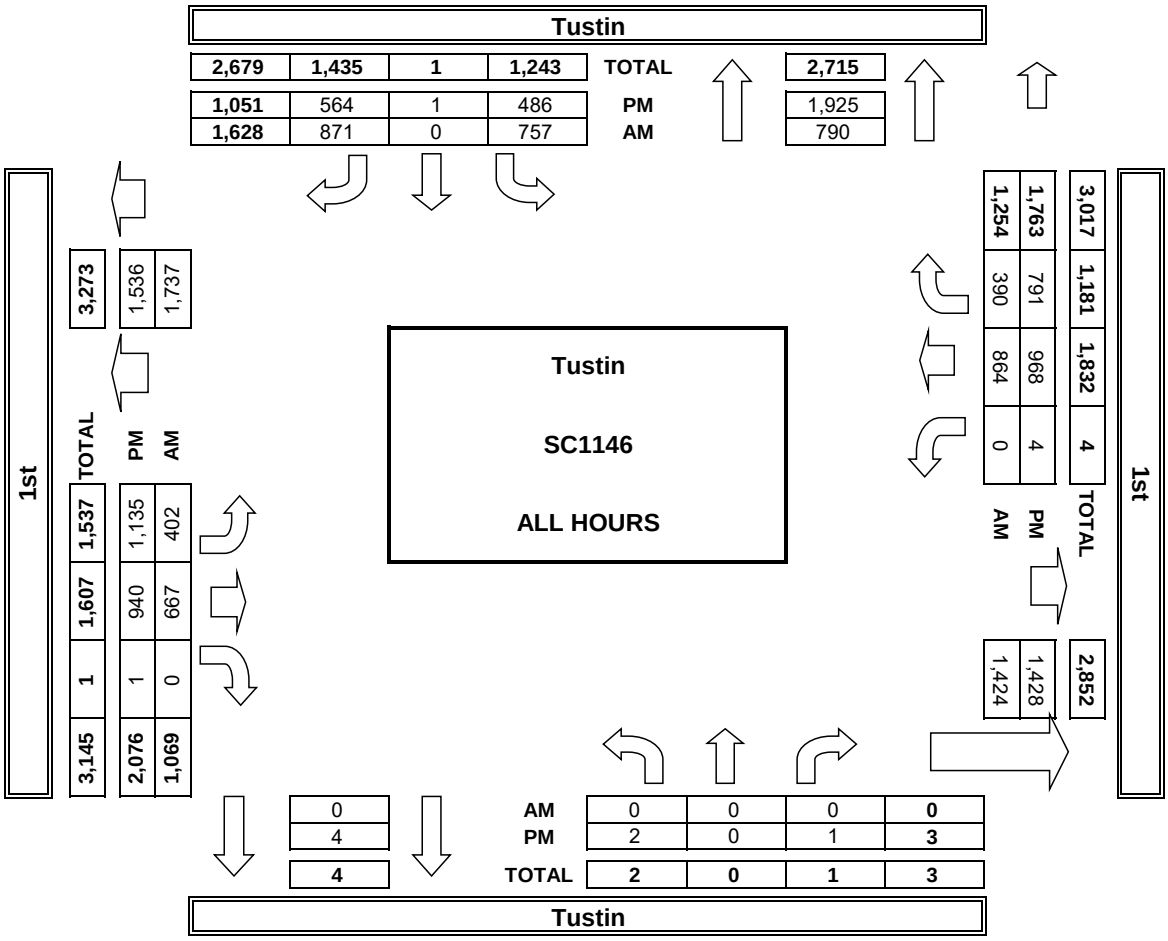
		NORTHBOUND Tustin			SOUTHBOUND Tustin			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 0.5	NT 0.5	NR 1	SL 1.5	ST 0.5	SR 2	EL 2	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	81	0	102	48	74	0	0	57	31	393	0	0	0	0	0
	7:15 AM	0	0	0	97	0	105	34	99	0	0	88	42	465	0	0	0	0	0
	7:30 AM	0	0	0	108	0	127	42	72	0	0	113	56	518	0	0	0	0	0
	7:45 AM	0	0	0	90	0	127	48	71	0	0	197	70	603	0	0	1	0	1
	8:00 AM	0	0	0	87	0	115	48	94	0	0	124	46	514	0	0	0	0	0
	8:15 AM	0	0	0	75	0	110	67	89	0	0	123	53	517	0	0	0	0	0
	8:30 AM	0	0	0	115	0	96	46	77	0	0	85	45	464	0	0	1	0	1
	8:45 AM	0	0	0	104	0	89	69	91	0	0	77	47	477	0	0	0	0	0
	VOLUMES	0	0	0	757	0	871	402	667	0	0	864	390	3,951	0	0	2	0	2
	APPROACH %	0%	0%	0%	46%	0%	54%	38%	62%	0%	0%	69%	31%						
	APP/DEPART	0	/	790	1,628	/	0	1,069	/	1,424	1,254	/	1,737	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	0	0	360	0	479	205	326	0	0	557	225	2,152					
	APPROACH %	0%	0%	0%	43%	0%	57%	39%	61%	0%	0%	71%	29%						
	PEAK HR FACTOR		0.000			0.893			0.851			0.732		0.892					
	APP/DEPART	0	/	429	839	/	0	531	/	686	782	/	1,037	0					
PM	4:00 PM	0	0	0	57	0	71	140	119	0	0	120	85	592	0	0	0	0	0
	4:15 PM	1	0	0	57	0	91	158	101	1	0	102	74	585	0	0	0	0	0
	4:30 PM	0	0	0	51	0	74	140	109	0	1	131	111	617	0	0	1	0	1
	4:45 PM	1	0	0	60	0	69	126	132	0	0	108	109	605	0	0	1	0	1
	5:00 PM	0	0	0	78	0	76	148	133	0	2	141	103	681	0	0	0	1	1
	5:15 PM	0	0	1	74	1	75	161	130	0	0	111	113	666	0	0	0	0	0
	5:30 PM	0	0	0	53	0	49	116	108	0	1	136	112	575	0	0	0	1	1
	5:45 PM	0	0	0	56	0	59	146	108	0	0	119	84	572	0	1	0	0	1
	VOLUMES	2	0	1	486	1	564	1,135	940	1	4	968	791	4,893	0	1	2	2	5
	APPROACH %	67%	0%	33%	46%	0%	54%	55%	45%	0%	0%	55%	45%						
	APP/DEPART	3	/	1,925	1,051	/	4	2,076	/	1,428	1,763	/	1,536	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	1	0	1	263	1	294	575	504	0	3	491	436	2,569					
	APPROACH %	50%	0%	50%	47%	0%	53%	53%	47%	0%	0%	53%	47%						
	PEAK HR FACTOR		0.500			0.906			0.927			0.945		0.943					
	APP/DEPART	2	/	1,009	558	/	3	1,079	/	769	930	/	788	0					

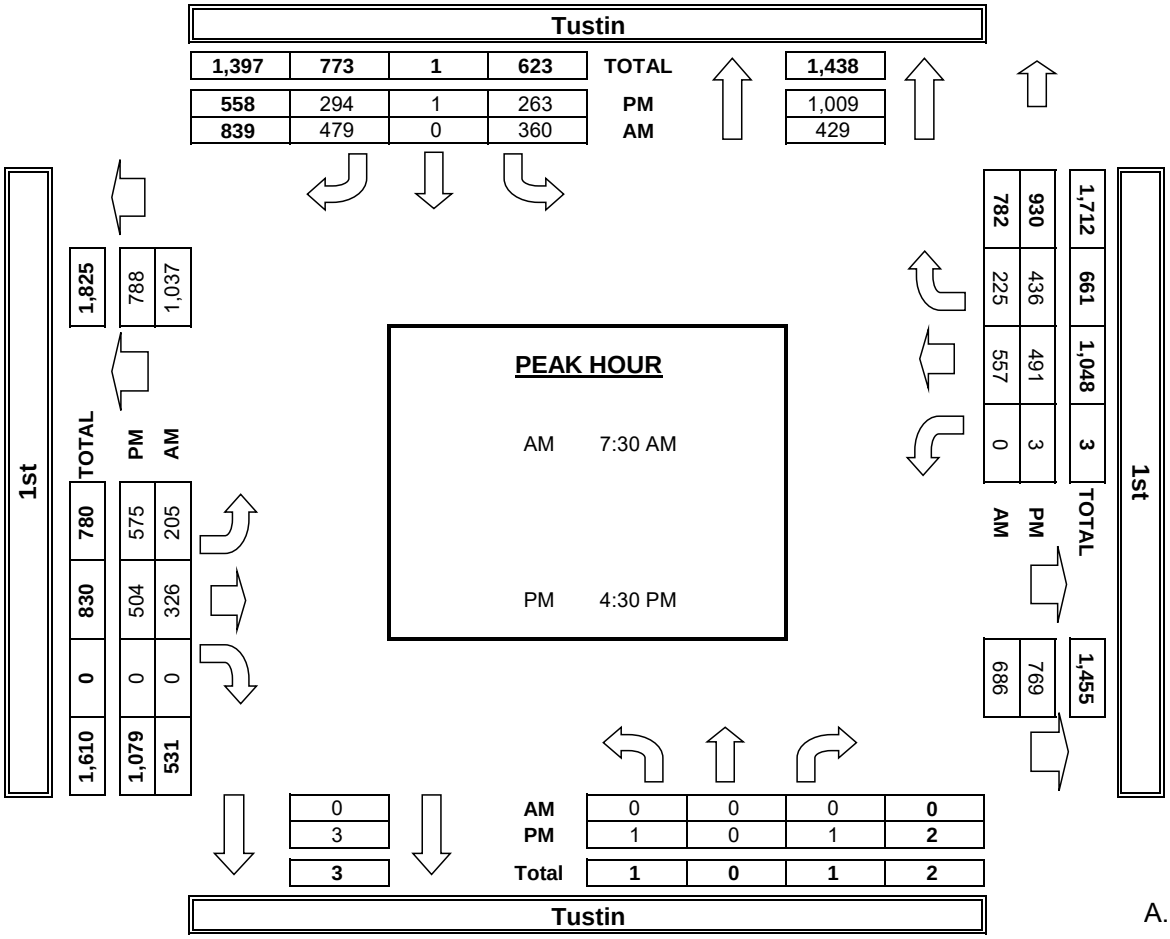


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

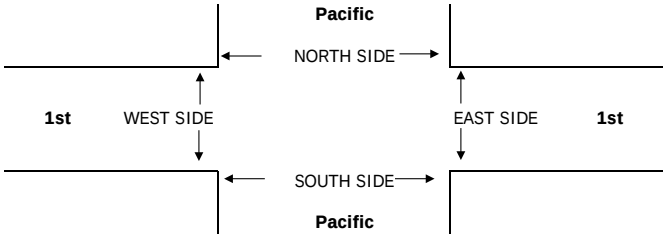
DATE:				
Tue, Mar 8, 16	LOCATION:	Tustin	PROJECT #:	SC0878
	NORTH & SOUTH:	Pacific	LOCATION #:	4
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W ▲ N S ▼ E ►

☑ Add U-Turns to Left Turns

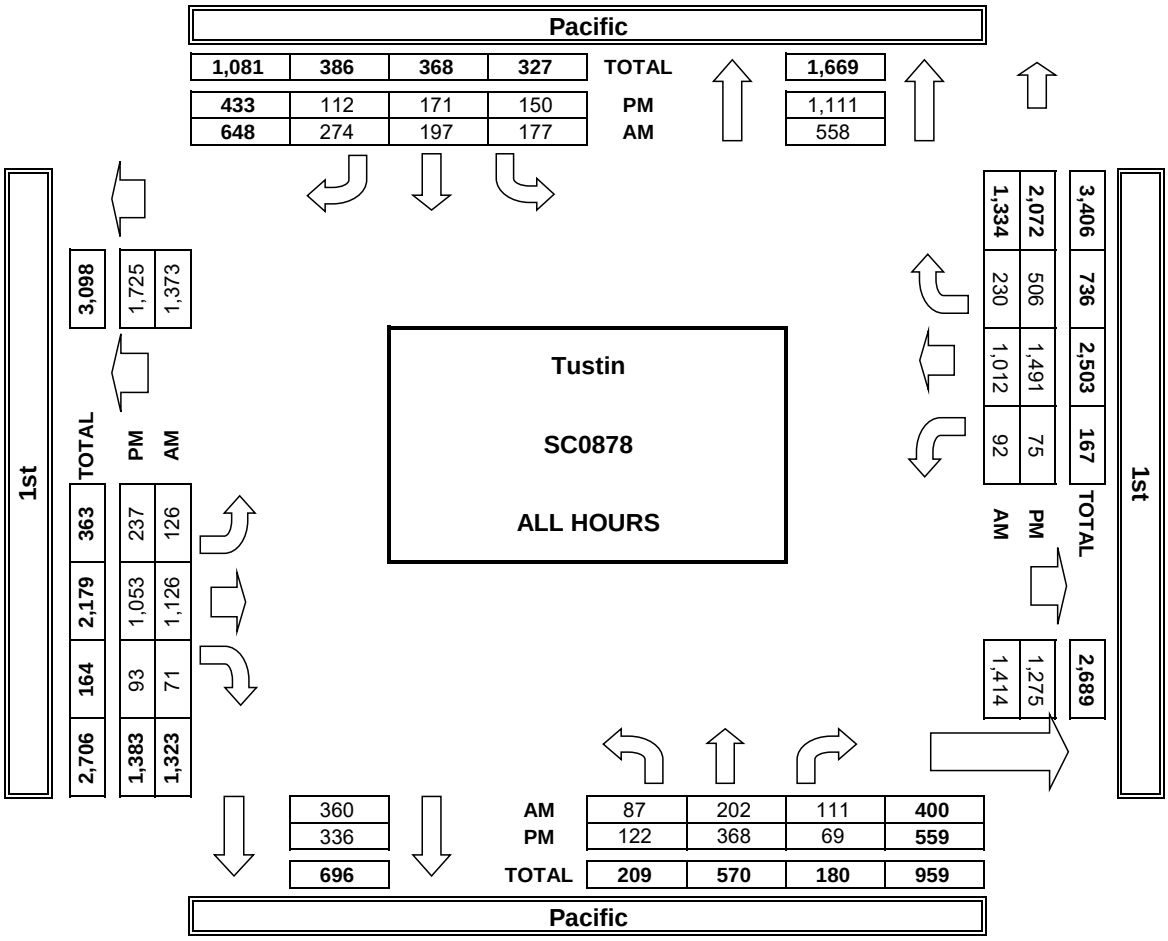
		NORTHBOUND Pacific			SOUTHBOUND Pacific			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 1	NR 1	SL 1	ST 1	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	14	25	10	9	20	19	10	121	7	7	64	20	326	0	0	0	0	0
	7:15 AM	13	21	27	10	20	28	19	170	8	7	112	26	461	0	0	0	0	0
	7:30 AM	10	38	19	31	15	43	29	177	12	22	173	35	604	0	0	0	0	0
	7:45 AM	12	29	14	31	43	46	8	162	10	15	183	31	584	0	0	0	0	0
	8:00 AM	9	28	8	21	24	37	18	143	12	14	154	37	505	0	0	0	0	0
	8:15 AM	11	24	12	25	31	34	13	121	8	11	135	30	455	0	0	0	0	0
	8:30 AM	10	22	8	20	23	36	12	109	8	7	104	30	389	0	0	0	0	0
	8:45 AM	8	15	13	30	21	31	17	123	6	9	87	21	381	0	0	0	0	0
	VOLUMES	87	202	111	177	197	274	126	1,126	71	92	1,012	230	3,705	0	0	0	0	0
	APPROACH %	22%	51%	28%	27%	30%	42%	10%	85%	5%	7%	76%	17%						
	APP/DEPART	400	/	558	648	/	360	1,323	/	1,414	1,334	/	1,373	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	44	116	68	93	102	154	74	652	42	58	622	129	2,154					
	APPROACH %	19%	51%	30%	27%	29%	44%	10%	85%	5%	7%	77%	16%						
	PEAK HR FACTOR		0.851			0.727			0.881			0.879		0.892					
	APP/DEPART	228	/	319	349	/	202	768	/	813	809	/	820	0					
PM	4:00 PM	11	38	5	19	18	7	32	112	14	8	136	41	441	0	0	0	0	0
	4:15 PM	12	43	11	21	22	13	26	136	14	10	169	56	533	0	0	0	0	0
	4:30 PM	20	43	8	21	24	11	32	115	11	7	172	66	530	0	0	0	0	0
	4:45 PM	9	38	6	14	22	13	23	113	13	8	172	76	507	0	0	0	0	0
	5:00 PM	16	60	8	24	22	16	36	168	9	8	186	67	620	0	0	0	0	0
	5:15 PM	20	51	11	19	17	18	34	136	11	8	224	74	623	0	0	0	0	0
	5:30 PM	18	45	9	15	23	15	26	143	12	11	227	66	610	0	0	0	0	0
	5:45 PM	16	50	11	17	23	19	28	130	9	15	205	60	583	0	0	0	3	3
	VOLUMES	122	368	69	150	171	112	237	1,053	93	75	1,491	506	4,447	0	0	0	3	3
	APPROACH %	22%	66%	12%	35%	39%	26%	17%	76%	7%	4%	72%	24%						
	APP/DEPART	559	/	1,111	433	/	336	1,383	/	1,275	2,072	/	1,725	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	70	206	39	75	85	68	124	577	41	42	842	267	2,436					
	APPROACH %	22%	65%	12%	33%	37%	30%	17%	78%	6%	4%	73%	23%						
	PEAK HR FACTOR		0.938			0.919			0.871			0.940		0.978					
	APP/DEPART	315	/	597	228	/	165	742	/	694	1,151	/	980	0					

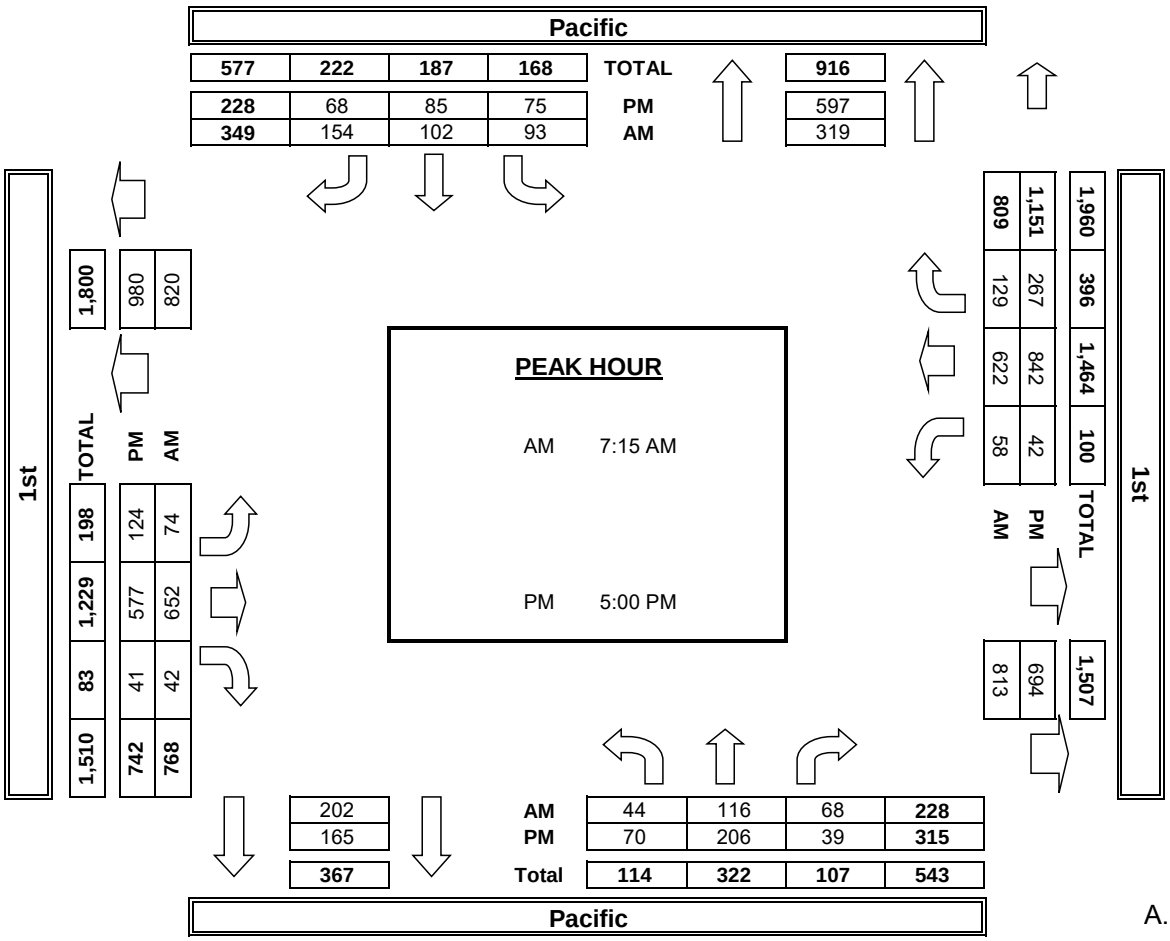


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

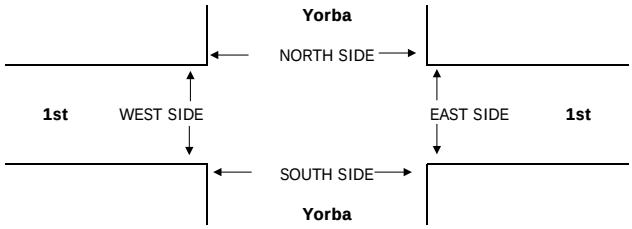
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Yorba	LOCATION #:	7
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

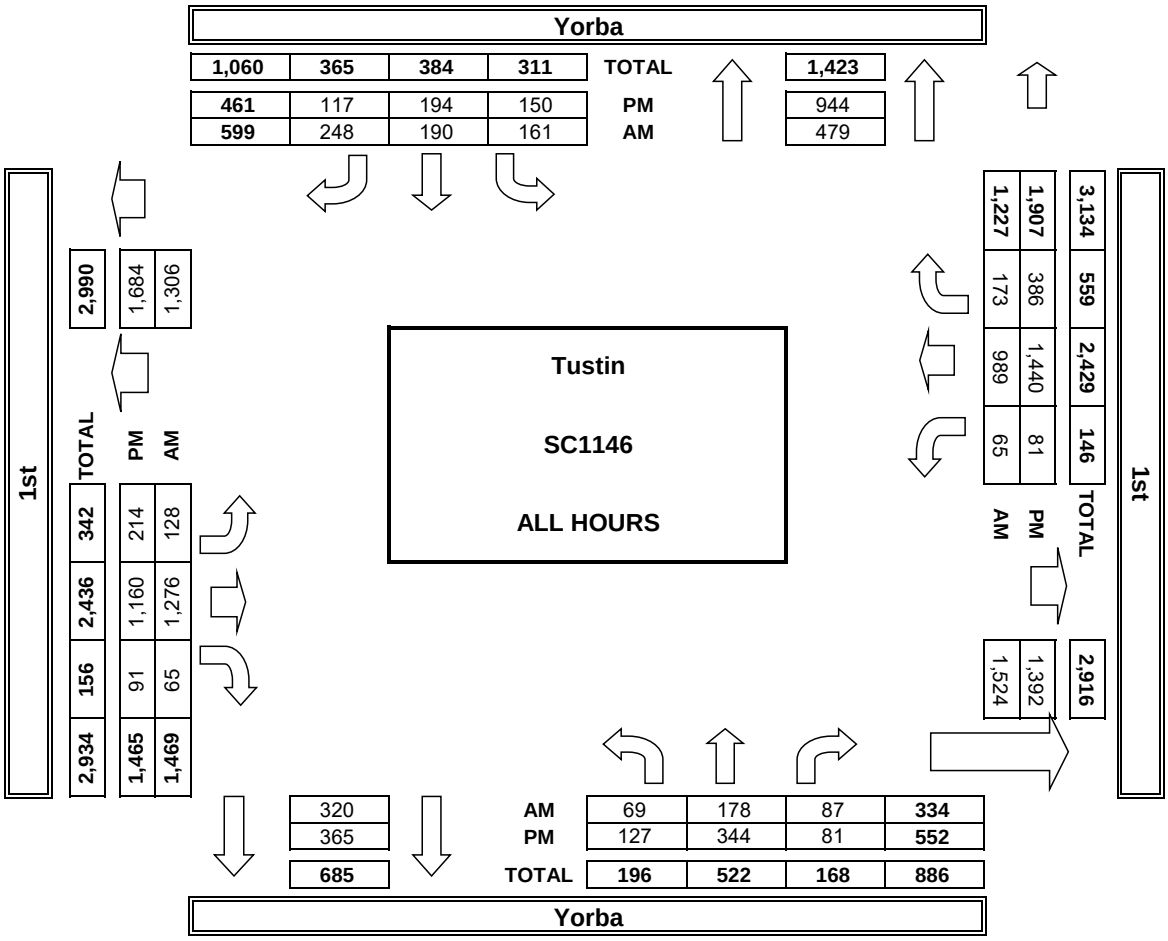
		NORTHBOUND Yorba			SOUTHBOUND Yorba			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 1	NR 1	SL 1	ST 1	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	11	21	8	18	20	20	15	136	6	2	57	20	334	0	0	0	0	0
	7:15 AM	12	23	15	18	33	26	16	188	6	7	97	19	460	0	0	0	0	0
	7:30 AM	9	24	20	16	22	28	30	199	8	15	140	31	542	0	0	0	0	0
	7:45 AM	9	29	15	19	20	49	19	148	8	13	221	19	569	0	0	0	0	0
	8:00 AM	6	25	9	24	29	31	14	149	6	13	144	21	471	0	0	0	0	0
	8:15 AM	8	16	11	17	26	34	15	142	7	6	135	21	438	0	0	0	0	0
	8:30 AM	6	17	3	16	19	32	10	159	11	2	101	24	400	0	0	0	0	0
	8:45 AM	8	23	6	33	21	28	9	155	13	7	94	18	415	0	0	0	0	0
	VOLUMES	69	178	87	161	190	248	128	1,276	65	65	989	173	3,629	0	0	0	0	0
	APPROACH %	21%	53%	26%	27%	32%	41%	9%	87%	4%	5%	81%	14%						
	APP/DEPART	334	/	479	599	/	320	1,469	/	1,524	1,227	/	1,306	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	36	101	59	77	104	134	79	684	28	48	602	90	2,042					
	APPROACH %	18%	52%	30%	24%	33%	43%	10%	86%	4%	6%	81%	12%						
	PEAK HR FACTOR		0.925			0.895			0.834			0.731		0.897					
	APP/DEPART	196	/	270	315	/	180	791	/	820	740	/	772	0					
PM	4:00 PM	15	35	10	19	19	17	21	147	13	10	164	40	510	0	0	0	0	0
	4:15 PM	14	29	16	20	31	18	17	129	11	14	172	42	513	0	0	0	1	1
	4:30 PM	11	56	11	24	22	18	18	132	9	14	172	49	536	0	0	0	0	0
	4:45 PM	20	37	10	20	18	16	25	149	13	14	183	42	547	0	0	0	0	0
	5:00 PM	12	49	13	15	23	12	39	170	7	9	197	55	601	0	0	0	0	0
	5:15 PM	15	41	8	15	25	12	29	172	15	4	180	56	572	0	0	0	0	0
	5:30 PM	25	51	7	14	25	8	38	128	7	12	213	54	582	0	0	0	0	0
	5:45 PM	15	46	6	23	31	16	27	133	16	4	159	48	524	0	0	0	0	0
	VOLUMES	127	344	81	150	194	117	214	1,160	91	81	1,440	386	4,385	0	0	0	1	1
	APPROACH %	23%	62%	15%	33%	42%	25%	15%	79%	6%	4%	76%	20%						
	APP/DEPART	552	/	944	461	/	365	1,465	/	1,392	1,907	/	1,684	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	72	178	38	64	91	48	131	619	42	39	773	207	2,302					
	APPROACH %	25%	62%	13%	32%	45%	24%	17%	78%	5%	4%	76%	20%						
	PEAK HR FACTOR		0.867			0.940			0.917			0.913		0.958					
	APP/DEPART	288	/	516	203	/	172	792	/	721	1,019	/	893	0					

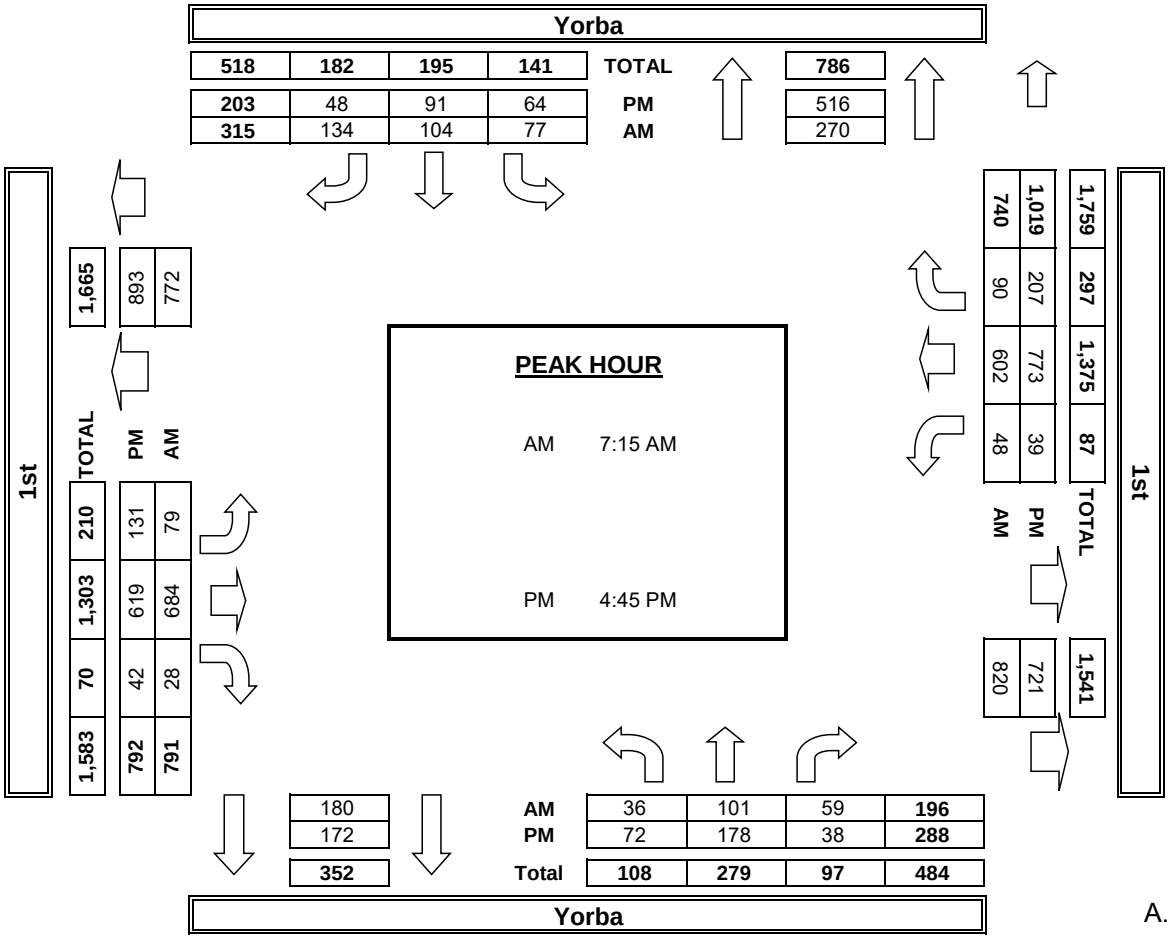


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

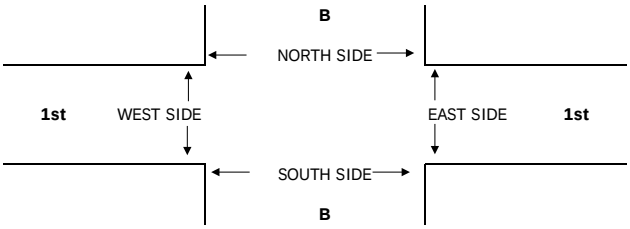
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Wed, Dec 7, 16	NORTH & SOUTH:	B	LOCATION #:	8
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

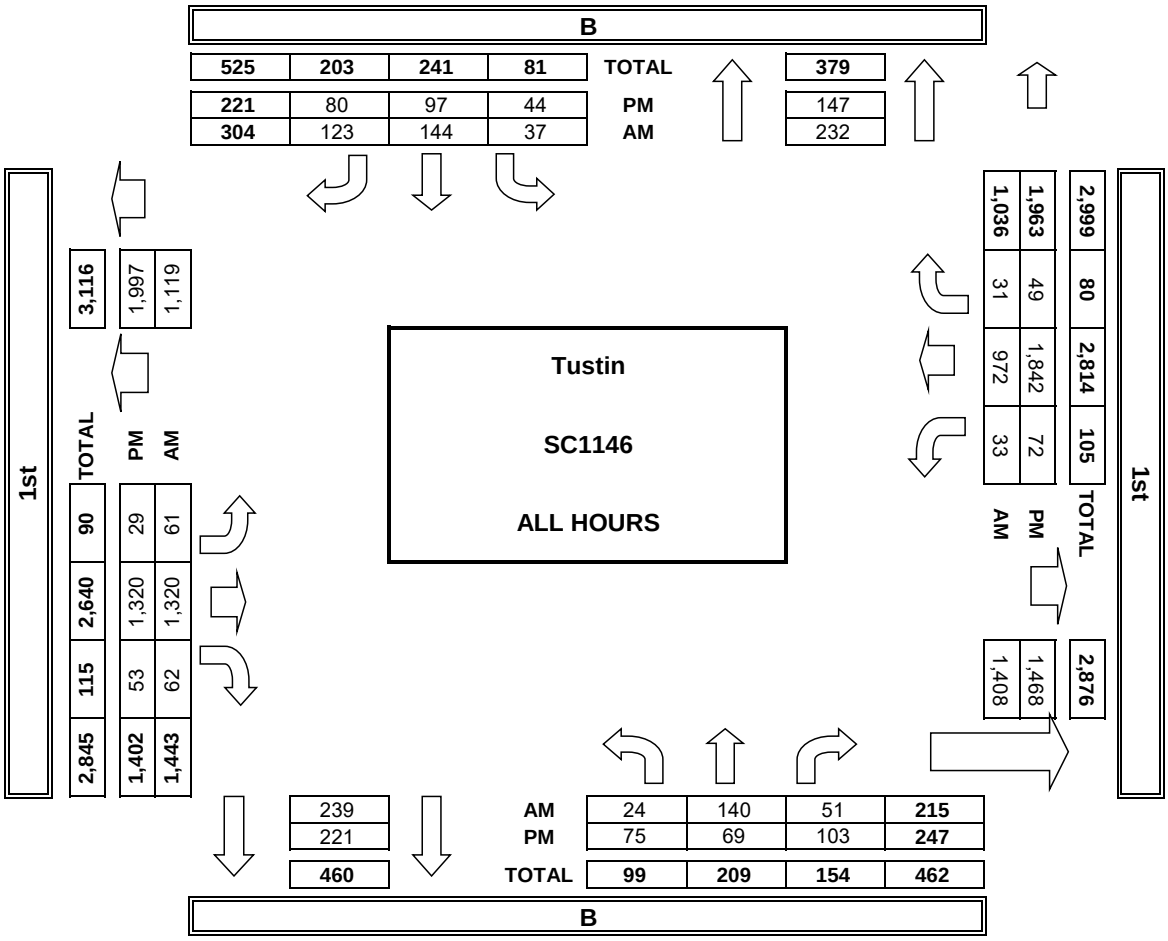
		NORTHBOUND B			SOUTHBOUND B			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0.5	ST 0.5	SR 1	EL 1	ET 2	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	2	7	3	1	3	9	3	122	5	0	55	1	211	0	0	0	0	0
	7:15 AM	3	11	6	4	10	7	8	142	7	3	80	4	285	0	0	0	0	0
	7:30 AM	6	27	3	3	15	18	8	139	13	2	106	6	346	0	0	0	0	0
	7:45 AM	4	60	6	3	44	29	24	178	14	3	129	5	499	0	0	0	0	0
	8:00 AM	0	11	10	7	28	20	4	159	8	8	173	2	430	0	0	0	0	0
	8:15 AM	2	8	10	5	15	17	3	195	3	5	150	2	415	0	0	0	0	0
	8:30 AM	2	11	10	5	20	16	4	193	8	6	145	5	425	0	0	0	0	0
	8:45 AM	5	5	3	9	9	7	7	192	4	6	134	6	387	0	0	0	0	0
	VOLUMES	24	140	51	37	144	123	61	1,320	62	33	972	31	2,998	0	0	0	0	0
	APPROACH %	11%	65%	24%	12%	47%	40%	4%	91%	4%	3%	94%	3%						
	APP/DEPART	215	/	232	304	/	239	1,443	/	1,408	1,036	/	1,119	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	8	90	36	20	107	82	35	725	33	22	597	14	1,769					
	APPROACH %	6%	67%	27%	10%	51%	39%	4%	91%	4%	3%	94%	2%						
	PEAK HR FACTOR		0.479			0.688			0.918			0.865		0.886					
	APP/DEPART	134	/	139	209	/	162	793	/	781	633	/	687	0					
PM	4:00 PM	8	9	4	1	7	5	2	138	5	5	175	5	364	0	0	0	0	0
	4:15 PM	6	8	7	4	10	9	2	146	9	5	212	5	423	0	0	0	0	0
	4:30 PM	13	11	16	7	9	5	2	141	6	11	223	4	448	0	0	0	0	0
	4:45 PM	4	4	15	3	17	13	3	154	8	8	229	8	466	0	0	0	1	1
	5:00 PM	11	7	12	5	10	15	5	190	4	9	254	9	531	0	0	0	0	0
	5:15 PM	17	13	21	9	13	14	5	205	13	12	271	8	601	0	0	0	0	0
	5:30 PM	11	9	11	5	16	14	6	201	7	10	244	3	537	0	0	0	0	0
	5:45 PM	5	8	17	10	15	5	4	145	1	12	234	7	463	0	0	0	0	0
	VOLUMES	75	69	103	44	97	80	29	1,320	53	72	1,842	49	3,833	0	0	0	1	1
	APPROACH %	30%	28%	42%	20%	44%	36%	2%	94%	4%	4%	94%	2%						
	APP/DEPART	247	/	147	221	/	221	1,402	/	1,468	1,963	/	1,997	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	43	33	59	22	56	56	19	750	32	39	998	28	2,135					
	APPROACH %	32%	24%	44%	16%	42%	42%	2%	94%	4%	4%	94%	3%						
	PEAK HR FACTOR		0.662			0.931			0.898			0.915		0.888					
	APP/DEPART	135	/	80	134	/	126	801	/	832	1,065	/	1,097	0					

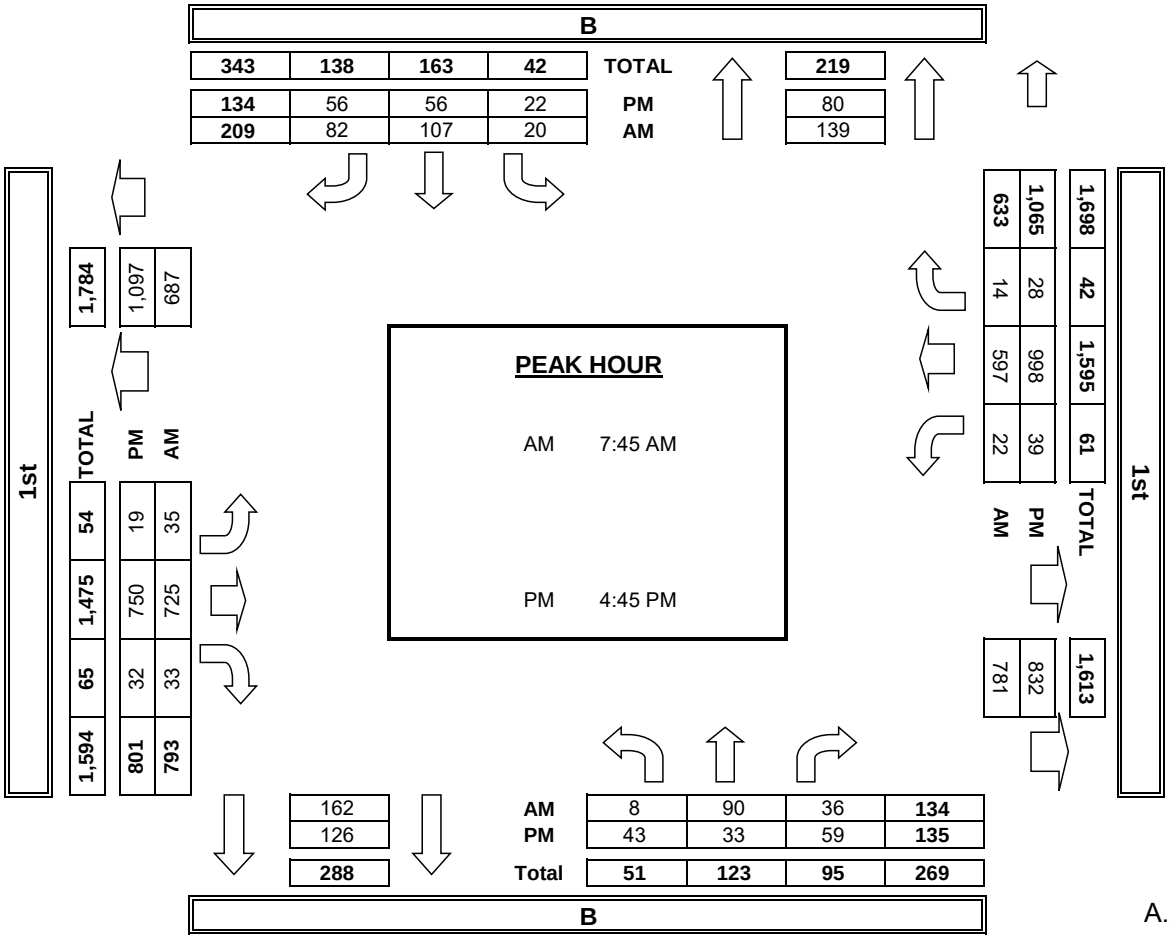


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

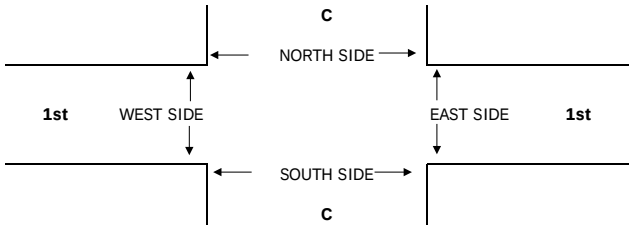
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Wed, Dec 7, 16	NORTH & SOUTH:	C	LOCATION #:	9
	EAST & WEST:	1st	CONTROL:	STOP N/S

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

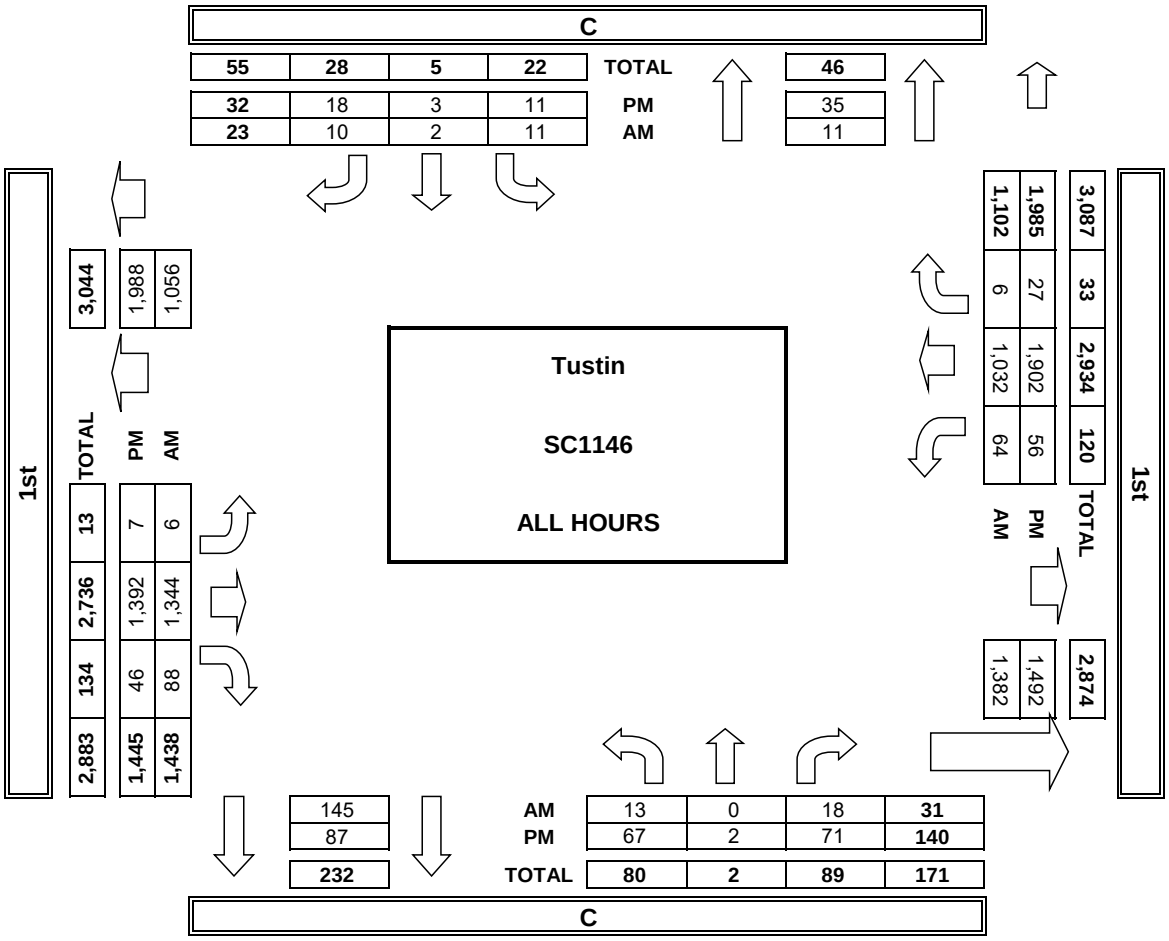
		NORTHBOUND C			SOUTHBOUND C			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	2	0	1	0	120	9	3	47	0	182	0	0	0	1	1
	7:15 AM	1	0	1	0	0	0	2	151	12	6	91	0	264	0	0	0	2	2
	7:30 AM	0	0	1	2	1	2	1	134	8	11	103	0	263	0	0	1	2	3
	7:45 AM	2	0	1	1	1	2	0	169	9	6	145	0	336	0	0	0	0	0
	8:00 AM	1	0	2	1	0	3	1	156	14	5	164	1	348	0	0	0	2	2
	8:15 AM	1	0	3	1	0	2	1	202	7	7	175	0	399	0	0	0	0	0
	8:30 AM	5	0	9	2	0	0	0	211	14	9	151	2	403	0	0	0	1	1
	8:45 AM	3	0	1	2	0	0	1	201	15	17	156	3	399	0	0	0	1	1
	VOLUMES	13	0	18	11	2	10	6	1,344	88	64	1,032	6	2,594	0	0	1	9	10
	APPROACH %	42%	0%	58%	48%	9%	43%	0%	93%	6%	6%	94%	1%						
	APP/DEPART	31	/	11	23	/	145	1,438	/	1,382	1,102	/	1,056	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	10	0	15	6	0	5	3	770	50	38	646	6	1,549					
	APPROACH %	40%	0%	60%	55%	0%	45%	0%	94%	6%	6%	94%	1%						
	PEAK HR FACTOR		0.446			0.688			0.914			0.948		0.961					
	APP/DEPART	25	/	9	11	/	84	823	/	795	690	/	661	0					
PM	4:00 PM	8	0	11	3	0	1	2	124	4	8	180	6	347	0	0	1	4	5
	4:15 PM	6	0	7	3	1	5	2	144	6	8	194	1	377	0	0	0	4	4
	4:30 PM	18	0	8	0	0	1	2	177	4	6	239	3	458	0	0	0	1	1
	4:45 PM	7	1	8	1	0	2	1	157	12	8	232	6	435	0	0	0	1	1
	5:00 PM	11	0	9	1	1	2	0	188	5	9	250	4	480	0	0	0	3	3
	5:15 PM	5	0	10	1	0	2	0	208	3	3	270	2	504	0	0	0	0	0
	5:30 PM	6	1	13	0	0	3	0	224	3	7	278	1	536	0	0	0	1	1
	5:45 PM	6	0	5	2	1	2	0	170	9	7	259	4	465	0	0	0	4	4
	VOLUMES	67	2	71	11	3	18	7	1,392	46	56	1,902	27	3,602	0	0	1	18	19
	APPROACH %	48%	1%	51%	34%	9%	56%	0%	96%	3%	3%	96%	1%						
	APP/DEPART	140	/	35	32	/	87	1,445	/	1,492	1,985	/	1,988	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	28	1	37	4	2	9	0	790	20	26	1,057	11	1,985					
	APPROACH %	42%	2%	56%	27%	13%	60%	0%	98%	2%	2%	97%	1%						
	PEAK HR FACTOR		0.825			0.750			0.892			0.956		0.926					
	APP/DEPART	66	/	12	15	/	40	810	/	839	1,094	/	1,094	0					

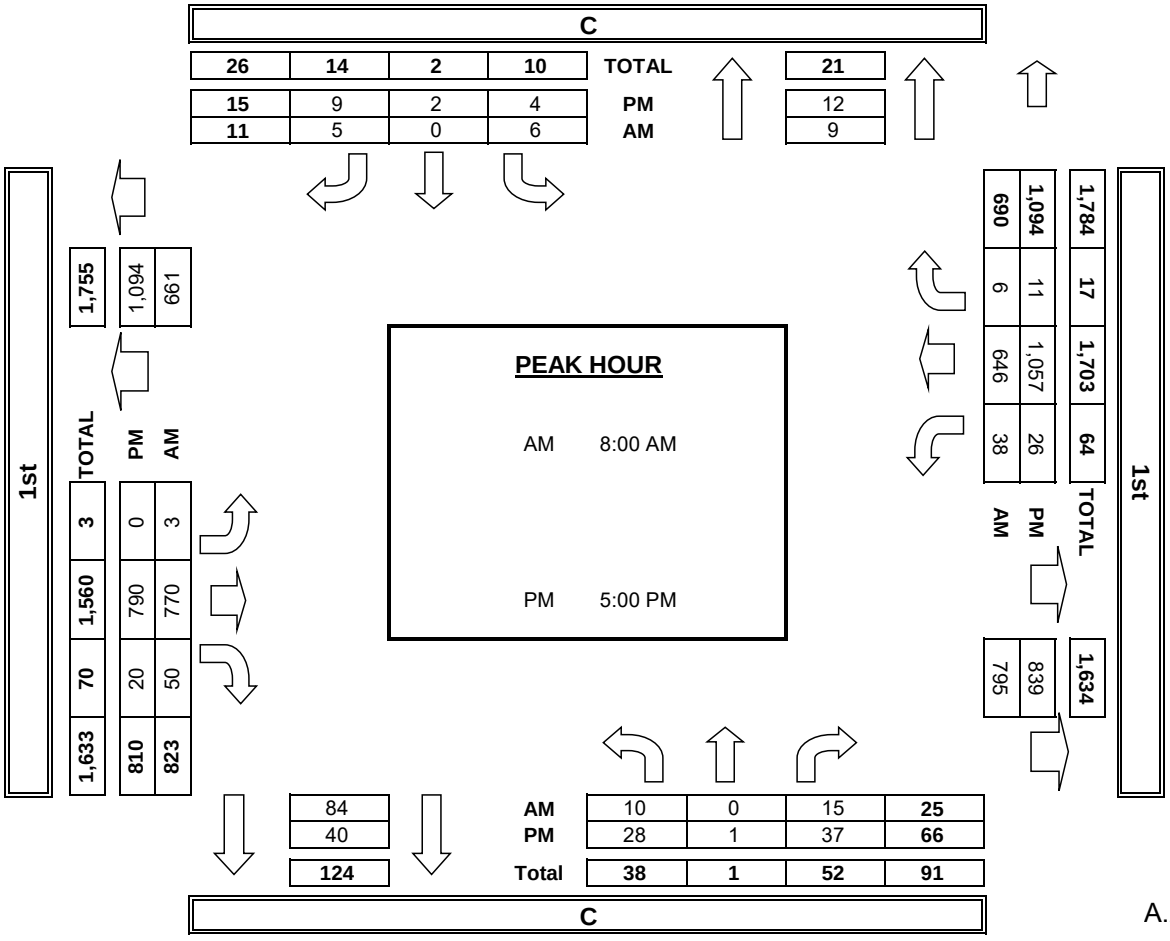


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE:				
Tue, Mar 8, 16	LOCATION:	Tustin	PROJECT #:	SC0878
	NORTH & SOUTH:	El Camino Real	LOCATION #:	3
	EAST & WEST:	1st	CONTROL:	SIGNAL

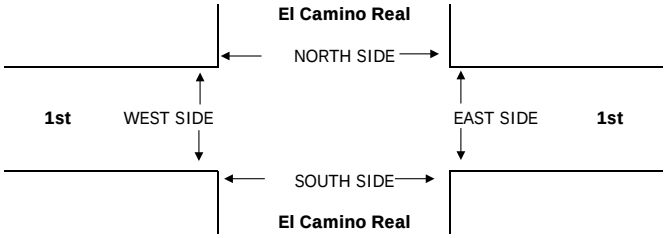
NOTES:

AM
PM
MD
OTHER
OTHER

N ▲ ◄ W E ► S ▼

☑Add U-Turns to Left Turns

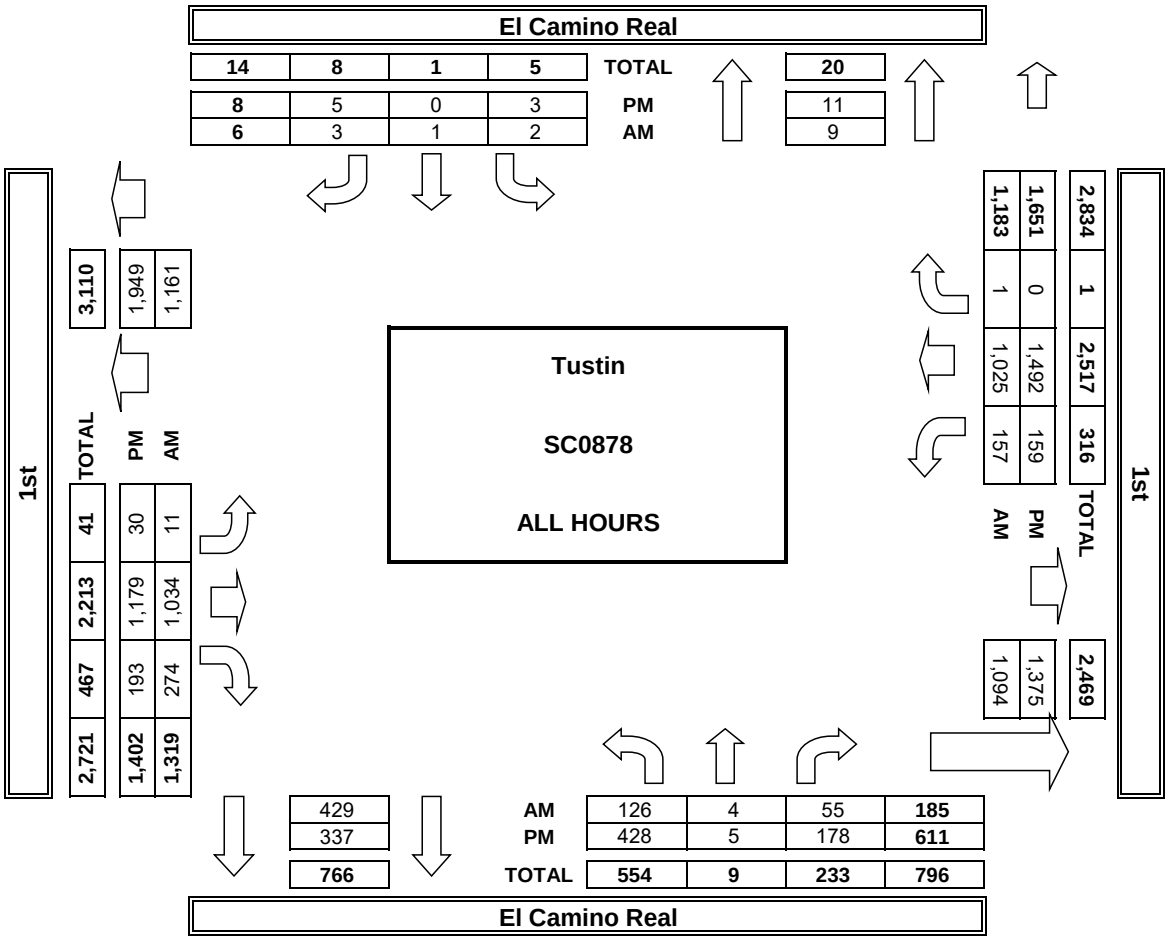
		NORTHBOUND El Camino Real			SOUTHBOUND El Camino Real			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 0	NR 1	SL 0	ST 1	SR 0	EL 1	ET 2	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	8	0	3	0	1	1	0	116	30	13	75	0	247	0	0	0	0	0
	7:15 AM	14	1	4	0	0	0	0	165	34	16	111	0	345	0	0	0	0	0
	7:30 AM	14	0	3	0	0	0	0	163	50	16	170	0	416	0	0	0	0	0
	7:45 AM	29	0	8	1	0	2	2	141	35	20	176	0	414	0	0	0	0	0
	8:00 AM	11	1	9	0	0	0	1	130	39	21	144	1	357	0	0	1	0	1
	8:15 AM	16	2	8	1	0	0	0	103	22	26	142	0	320	0	0	0	0	0
	8:30 AM	14	0	12	0	0	0	1	102	34	17	86	0	266	0	0	1	1	2
	8:45 AM	20	0	8	0	0	0	7	114	30	28	121	0	328	0	0	5	2	7
	VOLUMES	126	4	55	2	1	3	11	1,034	274	157	1,025	1	2,693	0	0	7	3	10
	APPROACH %	68%	2%	30%	33%	17%	50%	1%	78%	21%	13%	87%	0%						
	APP/DEPART	185	/	9	6	/	429	1,319	/	1,094	1,183	/	1,161	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	68	2	24	1	0	2	3	599	158	73	601	1	1,532					
	APPROACH %	72%	2%	26%	33%	0%	67%	0%	79%	21%	11%	89%	0%						
	PEAK HR FACTOR		0.635			0.250			0.892			0.861		0.921					
	APP/DEPART	94	/	5	3	/	231	760	/	624	675	/	672	0					
PM	4:00 PM	37	0	22	2	0	1	4	115	20	16	134	0	351	0	0	4	1	5
	4:15 PM	52	2	13	0	0	0	3	144	18	15	169	0	416	0	0	1	2	3
	4:30 PM	45	0	29	0	0	0	1	148	17	19	177	0	436	0	0	0	3	3
	4:45 PM	38	0	22	0	0	0	2	143	22	25	201	0	453	0	0	2	0	2
	5:00 PM	61	1	31	0	0	1	2	159	24	23	205	0	507	0	0	2	2	4
	5:15 PM	61	1	23	1	0	1	6	175	38	19	217	0	542	0	0	5	3	8
	5:30 PM	67	1	19	0	0	2	9	144	26	20	199	0	487	0	0	8	2	10
	5:45 PM	67	0	19	0	0	0	3	151	28	22	190	0	480	0	0	2	2	4
	VOLUMES	428	5	178	3	0	5	30	1,179	193	159	1,492	0	3,672	0	0	24	15	39
	APPROACH %	70%	1%	29%	38%	0%	63%	2%	84%	14%	10%	90%	0%						
	APP/DEPART	611	/	11	8	/	337	1,402	/	1,375	1,651	/	1,949	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	256	3	92	1	0	4	20	629	116	84	811	0	2,016					
	APPROACH %	73%	1%	26%	20%	0%	80%	3%	82%	15%	9%	91%	0%						
	PEAK HR FACTOR		0.944			0.625			0.873			0.948		0.930					
	APP/DEPART	351	/	6	5	/	191	765	/	731	895	/	1,088	0					

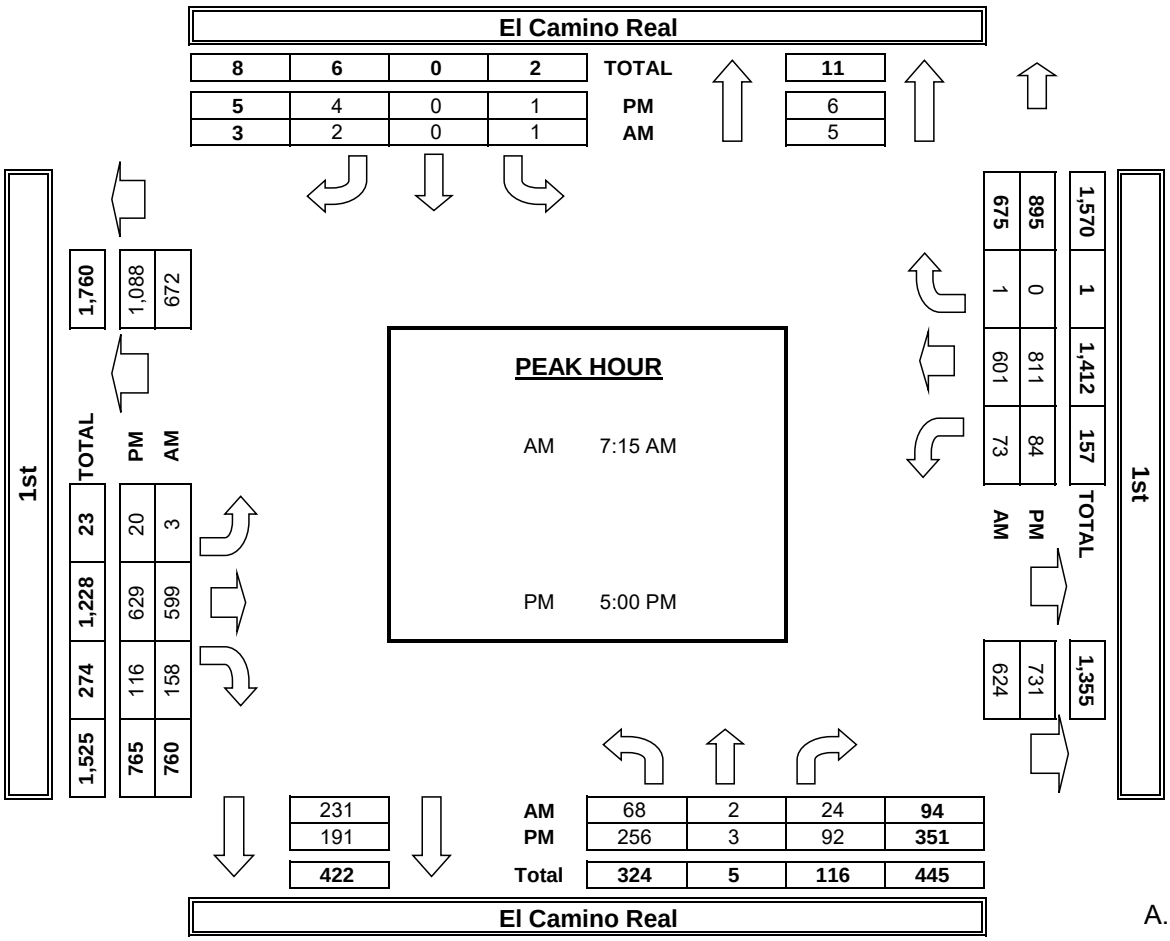


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

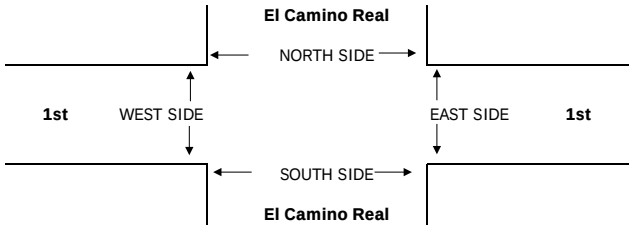
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Wed, Dec 7, 16	NORTH & SOUTH:	El Camino Real	LOCATION #:	10
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

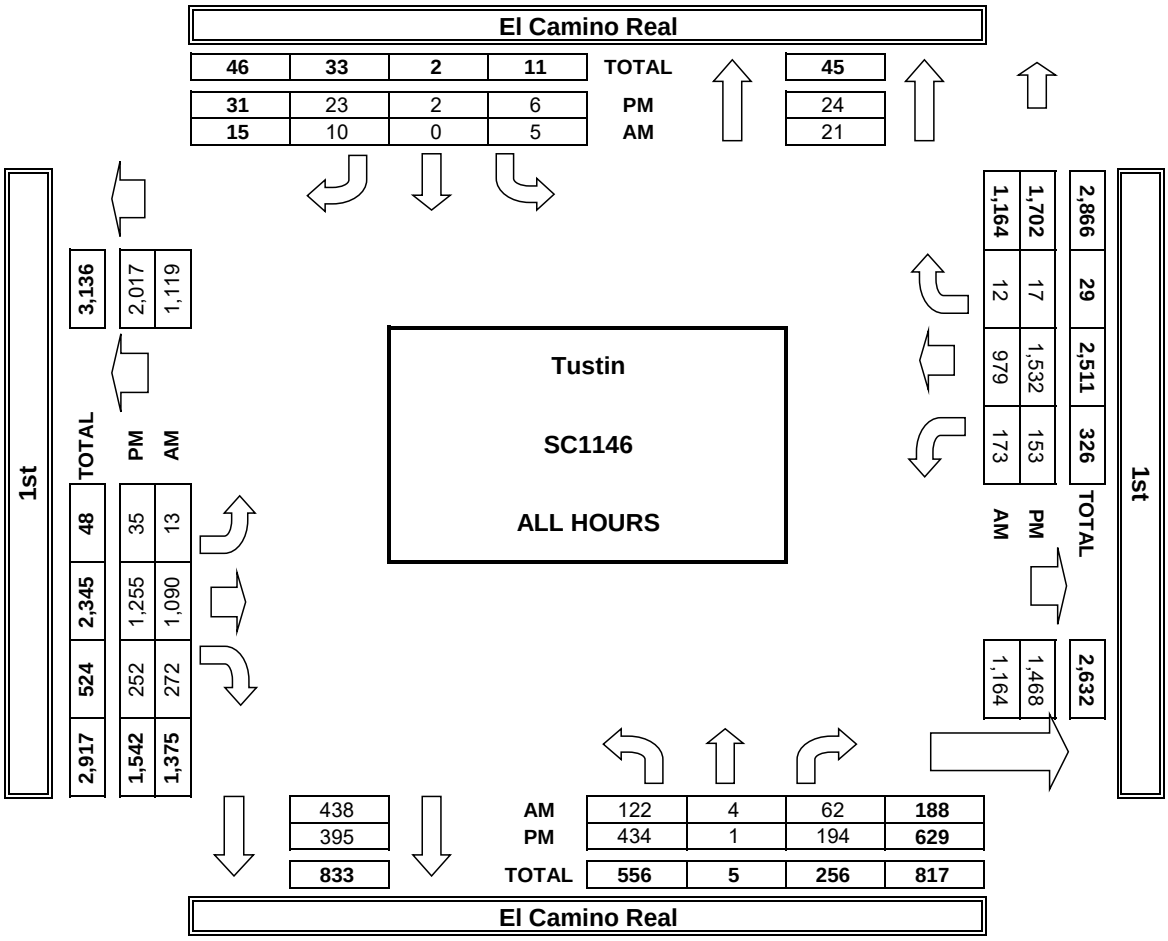
		NORTHBOUND El Camino Real			SOUTHBOUND El Camino Real			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 0	NR 1	SL 0	ST 1	SR 0	EL 1	ET 2	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	4	0	4	0	0	0	0	105	22	12	53	0	200	0	0	0	2	2
	7:15 AM	8	1	2	1	0	0	0	121	29	16	85	0	263	0	0	0	0	0
	7:30 AM	17	0	4	1	0	0	0	111	38	14	105	0	290	0	0	0	0	0
	7:45 AM	14	2	2	0	0	0	2	138	38	20	126	0	342	0	0	1	1	2
	8:00 AM	22	0	13	0	0	3	3	128	34	21	157	4	385	0	0	1	1	2
	8:15 AM	13	0	10	2	0	1	1	162	42	26	156	6	419	0	0	0	0	0
	8:30 AM	25	1	14	0	0	5	2	172	37	35	143	1	435	0	0	2	1	3
	8:45 AM	19	0	13	1	0	1	5	153	32	29	154	1	408	0	0	4	2	6
	VOLUMES	122	4	62	5	0	10	13	1,090	272	173	979	12	2,742	0	0	8	7	15
	APPROACH %	65%	2%	33%	33%	0%	67%	1%	79%	20%	15%	84%	1%						
	APP/DEPART	188	/	21	15	/	438	1,375	/	1,164	1,164	/	1,119	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	79	1	50	3	0	10	11	615	145	111	610	12	1,647					
	APPROACH %	61%	1%	38%	23%	0%	77%	1%	80%	19%	15%	83%	2%						
	PEAK HR FACTOR		0.813			0.650			0.914			0.975		0.947					
	APP/DEPART	130	/	17	13	/	252	771	/	672	733	/	706	0					
PM	4:00 PM	48	0	30	1	0	4	3	139	16	22	147	2	412	0	0	3	1	4
	4:15 PM	51	0	29	1	0	4	2	136	26	20	165	4	438	0	0	2	1	3
	4:30 PM	64	0	27	1	0	1	5	134	33	16	171	3	455	0	0	1	0	1
	4:45 PM	46	0	25	0	0	1	3	137	28	20	195	1	456	0	0	3	0	3
	5:00 PM	57	0	21	2	0	2	7	186	32	16	205	1	529	0	0	7	1	8
	5:15 PM	54	1	17	0	0	4	6	186	63	17	243	1	592	1	0	5	4	10
	5:30 PM	59	0	20	0	2	2	6	193	31	19	203	3	538	0	0	5	3	8
	5:45 PM	55	0	25	1	0	5	3	144	23	23	203	2	484	0	0	3	3	6
	VOLUMES	434	1	194	6	2	23	35	1,255	252	153	1,532	17	3,904	1	0	29	13	43
	APPROACH %	69%	0%	31%	19%	6%	74%	2%	81%	16%	9%	90%	1%						
	APP/DEPART	629	/	24	31	/	395	1,542	/	1,468	1,702	/	2,017	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	225	1	83	3	2	13	22	709	149	75	854	7	2,143					
	APPROACH %	73%	0%	27%	17%	11%	72%	3%	81%	17%	8%	91%	1%						
	PEAK HR FACTOR		0.966			0.750			0.863			0.897		0.905					
	APP/DEPART	309	/	10	18	/	216	880	/	806	936	/	1,111	0					

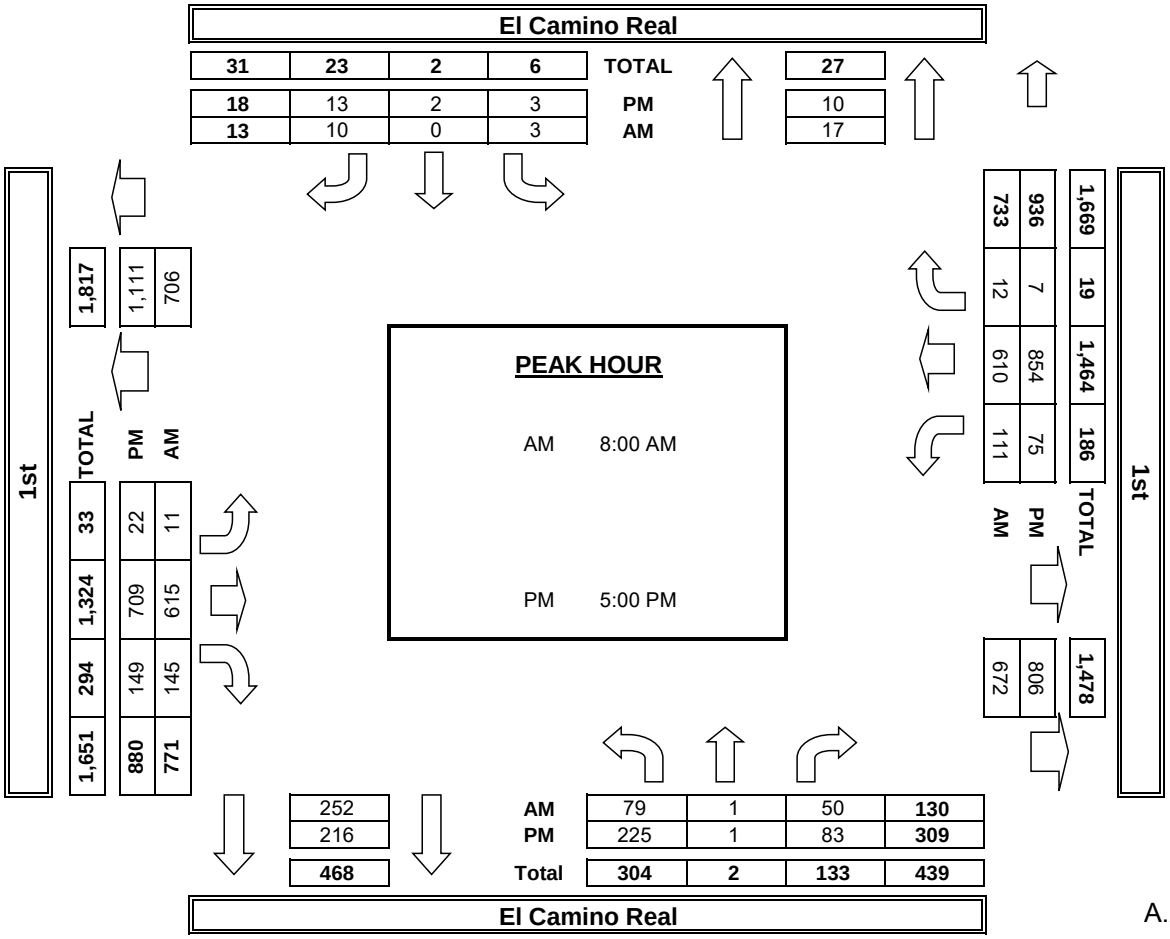


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

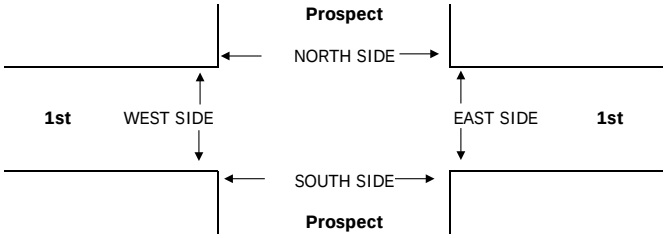
DATE:				
Tue, Mar 8, 16	LOCATION:	Tustin	PROJECT #:	SC0878
	NORTH & SOUTH:	Prospect	LOCATION #:	2
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

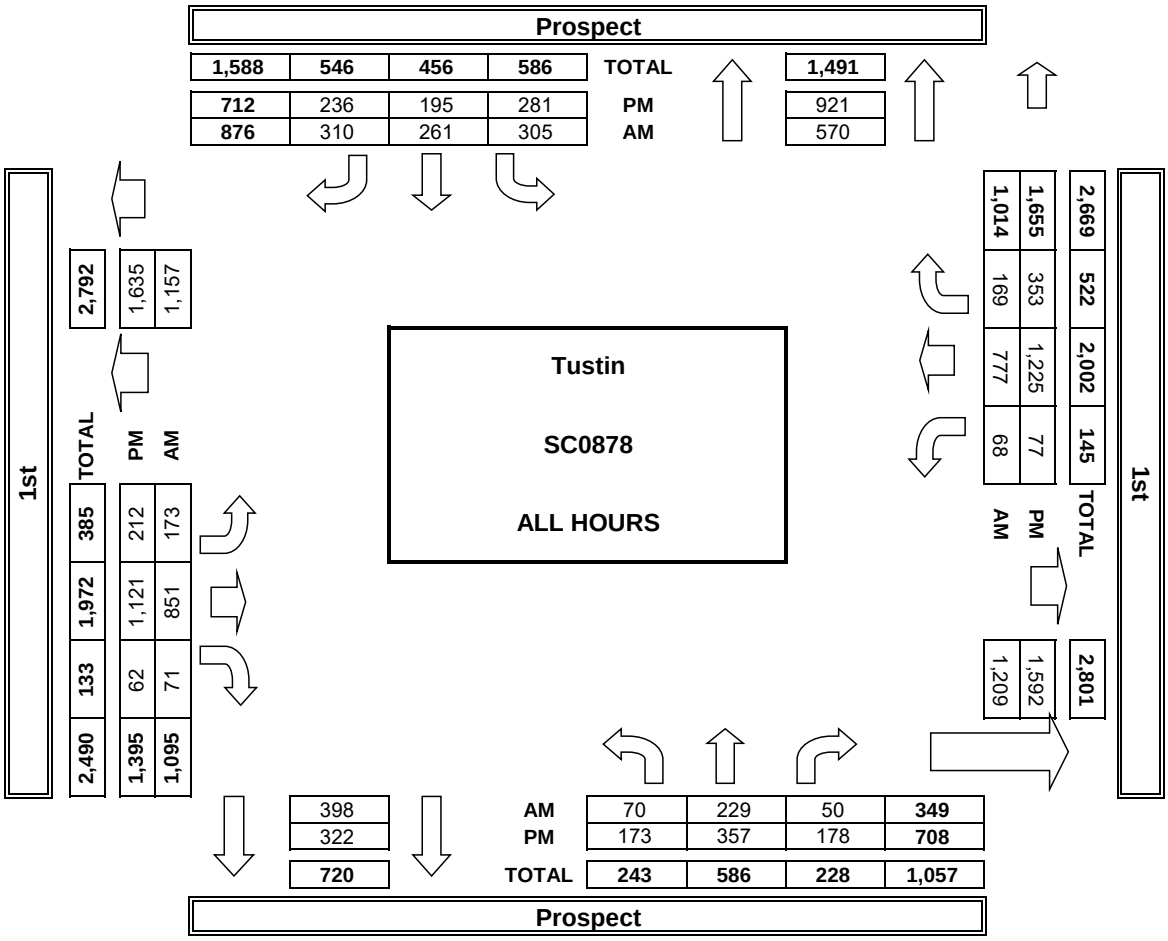
		NORTHBOUND Prospect			SOUTHBOUND Prospect			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 1.5	ST 0.5	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	4	25	6	26	24	14	8	90	6	4	61	21	289	0	0	0	0	0
	7:15 AM	7	46	2	37	28	40	35	111	6	5	77	26	420	0	0	0	0	0
	7:30 AM	19	69	6	44	38	63	66	111	7	11	104	19	557	0	0	0	0	0
	7:45 AM	5	24	5	44	43	67	20	117	10	8	118	16	477	0	0	0	1	1
	8:00 AM	6	12	2	27	26	36	11	117	13	3	123	22	398	1	0	1	0	2
	8:15 AM	5	10	8	46	29	33	9	90	12	8	131	19	400	0	0	0	1	1
	8:30 AM	10	18	10	44	35	27	6	102	5	17	62	17	353	0	0	0	0	0
	8:45 AM	14	25	11	37	38	30	18	113	12	12	101	29	440	0	0	0	1	1
	VOLUMES	70	229	50	305	261	310	173	851	71	68	777	169	3,334	1	0	1	3	5
	APPROACH %	20%	66%	14%	35%	30%	35%	16%	78%	6%	7%	77%	17%						
	APP/DEPART	349	/	570	876	/	398	1,095	/	1,209	1,014	/	1,157	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	37	151	15	152	135	206	132	456	36	27	422	83	1,852					
	APPROACH %	18%	74%	7%	31%	27%	42%	21%	73%	6%	5%	79%	16%						
	PEAK HR FACTOR		0.540			0.800			0.848			0.899		0.831					
	APP/DEPART	203	/	365	493	/	198	624	/	624	532	/	665	0					
PM	4:00 PM	11	26	25	34	26	21	25	108	6	12	117	30	441	0	0	0	0	0
	4:15 PM	17	44	32	36	25	20	25	139	7	7	147	33	532	0	0	0	0	0
	4:30 PM	27	53	21	32	17	27	18	154	9	6	135	48	547	0	0	0	1	1
	4:45 PM	33	48	28	33	33	31	26	130	10	13	159	58	602	0	0	0	0	0
	5:00 PM	23	53	30	46	19	40	26	151	11	11	161	40	611	0	0	0	2	2
	5:15 PM	14	33	11	33	21	32	40	164	8	10	186	49	601	0	0	0	4	4
	5:30 PM	27	49	14	33	33	36	18	143	7	14	160	50	584	0	0	0	3	3
	5:45 PM	21	51	17	34	21	29	34	132	4	4	160	45	552	0	0	1	2	3
	VOLUMES	173	357	178	281	195	236	212	1,121	62	77	1,225	353	4,470	0	0	1	12	13
	APPROACH %	24%	50%	25%	39%	27%	33%	15%	80%	4%	5%	74%	21%						
	APP/DEPART	708	/	921	712	/	322	1,395	/	1,592	1,655	/	1,635	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	97	183	83	145	106	139	110	588	36	48	666	197	2,398					
	APPROACH %	27%	50%	23%	37%	27%	36%	15%	80%	5%	5%	73%	22%						
	PEAK HR FACTOR		0.833			0.929			0.866			0.930		0.981					
	APP/DEPART	363	/	490	390	/	181	734	/	825	911	/	902	0					

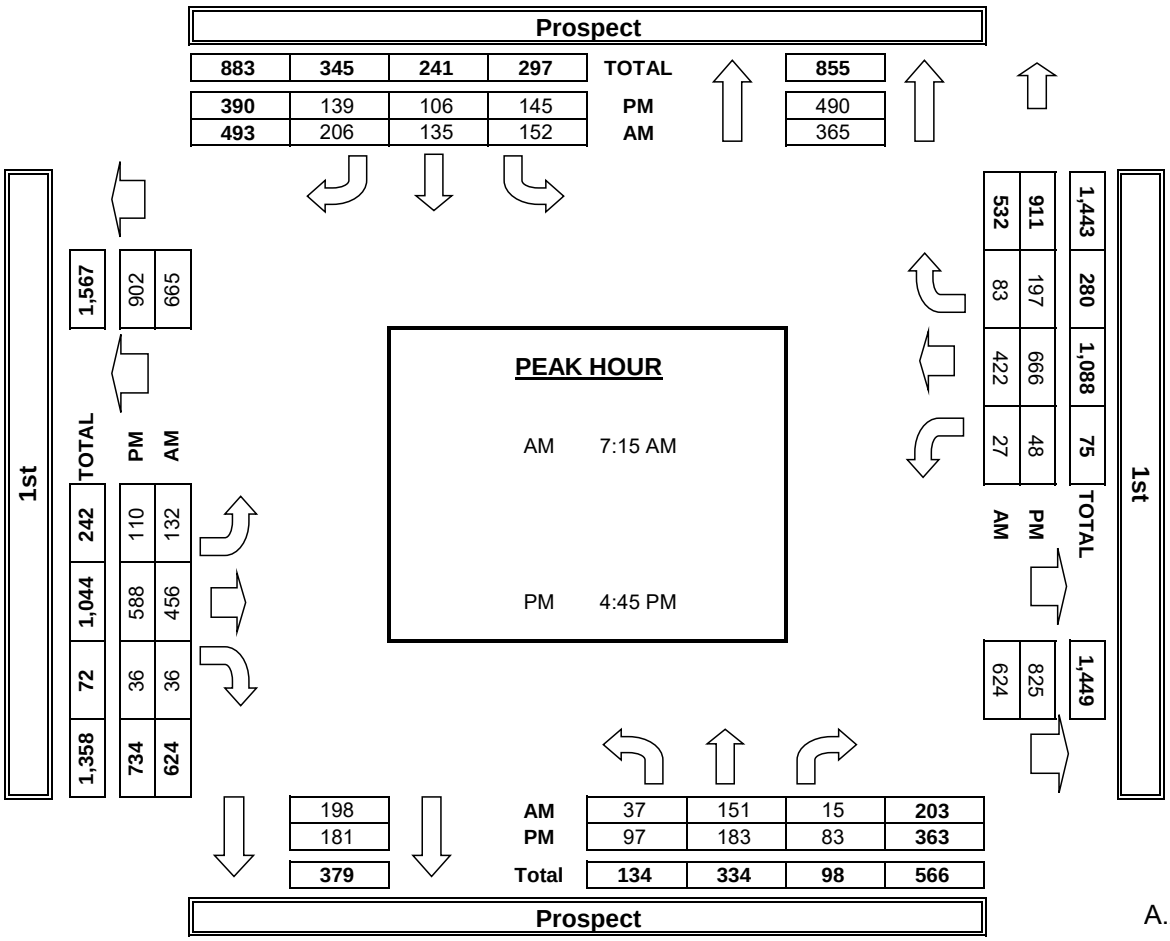


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

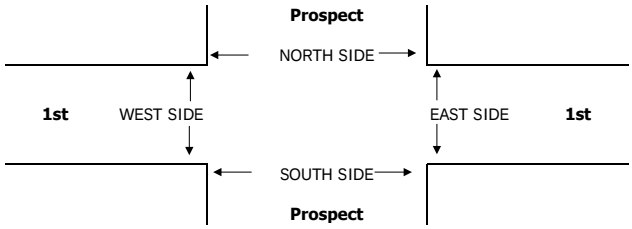
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Prospect	LOCATION #:	11
	EAST & WEST:	1st	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W, ▲ N, S ▼, E ►

☑ Add U-Turns to Left Turns

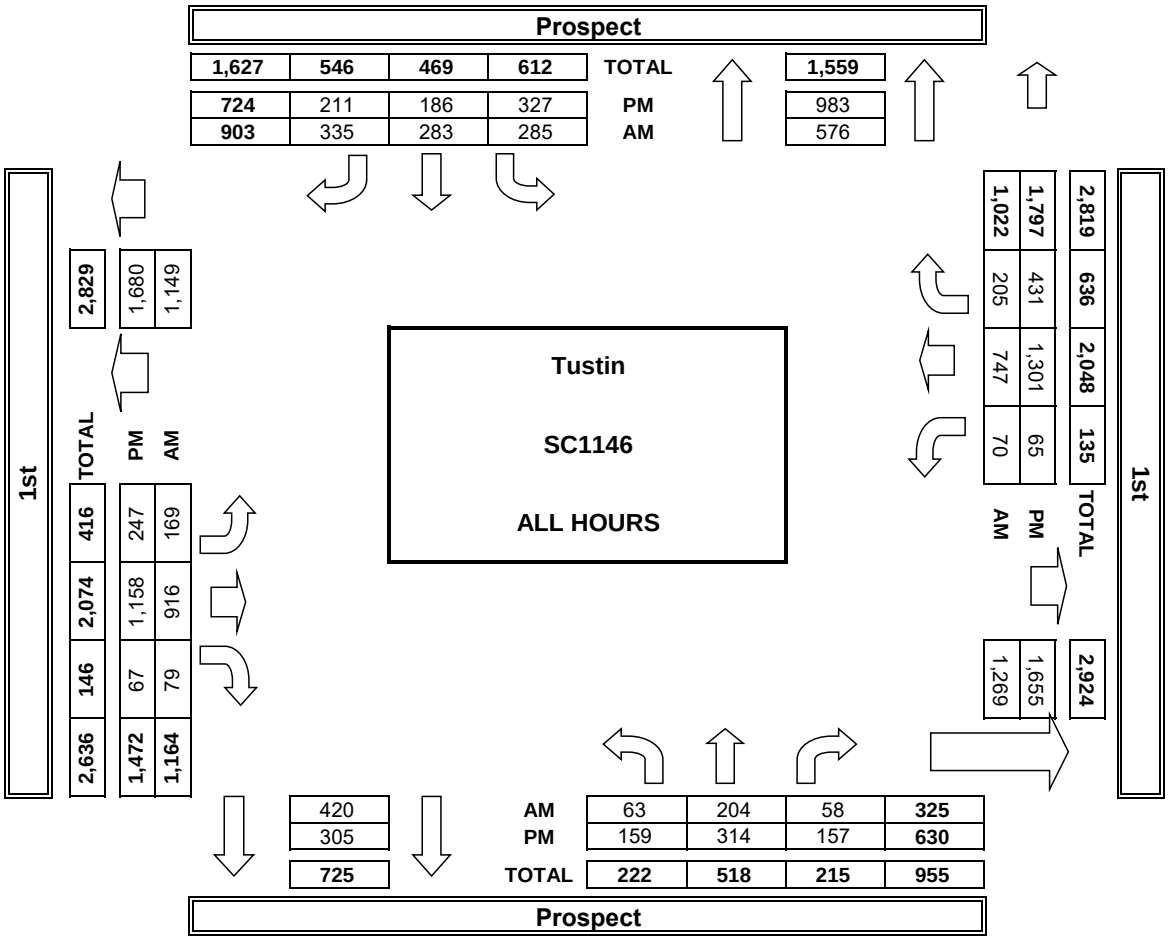
		NORTHBOUND Prospect			SOUTHBOUND Prospect			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 1.5	ST 0.5	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	4	18	4	28	24	28	12	108	10	7	49	10	302	0	0	0	1	1
	7:15 AM	8	36	6	25	33	30	35	125	8	7	70	30	413	0	0	0	2	2
	7:30 AM	9	71	7	33	23	56	62	115	10	5	110	37	538	0	0	0	1	1
	7:45 AM	13	24	5	57	57	76	15	111	3	5	138	31	535	0	0	0	2	2
	8:00 AM	3	10	8	35	34	38	14	110	13	11	104	22	402	0	0	0	0	0
	8:15 AM	9	12	8	41	37	37	17	95	13	13	109	30	421	0	2	2	3	7
	8:30 AM	8	19	10	33	31	36	7	117	13	8	74	22	378	0	0	1	2	3
	8:45 AM	9	14	10	33	44	34	7	135	9	14	93	23	425	0	0	1	1	2
	VOLUMES	63	204	58	285	283	335	169	916	79	70	747	205	3,414	0	2	4	12	18
	APPROACH %	19%	63%	18%	32%	31%	37%	15%	79%	7%	7%	73%	20%						
	APP/DEPART	325	/	576	903	/	420	1,164	/	1,269	1,022	/	1,149	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	34	117	28	166	151	207	108	431	39	34	461	120	1,896					
	APPROACH %	19%	65%	16%	32%	29%	40%	19%	75%	7%	6%	75%	20%						
	PEAK HR FACTOR		0.514			0.689			0.773			0.884		0.881					
	APP/DEPART	179	/	345	524	/	218	578	/	629	615	/	704	0					
PM	4:00 PM	14	37	20	35	21	25	30	153	10	8	144	46	543	0	0	0	1	1
	4:15 PM	12	33	25	34	18	22	27	155	8	12	184	47	577	0	0	1	1	2
	4:30 PM	14	48	30	48	26	24	32	122	9	12	151	45	561	0	0	1	0	1
	4:45 PM	35	42	31	49	25	37	27	155	21	8	162	56	648	0	0	0	6	6
	5:00 PM	24	52	20	43	22	28	37	144	4	5	168	68	615	0	0	2	0	2
	5:15 PM	18	38	14	34	24	25	32	159	7	5	166	63	585	0	0	2	1	3
	5:30 PM	22	31	11	39	26	33	30	145	4	9	189	52	591	0	0	1	1	2
	5:45 PM	20	33	6	45	24	17	32	125	4	6	137	54	503	0	0	2	3	5
	VOLUMES	159	314	157	327	186	211	247	1,158	67	65	1,301	431	4,623	0	0	9	13	22
	APPROACH %	25%	50%	25%	45%	26%	29%	17%	79%	5%	4%	72%	24%						
	APP/DEPART	630	/	983	724	/	305	1,472	/	1,655	1,797	/	1,680	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	99	163	76	165	97	123	126	603	36	27	685	239	2,439					
	APPROACH %	29%	48%	22%	43%	25%	32%	16%	79%	5%	3%	72%	25%						
	PEAK HR FACTOR		0.782			0.867			0.942			0.951		0.941					
	APP/DEPART	338	/	523	385	/	152	765	/	852	951	/	912	0					

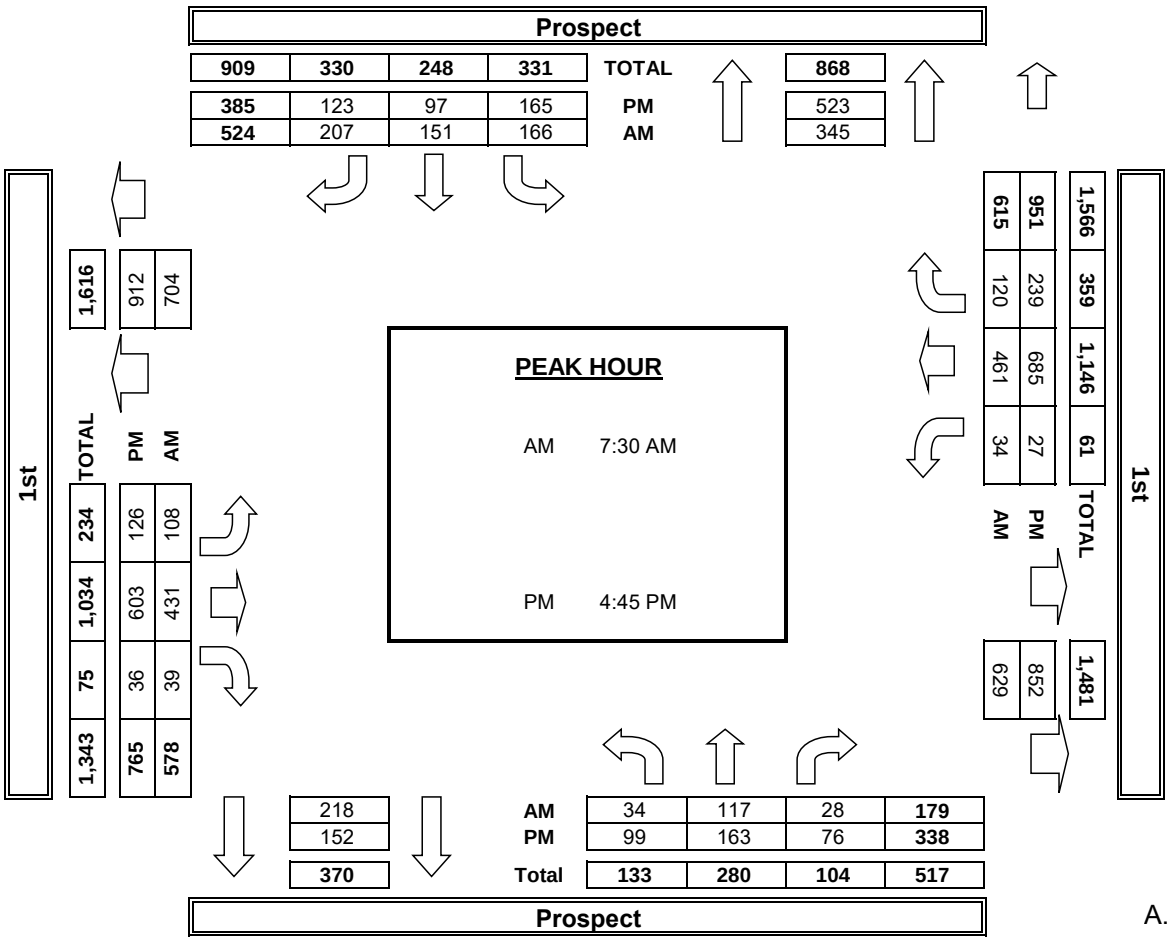


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE:				
Tue, Mar 8, 16	LOCATION:	Tustin	PROJECT #:	SC0878
	NORTH & SOUTH:	Newport	LOCATION #:	1
	EAST & WEST:	1st	CONTROL:	SIGNAL

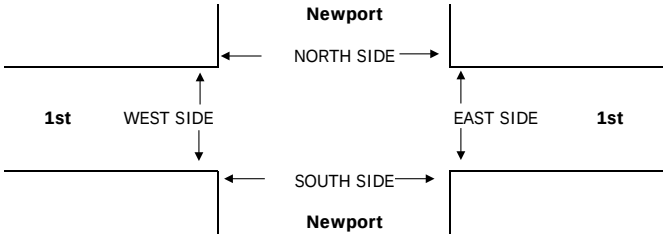
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ ◄ W E ► S ▼

☑Add U-Turns to Left Turns

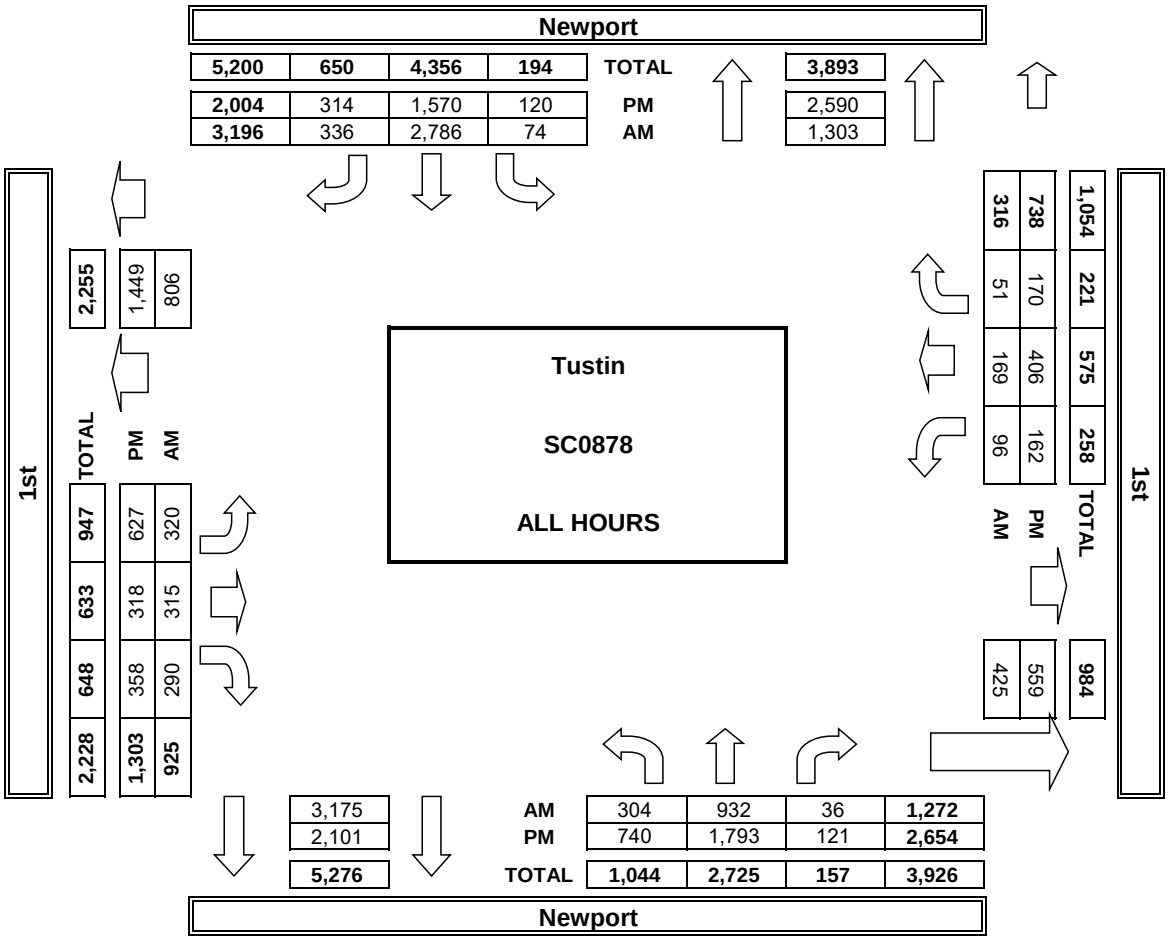
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 2	NT 2	NR 0	SL 1	ST 3	SR 0	EL 1.5	ET 1.5	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	16	73	5	4	220	29	54	40	36	10	13	7	507	0	0	0	0	0
	7:15 AM	32	121	6	8	356	35	44	40	34	14	13	4	707	0	0	0	0	0
	7:30 AM	42	150	2	11	395	38	41	54	39	10	18	9	809	1	0	0	0	1
	7:45 AM	38	142	5	15	413	37	42	46	50	12	31	6	837	1	0	0	0	1
	8:00 AM	44	137	3	5	375	42	48	29	29	16	21	11	760	0	0	0	0	0
	8:15 AM	42	106	6	12	444	65	34	33	31	9	22	5	809	0	0	0	0	0
	8:30 AM	34	87	5	9	308	38	30	39	35	13	27	1	626	0	0	0	0	0
	8:45 AM	56	116	4	10	275	52	27	34	36	12	24	8	654	1	0	0	0	1
	VOLUMES	304	932	36	74	2,786	336	320	315	290	96	169	51	5,709	3	0	0	0	3
	APPROACH %	24%	73%	3%	2%	87%	11%	35%	34%	31%	30%	53%	16%						
	APP/DEPART	1,272	/	1,303	3,196	/	3,175	925	/	425	316	/	806	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	166	535	16	43	1,627	182	165	162	149	47	92	31	3,215					
	APPROACH %	23%	75%	2%	2%	88%	10%	35%	34%	31%	28%	54%	18%						
	PEAK HR FACTOR		0.924			0.889			0.862			0.867		0.960					
	APP/DEPART	717	/	731	1,852	/	1,825	476	/	221	170	/	438	0					
PM	4:00 PM	83	183	14	15	211	38	65	34	35	15	27	21	741	1	0	0	0	1
	4:15 PM	86	194	15	19	172	35	69	29	41	12	37	17	726	0	0	0	0	0
	4:30 PM	104	228	9	18	174	23	76	43	51	14	57	23	820	2	0	0	0	2
	4:45 PM	87	228	21	19	198	50	62	39	36	30	52	21	843	5	0	0	0	5
	5:00 PM	93	248	16	6	216	29	101	44	52	24	52	15	896	2	0	0	0	2
	5:15 PM	93	259	11	11	209	47	72	44	47	22	78	29	922	0	0	0	0	0
	5:30 PM	109	222	20	14	193	34	104	36	49	21	54	24	880	1	0	0	0	1
	5:45 PM	85	231	15	18	197	58	78	49	47	24	49	20	871	0	0	0	0	0
	VOLUMES	740	1,793	121	120	1,570	314	627	318	358	162	406	170	6,699	11	0	0	0	11
	APPROACH %	28%	68%	5%	6%	78%	16%	48%	24%	27%	22%	55%	23%						
	APP/DEPART	2,654	/	2,590	2,004	/	2,101	1,303	/	559	738	/	1,449	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	380	960	62	49	815	168	355	173	195	91	233	88	3,569					
	APPROACH %	27%	68%	4%	5%	79%	16%	49%	24%	27%	22%	57%	21%						
	PEAK HR FACTOR		0.966			0.945			0.918			0.798		0.968					
	APP/DEPART	1,402	/	1,403	1,032	/	1,104	723	/	284	412	/	778	0					

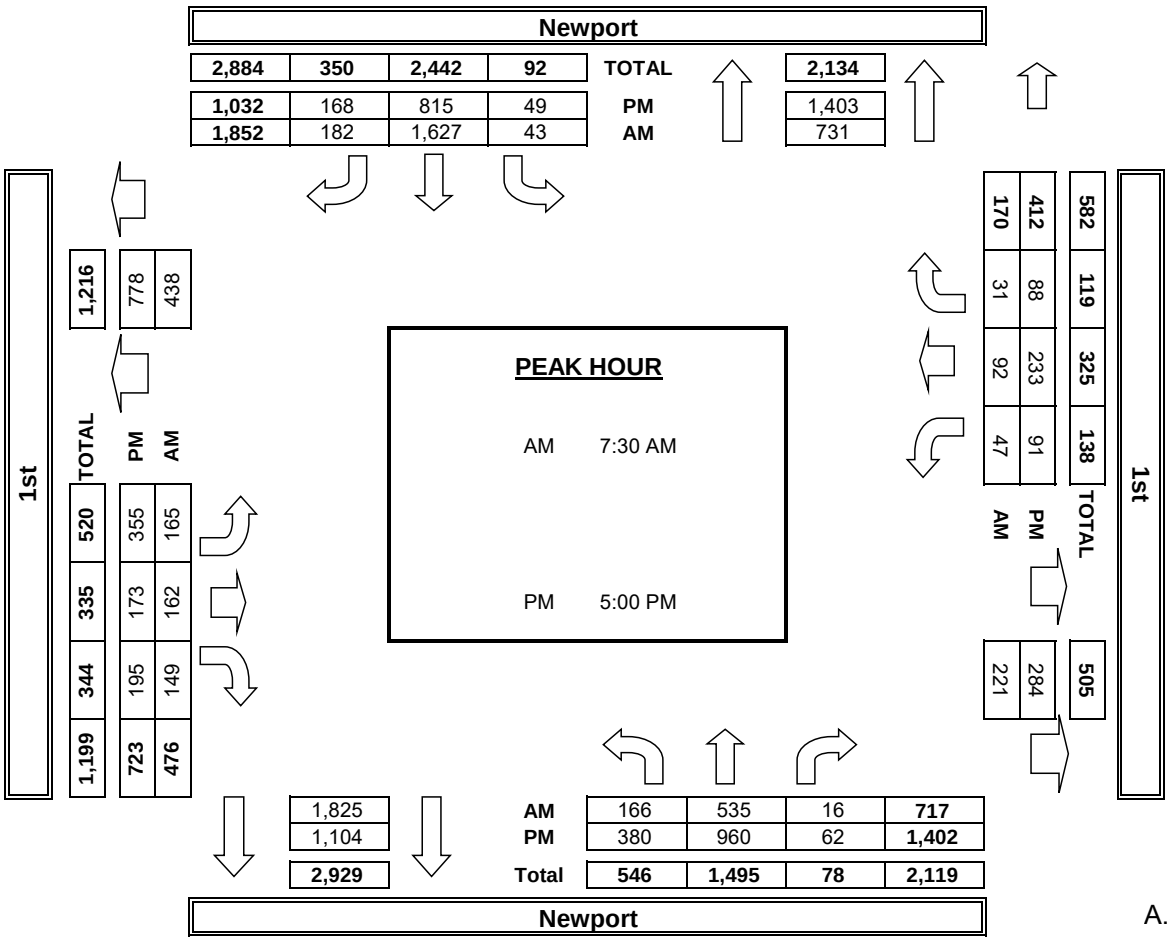


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	12
	EAST & WEST:	1st	CONTROL:	SIGNAL

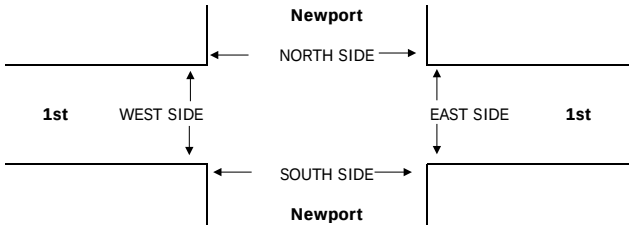
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

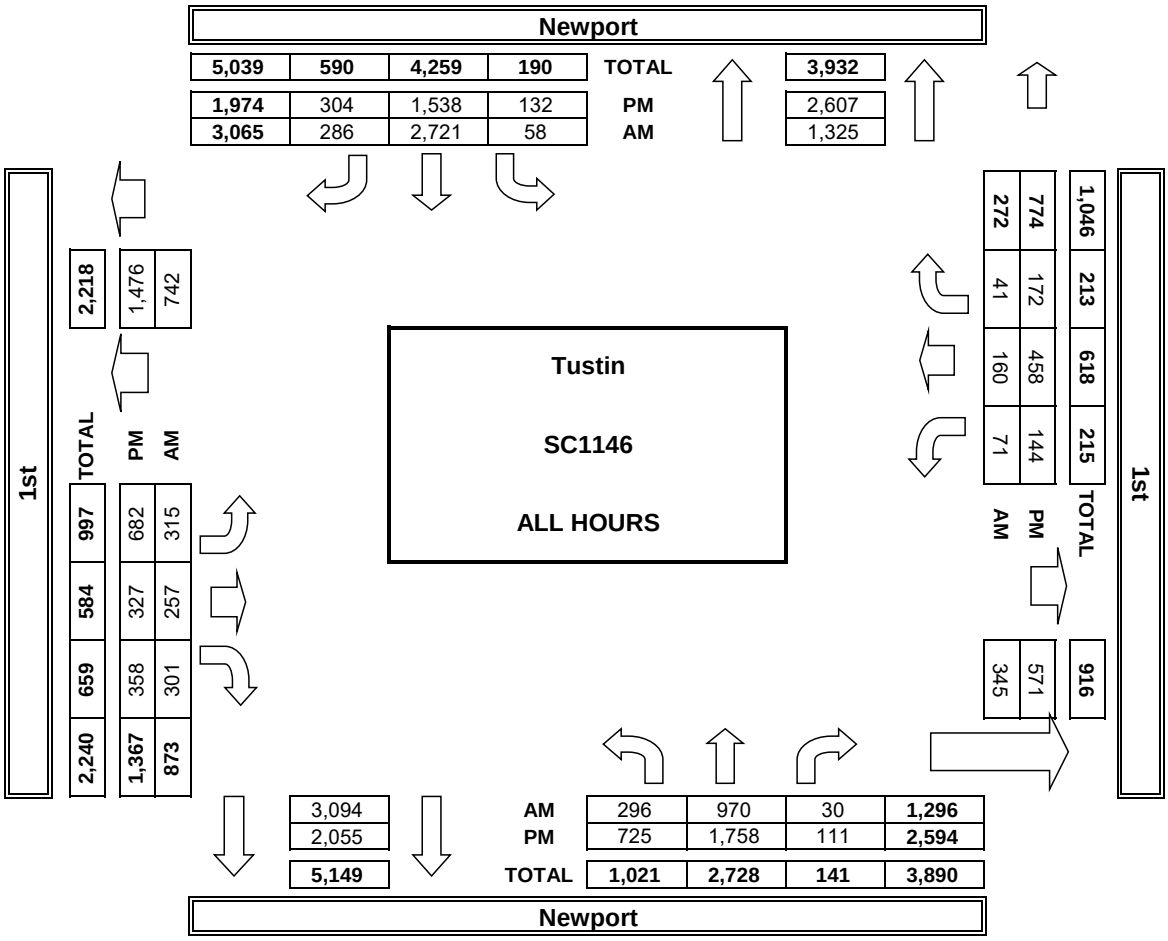
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 2	NT 2	NR 0	SL 1	ST 3	SR 0	EL 1.5	ET 1.5	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	12	87	0	5	220	20	31	15	35	5	10	3	443	0	0	0	0	0
	7:15 AM	26	128	5	6	366	27	55	35	39	4	17	5	713	0	0	0	0	0
	7:30 AM	47	152	4	4	386	33	36	44	53	9	17	3	788	1	0	0	0	1
	7:45 AM	57	162	3	5	376	36	28	28	42	9	37	9	792	0	0	0	0	0
	8:00 AM	41	127	5	3	373	40	34	40	35	13	19	11	741	0	0	1	0	1
	8:15 AM	37	110	3	14	393	51	43	36	25	14	30	6	762	0	0	0	0	0
	8:30 AM	40	106	5	12	328	28	46	30	34	8	14	0	651	0	0	0	0	0
	8:45 AM	36	98	5	9	279	51	42	29	38	9	16	4	616	0	0	0	0	0
	VOLUMES	296	970	30	58	2,721	286	315	257	301	71	160	41	5,506	1	0	1	0	2
	APPROACH %	23%	75%	2%	2%	89%	9%	36%	29%	34%	26%	59%	15%						
	APP/DEPART	1,296	/	1,325	3,065	/	3,094	873	/	345	272	/	742	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	182	551	15	26	1,528	160	141	148	155	45	103	29	3,083					
	APPROACH %	24%	74%	2%	2%	89%	9%	32%	33%	35%	25%	58%	16%						
	PEAK HR FACTOR		0.842			0.936			0.835			0.805		0.973					
	APP/DEPART	748	/	720	1,714	/	1,729	444	/	189	177	/	445	0					
PM	4:00 PM	80	228	20	12	203	33	75	27	48	18	39	8	791	2	0	0	0	2
	4:15 PM	82	201	12	15	207	42	92	33	41	14	81	15	835	5	0	0	0	5
	4:30 PM	90	230	19	19	180	30	79	34	37	11	52	17	798	2	0	0	0	2
	4:45 PM	77	214	8	16	188	37	94	52	47	22	61	30	846	1	0	4	0	5
	5:00 PM	108	258	16	15	180	38	82	38	45	22	55	32	889	1	0	0	1	2
	5:15 PM	92	196	13	19	190	30	100	55	57	24	68	23	867	1	0	1	0	2
	5:30 PM	111	213	15	20	193	51	80	47	45	16	50	23	864	2	0	0	0	2
	5:45 PM	85	218	8	16	197	43	80	41	38	17	52	24	819	2	0	0	0	2
	VOLUMES	725	1,758	111	132	1,538	304	682	327	358	144	458	172	6,709	16	0	5	1	22
	APPROACH %	28%	68%	4%	7%	78%	15%	50%	24%	26%	19%	59%	22%						
	APP/DEPART	2,594	/	2,607	1,974	/	2,055	1,367	/	571	774	/	1,476	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	388	881	52	70	751	156	356	192	194	84	234	108	3,466					
	APPROACH %	29%	67%	4%	7%	77%	16%	48%	26%	26%	20%	55%	25%						
	PEAK HR FACTOR		0.865			0.925			0.875			0.926		0.975					
	APP/DEPART	1,321	/	1,340	977	/	1,033	742	/	315	426	/	778	0					

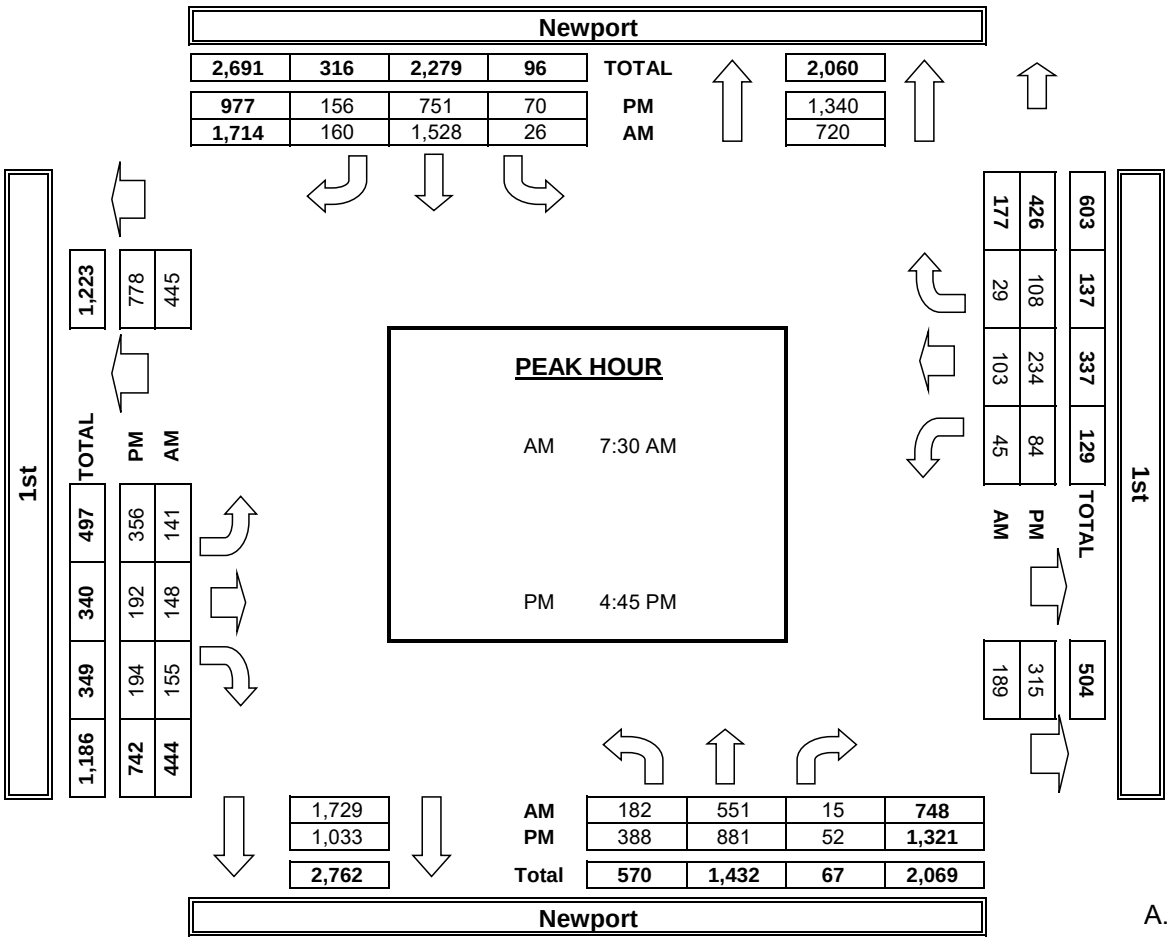


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

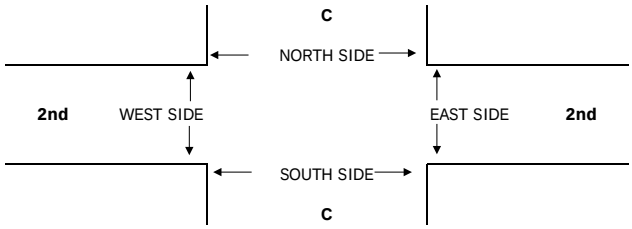
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Wed, Dec 7, 16	NORTH & SOUTH:	C	LOCATION #:	13
	EAST & WEST:	2nd	CONTROL:	STOP ALL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

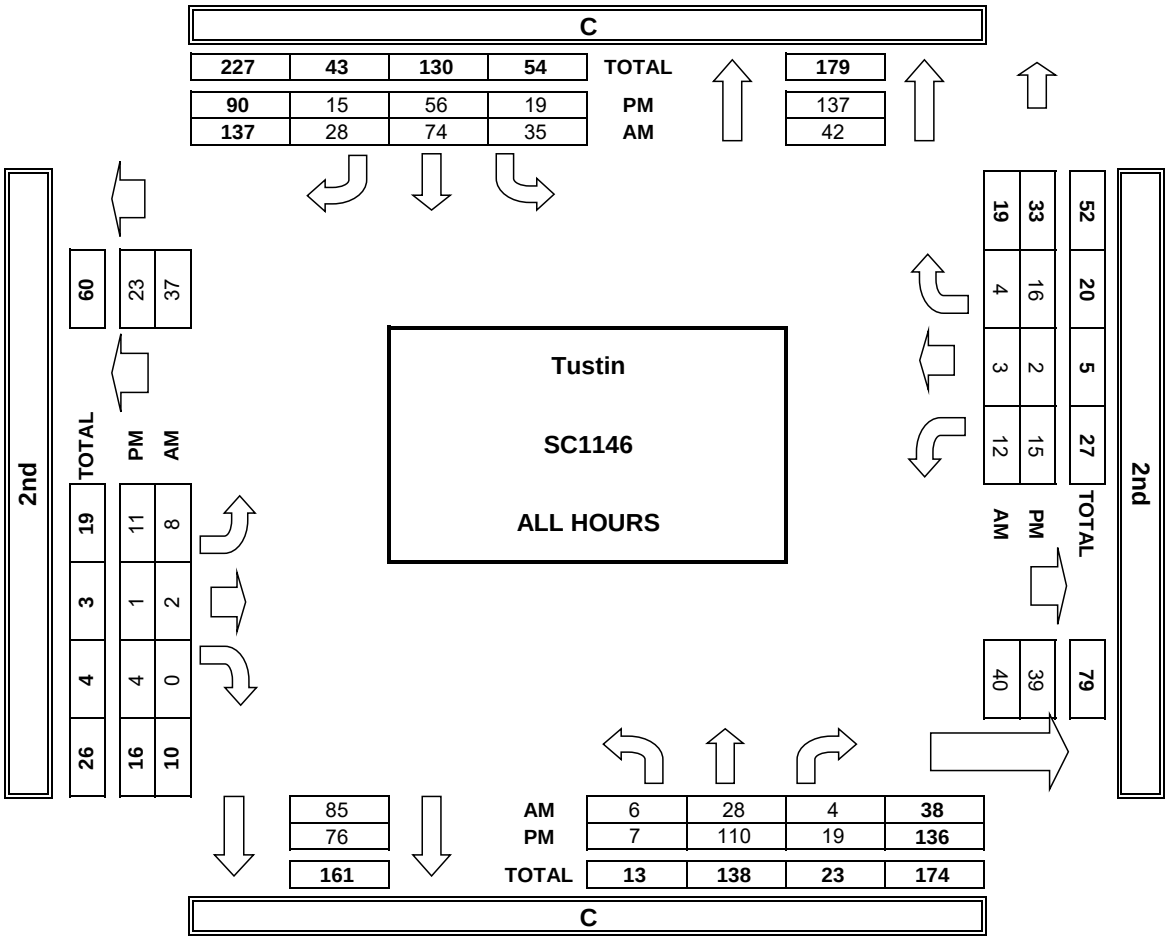
		NORTHBOUND C			SOUTHBOUND C			EASTBOUND 2nd			WESTBOUND 2nd				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	1	1	2	5	0	0	0	0	0	0	0	9	0	0	0	0	0
	7:15 AM	0	2	0	2	12	1	0	0	0	2	0	0	19	0	0	0	0	0
	7:30 AM	1	1	1	2	13	0	0	1	0	3	1	0	23	0	1	0	0	1
	7:45 AM	1	3	0	10	1	4	0	0	0	2	0	1	22	0	0	0	0	0
	8:00 AM	0	3	0	6	6	5	1	0	0	2	0	0	23	0	1	0	0	1
	8:15 AM	0	8	0	4	10	1	2	0	0	1	0	1	27	0	0	0	1	1
	8:30 AM	4	9	2	2	5	10	1	0	0	1	1	2	37	0	0	0	0	0
	8:45 AM	0	1	0	7	22	7	4	1	0	1	1	0	44	0	0	0	0	0
	VOLUMES	6	28	4	35	74	28	8	2	0	12	3	4	204	0	2	0	1	3
	APPROACH %	16%	74%	11%	26%	54%	20%	80%	20%	0%	63%	16%	21%						
	APP/DEPART	38	/	42	137	/	85	10	/	40	19	/	37	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	4	21	2	19	43	23	8	1	0	5	2	3	131					
	APPROACH %	15%	78%	7%	22%	51%	27%	89%	11%	0%	50%	20%	30%						
	PEAK HR FACTOR		0.450			0.590			0.450			0.625		0.744					
	APP/DEPART	27	/	33	85	/	47	9	/	22	10	/	29	0					
PM	4:00 PM	2	12	2	0	8	1	1	0	0	0	0	2	28	0	0	0	0	0
	4:15 PM	0	7	0	3	5	3	1	0	2	2	0	2	25	0	0	0	0	0
	4:30 PM	1	14	3	5	7	2	3	0	0	2	0	2	39	0	0	0	0	0
	4:45 PM	0	7	4	2	8	2	1	0	1	1	0	2	28	0	0	0	0	0
	5:00 PM	1	18	7	4	10	2	2	1	0	4	1	3	53	0	0	0	0	0
	5:15 PM	0	22	1	1	5	0	2	0	1	3	0	0	35	0	0	0	0	0
	5:30 PM	0	20	0	2	3	3	0	0	0	1	0	3	32	0	0	0	0	0
	5:45 PM	3	10	2	2	10	2	1	0	0	2	1	2	35	1	0	0	0	1
	VOLUMES	7	110	19	19	56	15	11	1	4	15	2	16	275	1	0	0	0	1
	APPROACH %	5%	81%	14%	21%	62%	17%	69%	6%	25%	45%	6%	48%						
	APP/DEPART	136	/	137	90	/	76	16	/	39	33	/	23	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	4	70	10	9	28	7	5	1	1	10	2	8	155					
	APPROACH %	5%	83%	12%	20%	64%	16%	71%	14%	14%	50%	10%	40%						
	PEAK HR FACTOR		0.808			0.688			0.583			0.625		0.731					
	APP/DEPART	84	/	83	44	/	40	7	/	20	20	/	12	0					

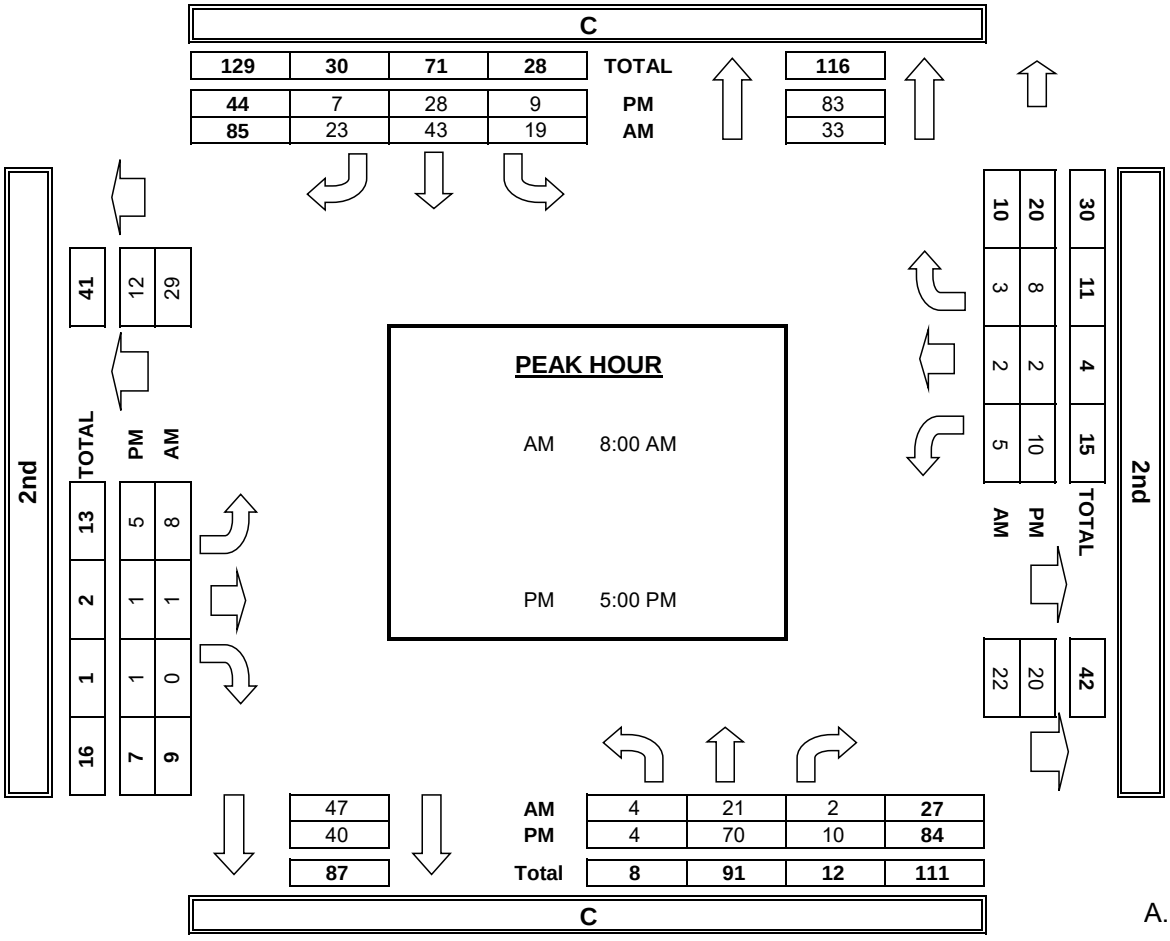


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

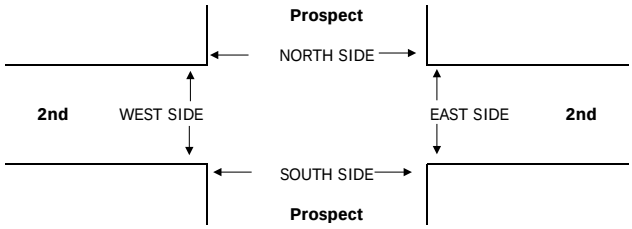
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Prospect	LOCATION #:	14
	EAST & WEST:	2nd	CONTROL:	STOP E

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

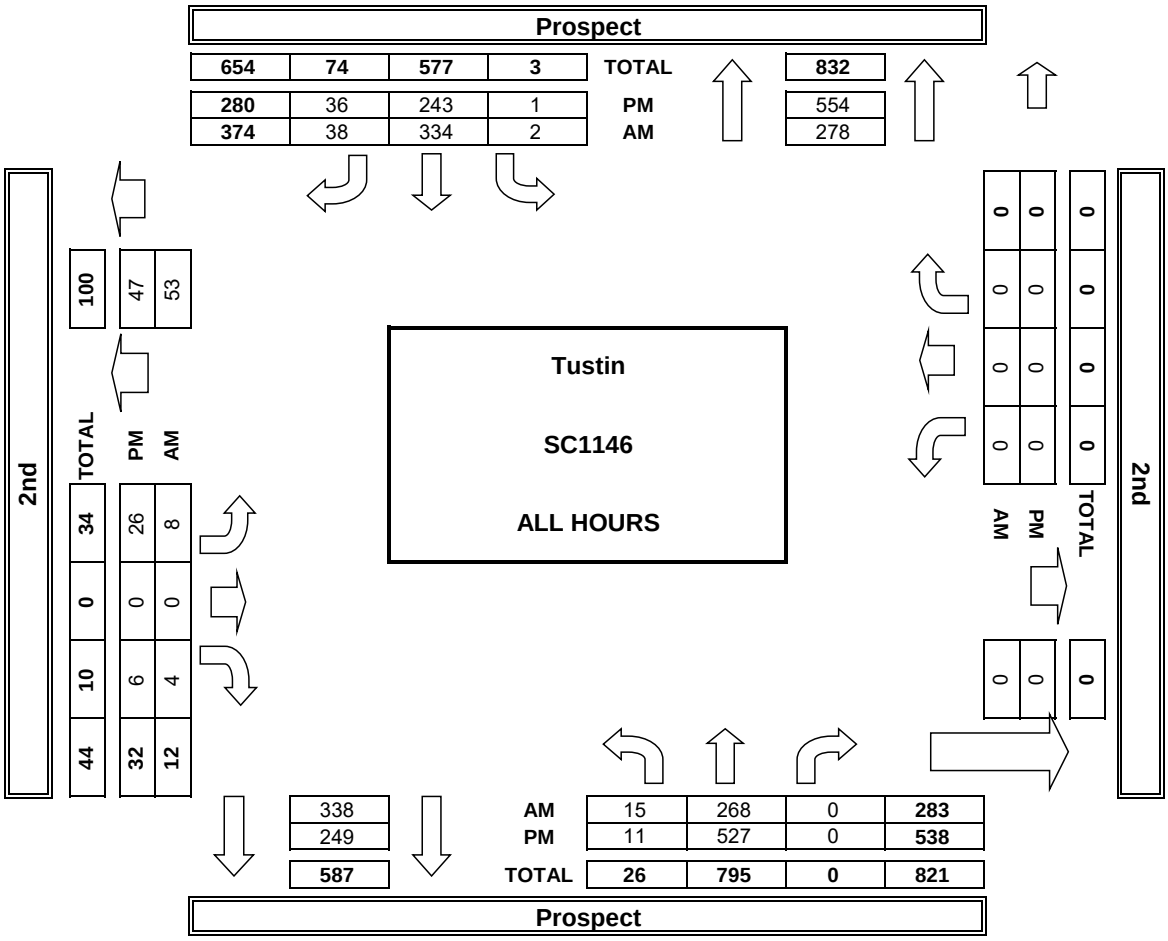
		NORTHBOUND Prospect			SOUTHBOUND Prospect			EASTBOUND 2nd			WESTBOUND 2nd				U-TURNS				
	LANES:	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	1	22	0	1	31	0	0	0	0	0	0	0	55	0	1	0	0	1
	7:15 AM	0	55	0	0	35	7	0	0	0	0	0	0	97	0	0	0	0	0
	7:30 AM	2	75	0	0	32	4	2	0	1	0	0	0	116	0	0	0	0	0
	7:45 AM	2	36	0	1	55	4	1	0	0	0	0	0	99	0	1	0	0	1
	8:00 AM	3	17	0	0	48	5	1	0	1	0	0	0	75	0	0	0	0	0
	8:15 AM	0	21	0	0	46	5	0	0	0	0	0	0	72	0	0	0	0	0
	8:30 AM	1	22	0	0	37	6	3	0	0	0	0	0	69	0	0	0	0	0
	8:45 AM	6	20	0	0	50	7	1	0	2	0	0	0	86	0	0	0	0	0
	VOLUMES	15	268	0	2	334	38	8	0	4	0	0	0	669	0	2	0	0	2
	APPROACH %	5%	95%	0%	1%	89%	10%	67%	0%	33%	0%	0%	0%						
	APP/DEPART	283	/	278	374	/	338	12	/	0	0	/	53	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	7	183	0	1	170	20	4	0	2	0	0	0	387					
	APPROACH %	4%	96%	0%	1%	89%	10%	67%	0%	33%	0%	0%	0%						
	PEAK HR FACTOR		0.617			0.796			0.500			0.000		0.834					
	APP/DEPART	190	/	188	191	/	172	6	/	0	0	/	27	0					
PM	4:00 PM	1	68	0	0	29	9	5	0	1	0	0	0	113	0	0	0	0	0
	4:15 PM	1	73	0	0	32	3	1	0	0	0	0	0	110	0	0	0	0	0
	4:30 PM	2	61	0	0	32	6	2	0	1	0	0	0	104	0	0	0	0	0
	4:45 PM	0	77	0	1	28	6	4	0	0	0	0	0	116	0	1	0	0	1
	5:00 PM	5	74	0	0	24	4	4	0	0	0	0	0	111	0	0	0	0	0
	5:15 PM	1	62	0	0	39	2	5	0	0	0	0	0	109	0	0	0	0	0
	5:30 PM	0	56	0	0	29	6	2	0	2	0	0	0	95	0	0	0	0	0
	5:45 PM	1	56	0	0	30	0	3	0	2	0	0	0	92	0	0	0	0	0
	VOLUMES	11	527	0	1	243	36	26	0	6	0	0	0	850	0	1	0	0	1
	APPROACH %	2%	98%	0%	0%	87%	13%	81%	0%	19%	0%	0%	0%						
	APP/DEPART	538	/	554	280	/	249	32	/	0	0	/	47	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	4	279	0	1	121	24	12	0	2	0	0	0	443					
	APPROACH %	1%	99%	0%	1%	83%	16%	86%	0%	14%	0%	0%	0%						
	PEAK HR FACTOR		0.919			0.961			0.583			0.000		0.955					
	APP/DEPART	283	/	292	146	/	123	14	/	0	0	/	28	0					

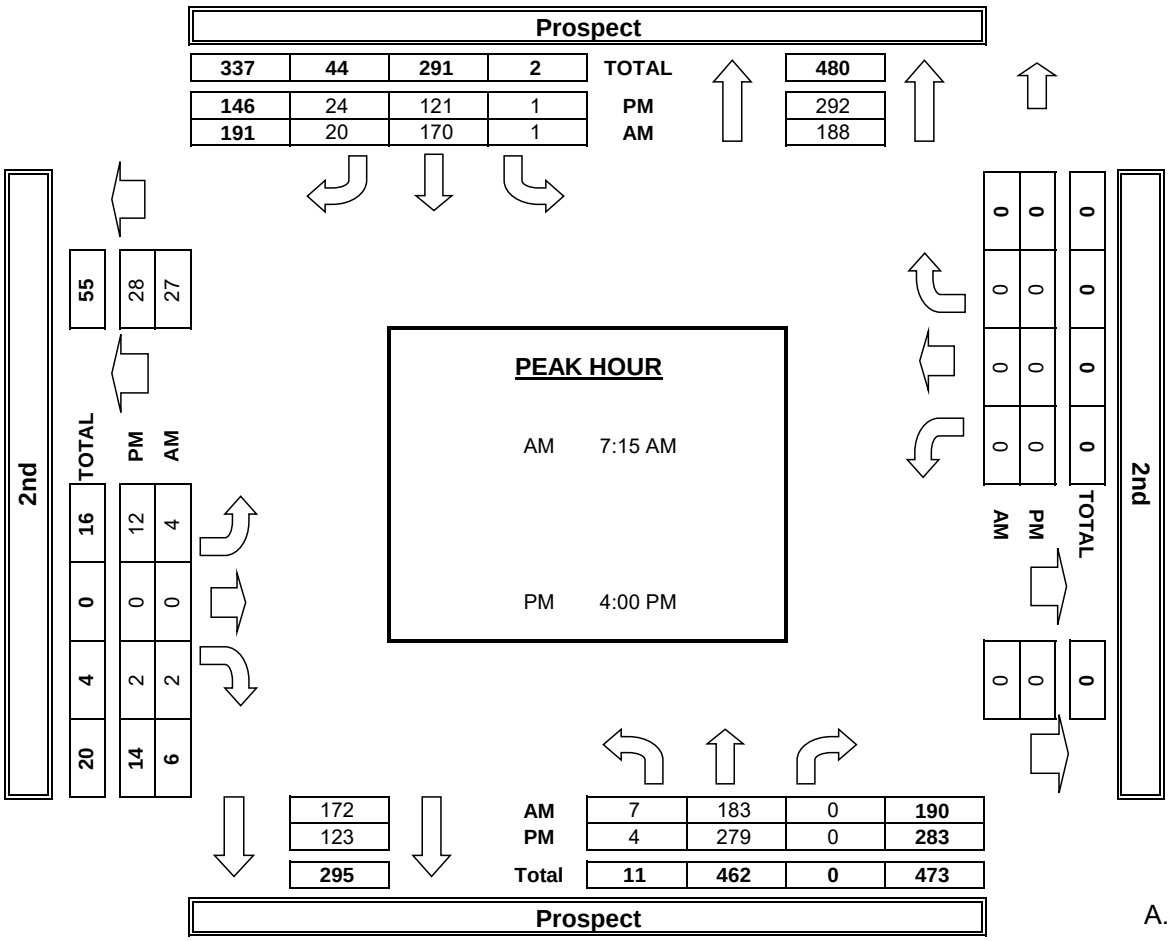


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

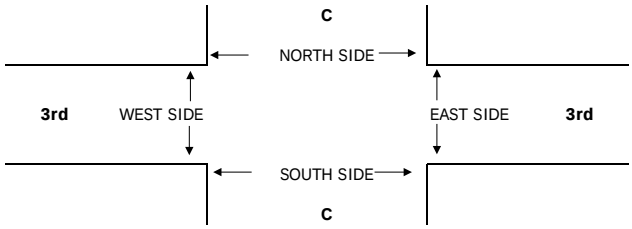
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Wed, Dec 7, 16	NORTH & SOUTH:	C	LOCATION #:	15
	EAST & WEST:	3rd	CONTROL:	STOP W

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W — ▲ N — S ▼ — E ►

☑ Add U-Turns to Left Turns

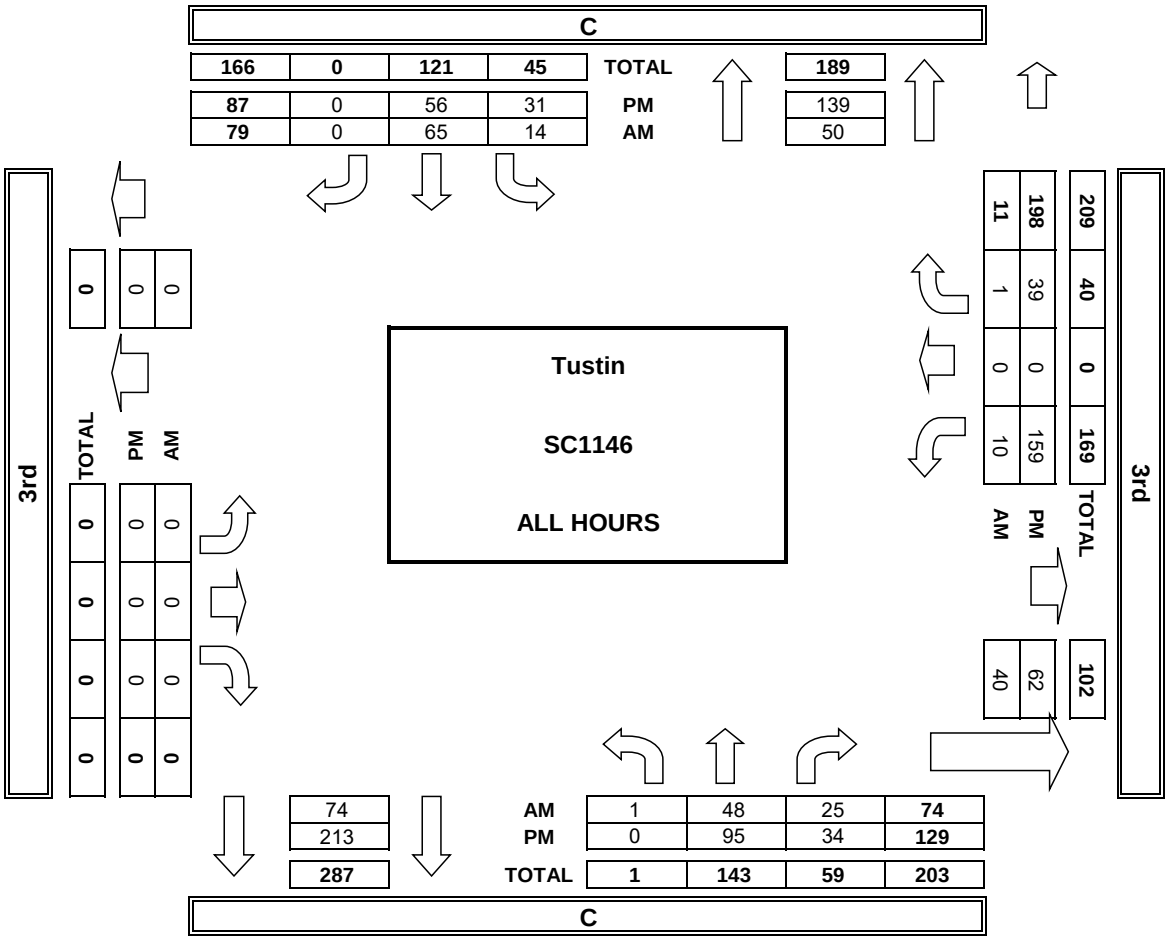
		NORTHBOUND C			SOUTHBOUND C			EASTBOUND 3rd			WESTBOUND 3rd				U-TURNS				
	LANES:	NL X	NT 1	NR 0	SL 0	ST 1	SR X	EL X	ET X	ER X	WL 0	WT X	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	2	2	2	2	0	0	0	0	1	0	0	9	0	0	0	0	0
	7:15 AM	0	2	1	1	14	0	0	0	0	2	0	0	20	0	0	0	1	1
	7:30 AM	0	4	2	2	11	0	0	0	0	1	0	0	20	0	0	0	1	1
	7:45 AM	0	5	3	1	4	0	0	0	0	1	0	0	14	0	0	0	0	0
	8:00 AM	0	4	3	0	9	0	0	0	0	0	0	0	16	0	0	0	0	0
	8:15 AM	0	8	5	2	9	0	0	0	0	2	0	0	26	0	0	0	0	0
	8:30 AM	1	15	8	3	2	0	0	0	0	2	0	1	32	1	0	0	0	1
	8:45 AM	0	8	1	3	14	0	0	0	0	1	0	0	27	0	1	0	0	1
	VOLUMES	1	48	25	14	65	0	0	0	0	10	0	1	164	1	1	0	2	4
	APPROACH %	1%	65%	34%	18%	82%	0%	0%	0%	0%	91%	0%	9%						
	APP/DEPART	74	/	50	79	/	74	0	/	40	11	/	0	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	1	35	17	8	34	0	0	0	0	5	0	1	101					
	APPROACH %	2%	66%	32%	19%	81%	0%	0%	0%	0%	83%	0%	17%						
	PEAK HR FACTOR		0.552			0.618			0.000			0.500		0.789					
	APP/DEPART	53	/	37	42	/	40	0	/	24	6	/	0	0					
PM	4:00 PM	0	6	1	1	5	0	0	0	0	1	0	4	18	0	0	0	0	0
	4:15 PM	0	5	2	3	6	0	0	0	0	2	0	3	21	0	0	0	0	0
	4:30 PM	0	13	6	4	9	0	0	0	0	2	0	4	38	0	0	0	1	1
	4:45 PM	0	10	3	3	7	0	0	0	0	0	0	5	28	0	2	0	0	2
	5:00 PM	0	23	10	6	10	0	0	0	0	17	0	3	69	0	0	0	1	1
	5:15 PM	0	17	11	7	7	0	0	0	0	69	0	7	118	0	2	0	0	2
	5:30 PM	0	12	1	3	3	0	0	0	0	29	0	6	54	0	0	0	0	0
	5:45 PM	0	9	0	4	9	0	0	0	0	39	0	7	68	0	1	0	0	1
	VOLUMES	0	95	34	31	56	0	0	0	0	159	0	39	414	0	5	0	2	7
	APPROACH %	0%	74%	26%	36%	64%	0%	0%	0%	0%	80%	0%	20%						
	APP/DEPART	129	/	139	87	/	213	0	/	62	198	/	0	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	61	22	20	29	0	0	0	0	154	0	23	309					
	APPROACH %	0%	73%	27%	41%	59%	0%	0%	0%	0%	87%	0%	13%						
	PEAK HR FACTOR		0.629			0.766			0.000			0.582		0.655					
	APP/DEPART	83	/	87	49	/	182	0	/	40	177	/	0	0					

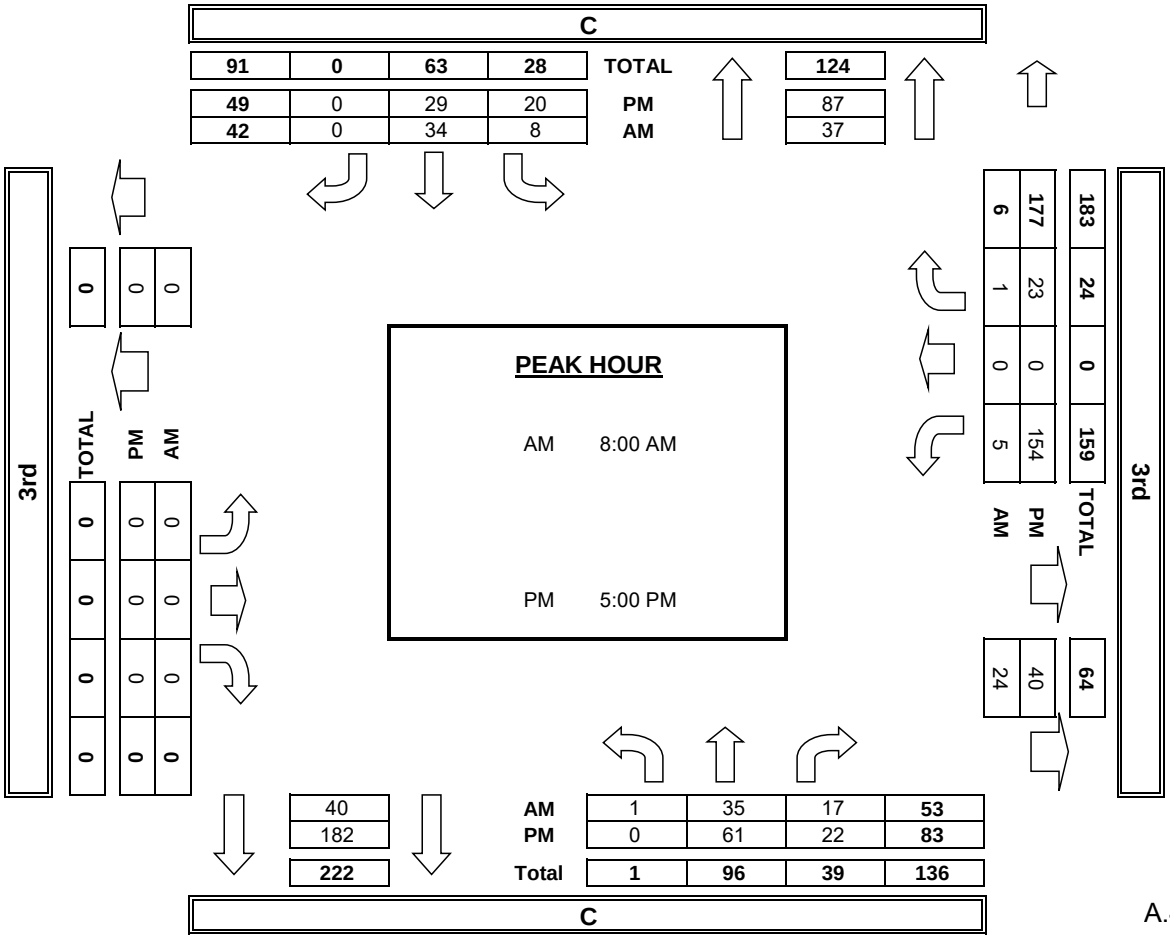


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Prospect	LOCATION #:	16
	EAST & WEST:	3rd	CONTROL:	STOP ALL

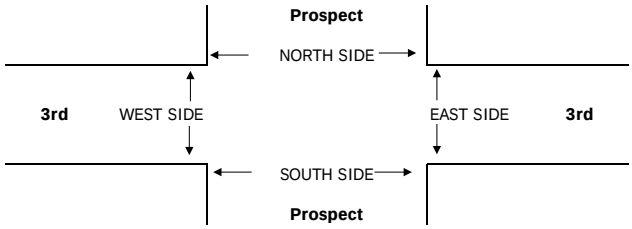
NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

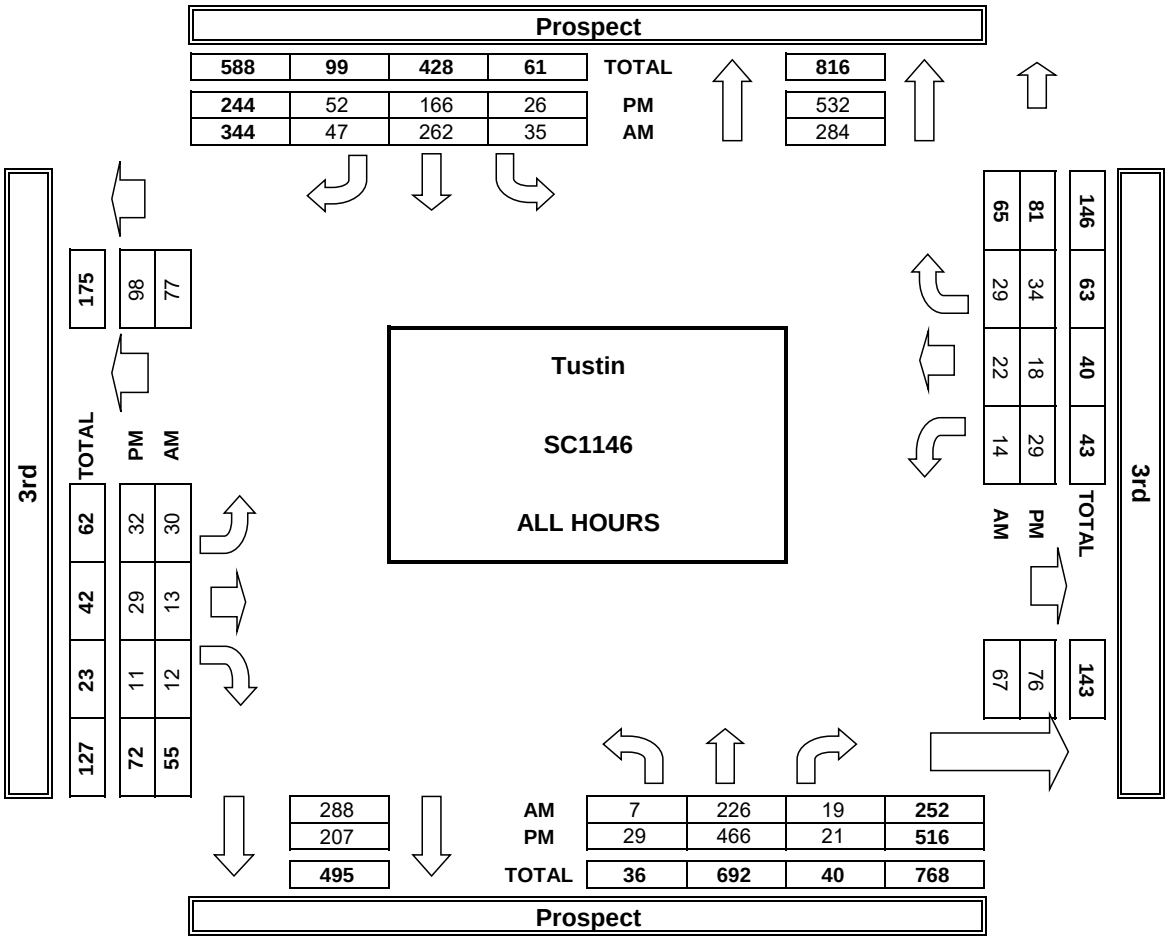
		NORTHBOUND Prospect			SOUTHBOUND Prospect			EASTBOUND 3rd			WESTBOUND 3rd				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	17	0	5	26	1	2	0	0	1	2	3	57	0	0	0	0	0
	7:15 AM	0	51	5	5	25	7	4	2	2	0	4	2	107	0	0	0	0	0
	7:30 AM	1	60	1	1	31	2	9	2	1	4	3	5	120	0	0	0	0	0
	7:45 AM	2	31	2	6	36	12	4	1	0	1	2	6	103	0	0	0	0	0
	8:00 AM	1	13	1	9	38	5	3	7	0	0	2	4	83	0	0	1	0	1
	8:15 AM	1	14	6	4	31	8	2	1	2	2	5	4	80	0	0	0	0	0
	8:30 AM	1	17	2	3	33	5	3	0	3	4	3	4	78	0	0	0	0	0
	8:45 AM	1	23	2	2	42	7	3	0	4	2	1	1	88	0	0	0	0	0
	VOLUMES	7	226	19	35	262	47	30	13	12	14	22	29	716	0	0	1	0	1
	APPROACH %	3%	90%	8%	10%	76%	14%	55%	24%	22%	22%	34%	45%						
	APP/DEPART	252	/	284	344	/	288	55	/	67	65	/	77	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	4	155	9	21	130	26	20	12	3	5	11	17	413					
	APPROACH %	2%	92%	5%	12%	73%	15%	57%	34%	9%	15%	33%	52%						
	PEAK HR FACTOR		0.677			0.819			0.729			0.688		0.860					
	APP/DEPART	168	/	191	177	/	138	35	/	42	33	/	42	0					
PM	4:00 PM	4	57	2	7	19	3	6	4	3	6	3	5	119	1	0	0	0	1
	4:15 PM	1	63	3	3	23	5	3	0	0	1	1	4	107	0	0	0	0	0
	4:30 PM	1	61	0	4	19	8	4	2	1	2	3	5	110	0	0	0	0	0
	4:45 PM	6	61	3	1	19	8	5	3	2	2	3	1	114	0	0	0	0	0
	5:00 PM	3	63	3	1	16	7	7	3	1	8	3	8	123	0	0	0	0	0
	5:15 PM	6	54	2	2	33	5	3	9	2	3	2	6	127	0	0	0	0	0
	5:30 PM	3	52	2	2	22	6	2	5	2	3	3	3	105	0	0	0	0	0
	5:45 PM	5	55	6	6	15	10	2	3	0	4	0	2	108	0	0	0	0	0
	VOLUMES	29	466	21	26	166	52	32	29	11	29	18	34	913	1	0	0	0	1
	APPROACH %	6%	90%	4%	11%	68%	21%	44%	40%	15%	36%	22%	42%						
	APP/DEPART	516	/	532	244	/	207	72	/	76	81	/	98	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	16	239	8	8	87	28	19	17	6	15	11	20	474					
	APPROACH %	6%	91%	3%	7%	71%	23%	45%	40%	14%	33%	24%	43%						
	PEAK HR FACTOR		0.939			0.769			0.750			0.605		0.933					
	APP/DEPART	263	/	278	123	/	108	42	/	33	46	/	55	0					

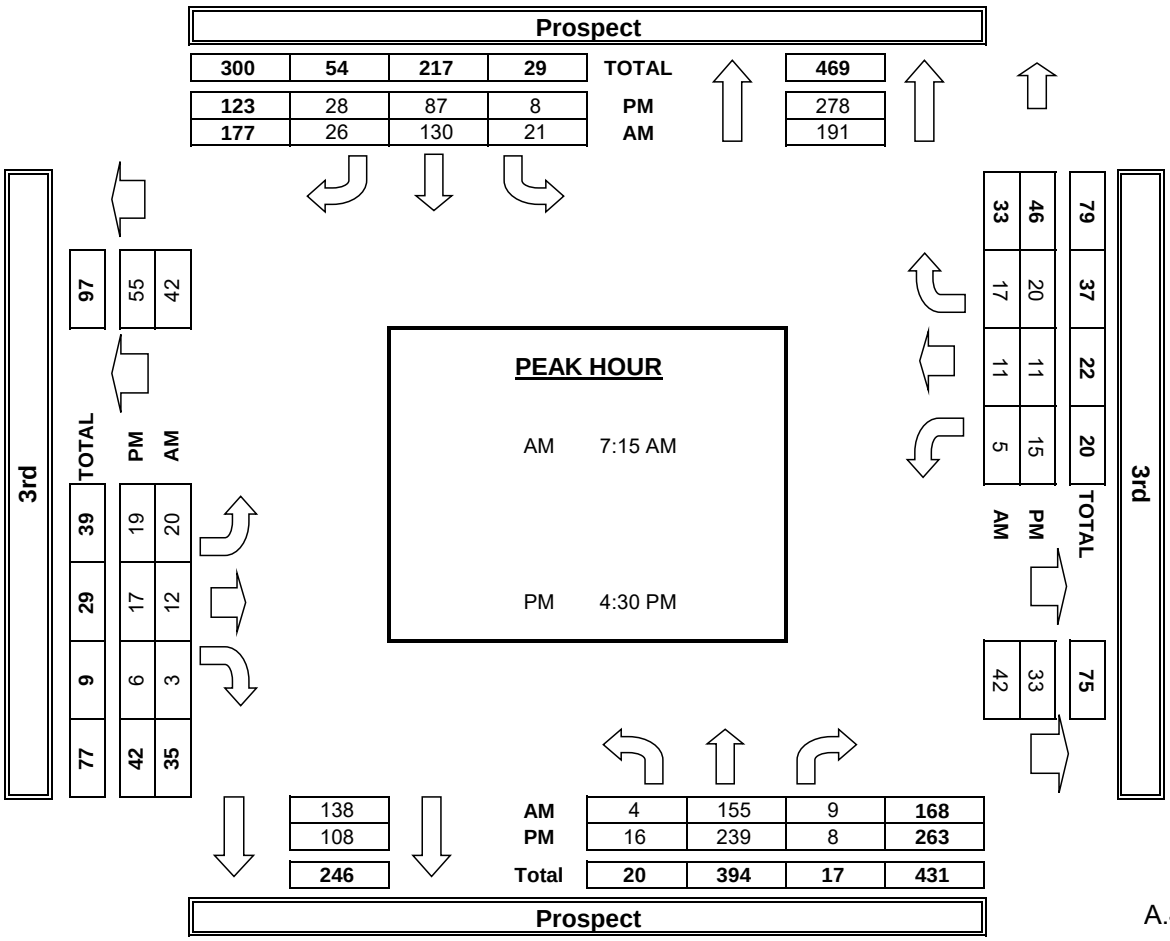


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

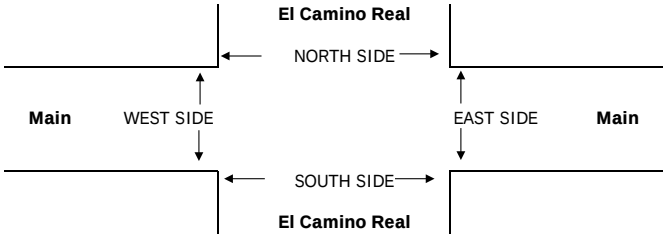
DATE:	LOCATION:	Tustin	PROJECT #:	SC0878
Tue, Mar 8, 16	NORTH & SOUTH:	El Camino Real	LOCATION #:	7
	EAST & WEST:	Main	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W ▲ N S ▼ E ►

☑Add U-Turns to Left Turns

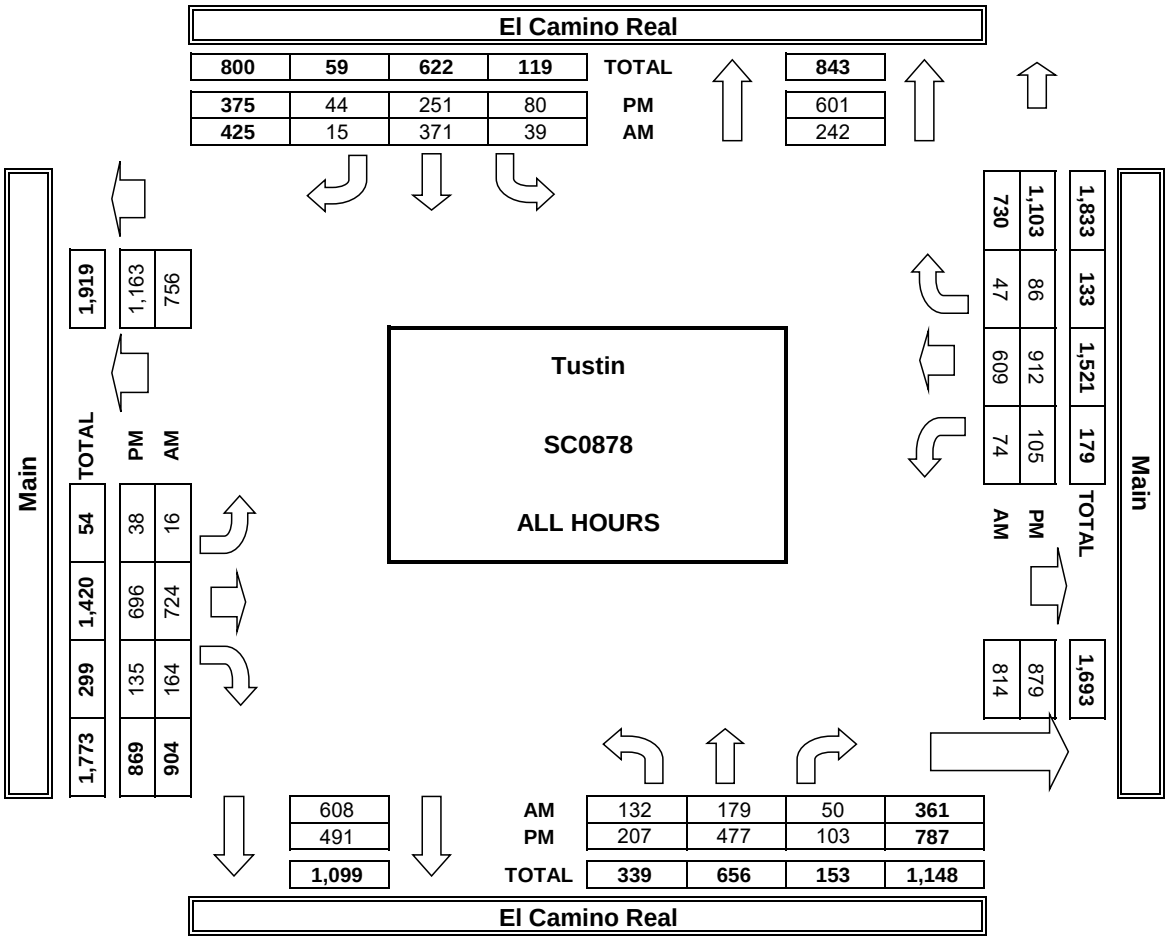
		NORTHBOUND El Camino Real			SOUTHBOUND El Camino Real			EASTBOUND Main			WESTBOUND Main				U-TURNS				
	LANES:	NL 0	NT 1	NR 1	SL 0	ST 1	SR 1	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	7	10	2	3	38	1	1	82	13	7	30	5	199	0	0	0	0	0
AM	7:15 AM	24	18	4	4	48	2	0	142	31	4	51	4	332	0	0	0	0	0
AM	7:30 AM	33	23	7	6	65	2	2	129	34	8	78	1	388	0	0	0	0	0
AM	7:45 AM	16	29	7	3	51	2	3	115	25	11	146	4	412	0	0	0	0	0
AM	8:00 AM	11	23	8	6	55	3	7	94	21	8	94	4	334	0	0	0	0	0
AM	8:15 AM	9	20	7	5	39	0	1	64	18	12	75	16	266	0	0	0	1	1
AM	8:30 AM	17	20	5	8	34	4	1	39	12	13	70	6	229	0	0	0	0	0
AM	8:45 AM	15	36	10	4	41	1	1	59	10	11	65	7	260	0	0	0	0	0
AM	VOLUMES	132	179	50	39	371	15	16	724	164	74	609	47	2,420	0	0	0	1	1
AM	APPROACH %	37%	50%	14%	9%	87%	4%	2%	80%	18%	10%	83%	6%						
AM	APP/DEPART	361	/	242	425	/	608	904	/	814	730	/	756	0					
AM	BEGIN PEAK HR		7:15 AM																
AM	VOLUMES	84	93	26	19	219	9	12	480	111	31	369	13	1,466					
AM	APPROACH %	41%	46%	13%	8%	89%	4%	2%	80%	18%	8%	89%	3%						
AM	PEAK HR FACTOR		0.806			0.846			0.871			0.641		0.890					
AM	APP/DEPART	203	/	118	247	/	361	603	/	525	413	/	462	0					
PM	4:00 PM	20	50	19	7	30	10	7	80	16	8	114	16	377	0	0	0	0	0
PM	4:15 PM	22	50	15	9	22	3	4	81	18	8	116	13	361	0	0	0	0	0
PM	4:30 PM	21	63	11	7	17	5	4	91	19	14	101	14	367	0	0	0	0	0
PM	4:45 PM	30	57	8	13	23	8	2	79	19	18	103	11	371	0	0	0	0	0
PM	5:00 PM	18	55	8	15	37	3	7	100	21	15	124	9	412	0	0	0	0	0
PM	5:15 PM	39	67	11	9	40	5	4	90	13	20	113	7	418	0	0	0	0	0
PM	5:30 PM	33	67	17	8	39	4	7	82	18	11	114	12	412	0	0	0	0	0
PM	5:45 PM	24	68	14	12	43	6	3	93	11	11	127	4	416	0	0	0	0	0
PM	VOLUMES	207	477	103	80	251	44	38	696	135	105	912	86	3,134	0	0	0	0	0
PM	APPROACH %	26%	61%	13%	21%	67%	12%	4%	80%	16%	10%	83%	8%						
PM	APP/DEPART	787	/	601	375	/	491	869	/	879	1,103	/	1,163	0					
PM	BEGIN PEAK HR		5:00 PM																
PM	VOLUMES	114	257	50	44	159	18	21	365	63	57	478	32	1,658					
PM	APPROACH %	27%	61%	12%	20%	72%	8%	5%	81%	14%	10%	84%	6%						
PM	PEAK HR FACTOR		0.900			0.906			0.877			0.958		0.992					
PM	APP/DEPART	421	/	310	221	/	279	449	/	459	567	/	610	0					

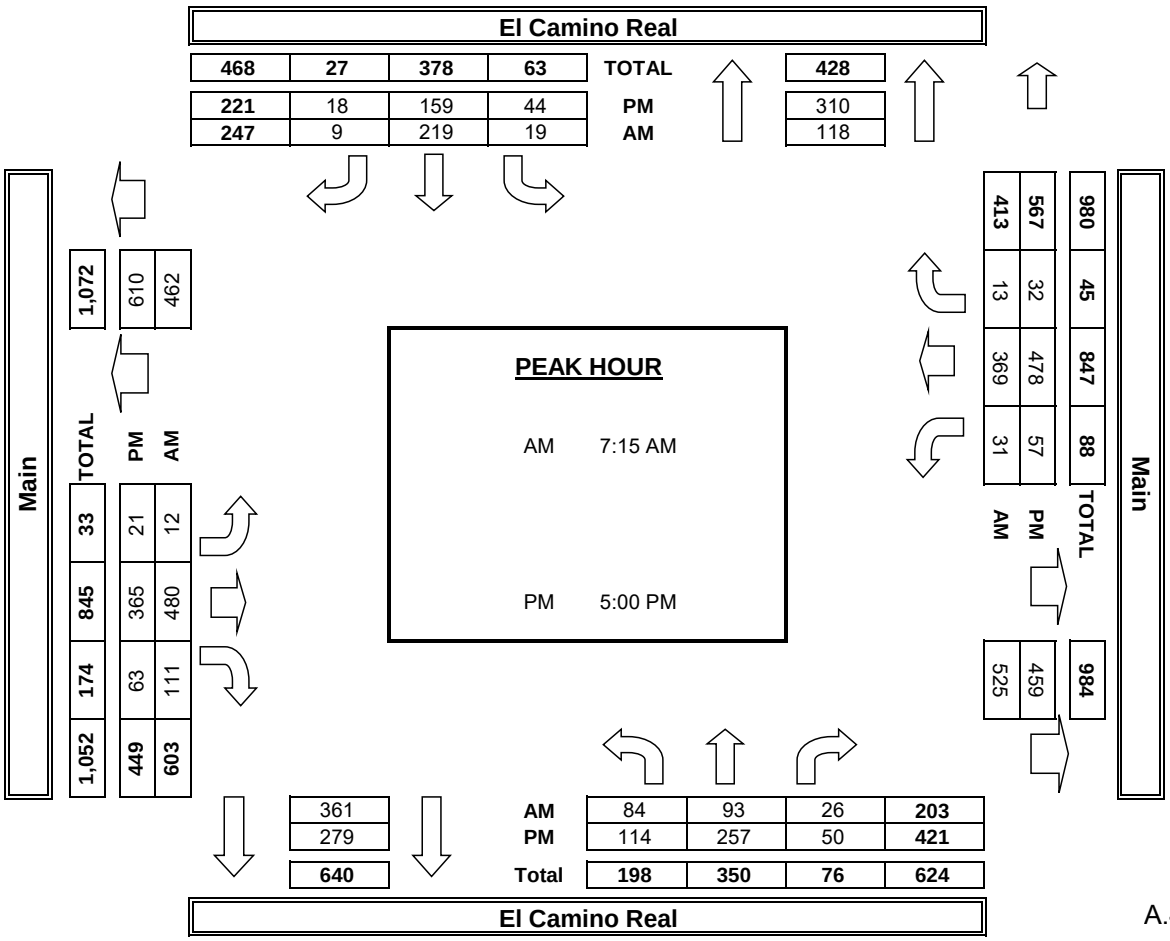


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:			
Wed, Dec 7, 16	LOCATION:	Tustin	PROJECT #: SC1146
	NORTH & SOUTH:	El Camino Real	LOCATION #: 17
	EAST & WEST:	Main	CONTROL: SIGNAL

NOTES:

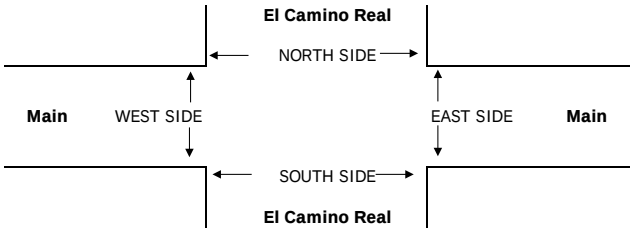
AM count was conducted on 12/07/16, however, PM count was conducted on 12/13/16 due to the accident involving a motorcyclist on 12/07/2016 at 17:05

AM
PM
MD
OTHER
OTHER

◄ W ▲ N S ▼ E ►

☑ Add U-Turns to Left Turns

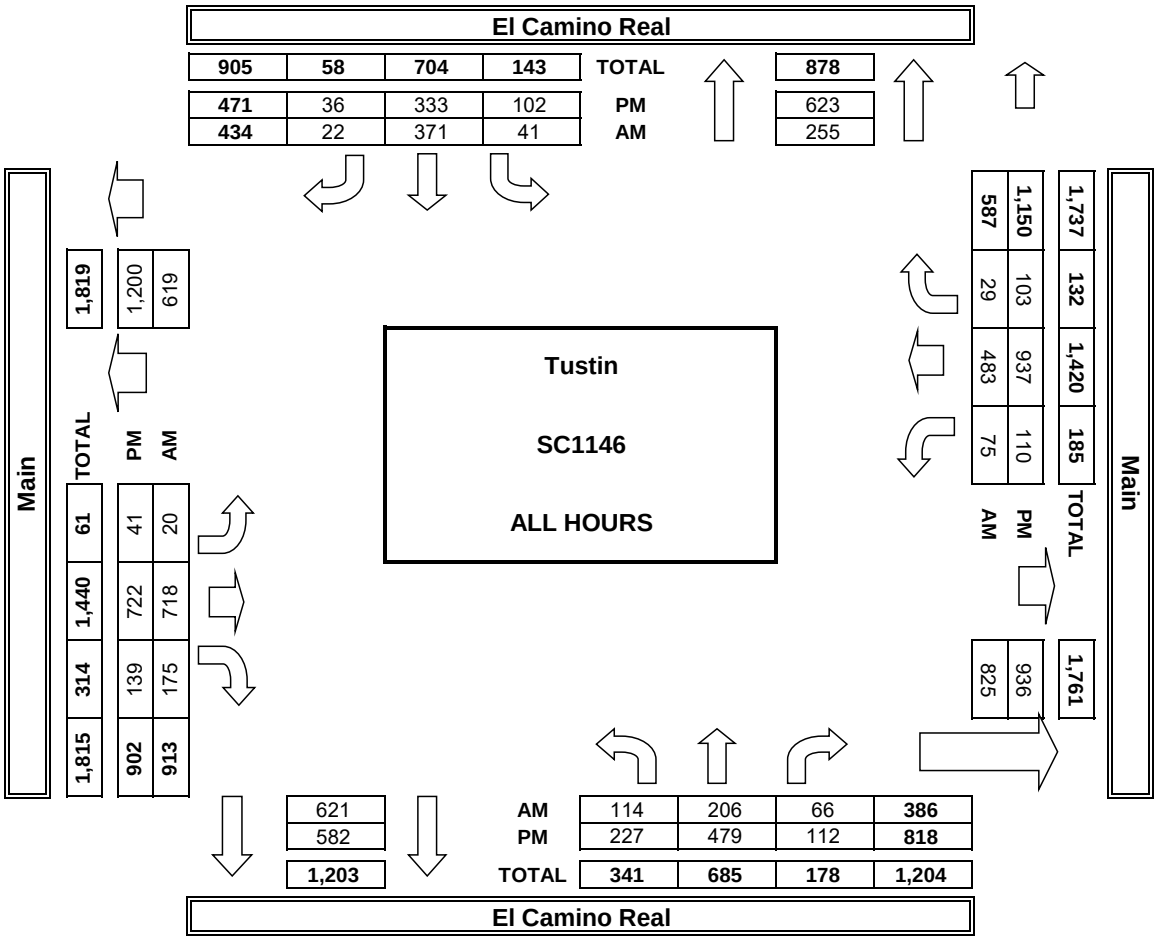
		NORTHBOUND El Camino Real			SOUTHBOUND El Camino Real			EASTBOUND Main			WESTBOUND Main				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	1	1	0	1	1	1	1	0	1	1	0		0	0	0	0	
AM	7:00 AM	7	12	6	2	29	3	2	51	16	3	43	0	174	0	0	0	0	0
	7:15 AM	11	18	5	3	39	2	0	63	20	12	45	1	219	0	0	0	0	0
	7:30 AM	18	15	11	8	40	1	1	75	21	5	55	4	254	0	0	0	0	0
	7:45 AM	15	21	11	4	48	2	3	106	33	9	93	0	345	0	0	0	0	0
	8:00 AM	12	38	7	2	55	2	5	109	21	7	53	3	314	0	0	0	0	0
	8:15 AM	11	20	12	9	63	3	3	110	20	11	49	6	317	0	0	0	0	0
	8:30 AM	15	38	5	6	49	5	3	123	24	11	74	6	359	0	0	0	0	0
	8:45 AM	25	44	9	7	48	4	3	81	20	17	71	9	338	0	0	0	0	0
	VOLUMES	114	206	66	41	371	22	20	718	175	75	483	29	2,320	0	0	0	0	0
	APPROACH %	30%	53%	17%	9%	85%	5%	2%	79%	19%	13%	82%	5%						
	APP/DEPART	386	/	255	434	/	621	913	/	825	587	/	619	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	53	117	35	21	215	12	14	448	98	38	269	15	1,335					
	APPROACH %	26%	57%	17%	8%	87%	5%	3%	80%	18%	12%	84%	5%						
	PEAK HR FACTOR		0.884			0.827			0.933			0.789		0.930					
	APP/DEPART	205	/	146	248	/	351	560	/	504	322	/	334	0					
PM	4:00 PM	27	51	8	8	27	2	5	78	19	12	111	15	363	0	0	0	0	0
	4:15 PM	23	55	16	14	36	8	7	94	16	14	114	13	410	0	0	0	0	0
	4:30 PM	36	68	16	13	44	3	2	96	12	7	119	12	428	0	0	0	0	0
	4:45 PM	35	53	14	13	35	7	2	98	17	22	109	11	416	0	0	0	0	0
	5:00 PM	21	51	10	14	54	5	9	77	22	15	126	11	415	0	0	0	0	0
	5:15 PM	33	67	16	14	54	4	9	102	13	6	112	15	445	0	0	0	0	0
	5:30 PM	31	70	16	11	45	2	1	96	20	21	134	6	453	0	0	0	0	0
	5:45 PM	21	64	16	15	38	5	6	81	20	13	112	20	411	0	0	0	0	0
	VOLUMES	227	479	112	102	333	36	41	722	139	110	937	103	3,341	0	0	0	0	0
	APPROACH %	28%	59%	14%	22%	71%	8%	5%	80%	15%	10%	81%	9%						
	APP/DEPART	818	/	623	471	/	582	902	/	936	1,150	/	1,200	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	120	241	56	52	188	18	21	373	72	64	481	43	1,729					
	APPROACH %	29%	58%	13%	20%	73%	7%	5%	80%	15%	11%	82%	7%						
	PEAK HR FACTOR		0.891			0.884			0.940			0.913		0.954					
	APP/DEPART	417	/	305	258	/	324	466	/	481	588	/	619	0					

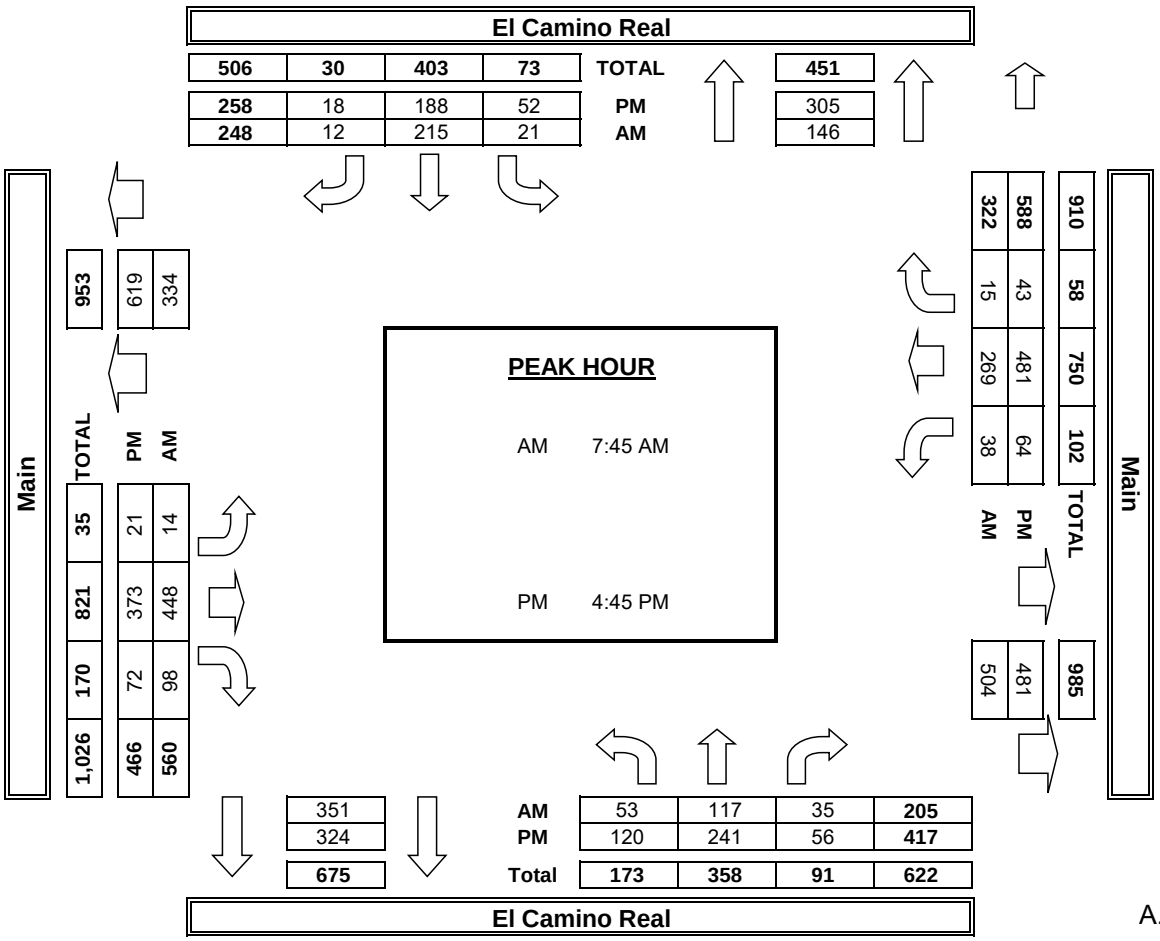


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

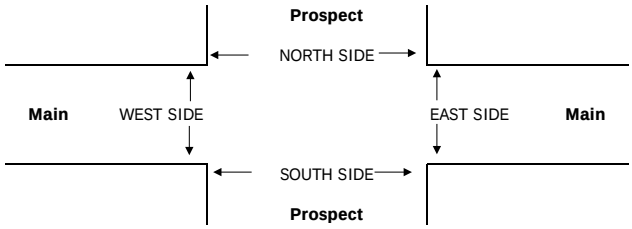
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Prospect	LOCATION #:	18
	EAST & WEST:	Main	CONTROL:	STOP N/S

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

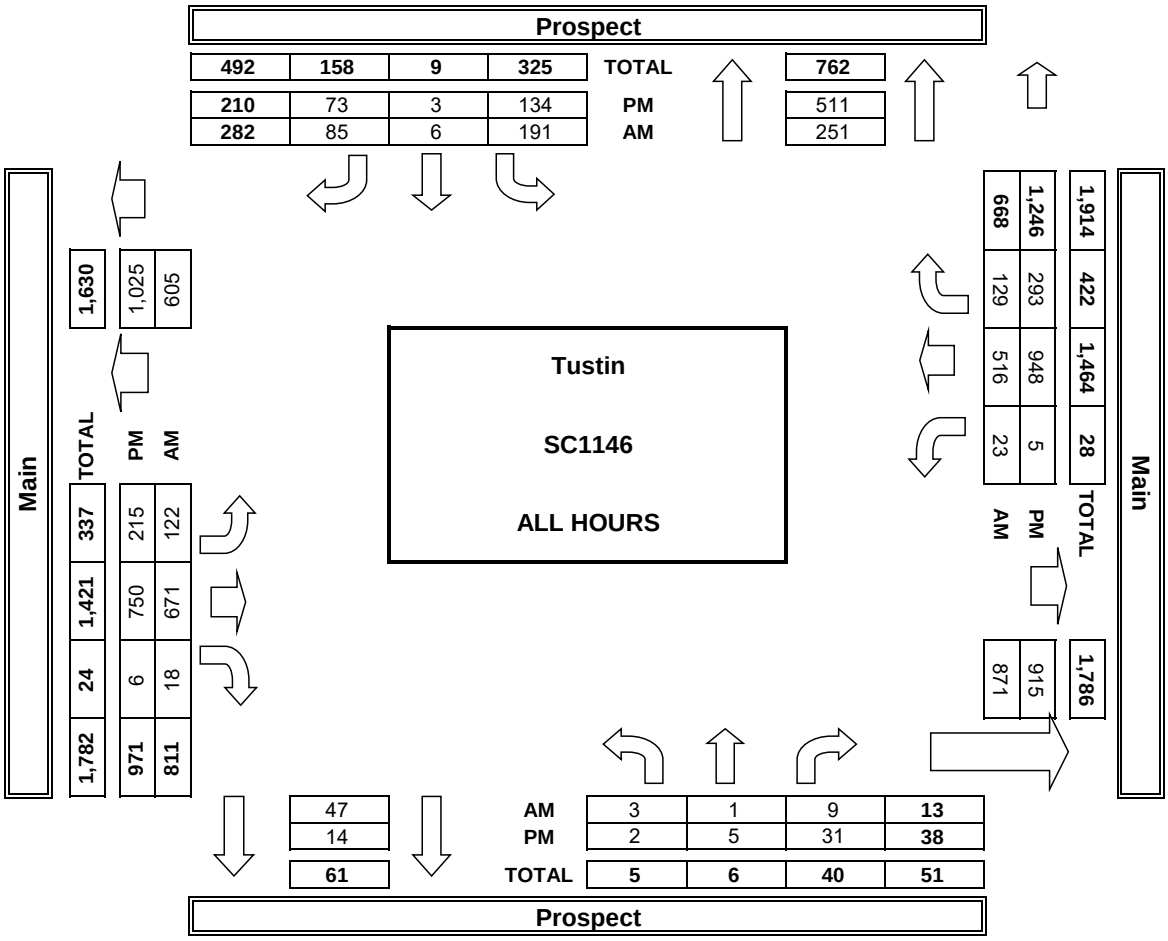
		NORTHBOUND Prospect			SOUTHBOUND Prospect			EASTBOUND Main			WESTBOUND Main				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	16	2	7	10	81	1	2	46	8	173	0	0	0	0	0
	7:15 AM	0	0	0	16	0	6	32	116	2	2	57	21	252	0	0	0	0	0
	7:30 AM	1	0	0	22	0	16	42	97	1	1	83	21	284	0	0	1	0	1
	7:45 AM	1	1	4	20	1	19	16	93	6	6	99	16	282	0	0	0	0	0
	8:00 AM	1	0	1	31	1	7	4	88	4	3	61	14	215	0	0	0	0	0
	8:15 AM	0	0	2	24	1	8	8	64	2	3	62	13	187	0	0	0	0	0
	8:30 AM	0	0	1	28	1	10	5	62	1	4	51	13	176	0	0	0	0	0
	8:45 AM	0	0	1	34	0	12	5	70	1	2	57	23	205	0	0	0	0	0
	VOLUMES	3	1	9	191	6	85	122	671	18	23	516	129	1,774	0	0	1	0	1
	APPROACH %	23%	8%	69%	68%	2%	30%	15%	83%	2%	3%	77%	19%						
	APP/DEPART	13	/	251	282	/	47	811	/	871	668	/	605	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	3	1	5	89	2	48	94	394	13	12	300	72	1,033					
	APPROACH %	33%	11%	56%	64%	1%	35%	19%	79%	3%	3%	78%	19%						
	PEAK HR FACTOR		0.375			0.869			0.835			0.793		0.909					
	APP/DEPART	9	/	166	139	/	27	501	/	488	384	/	352	0					
PM	4:00 PM	0	0	4	12	0	10	31	79	1	1	138	31	307	0	0	0	0	0
	4:15 PM	0	1	1	19	0	13	32	90	0	0	103	36	295	0	0	1	0	1
	4:30 PM	0	0	4	15	0	9	26	97	2	0	101	32	286	0	0	0	0	0
	4:45 PM	0	1	6	14	1	7	28	93	0	0	120	44	314	0	0	0	0	0
	5:00 PM	0	0	7	15	1	9	27	112	1	0	130	46	348	0	0	0	0	0
	5:15 PM	0	1	4	18	0	9	26	108	1	1	132	32	332	0	0	1	0	1
	5:30 PM	1	2	2	26	1	8	21	79	1	2	115	33	291	0	0	0	0	0
	5:45 PM	1	0	3	15	0	8	24	92	0	1	109	39	292	0	0	0	0	0
	VOLUMES	2	5	31	134	3	73	215	750	6	5	948	293	2,465	0	0	2	0	2
	APPROACH %	5%	13%	82%	64%	1%	35%	22%	77%	1%	0%	76%	24%						
	APP/DEPART	38	/	511	210	/	14	971	/	915	1,246	/	1,025	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	1	4	19	73	3	33	102	392	3	3	497	155	1,285					
	APPROACH %	4%	17%	79%	67%	3%	30%	21%	79%	1%	0%	76%	24%						
	PEAK HR FACTOR		0.857			0.779			0.888			0.930		0.923					
	APP/DEPART	24	/	260	109	/	9	497	/	484	655	/	532	0					

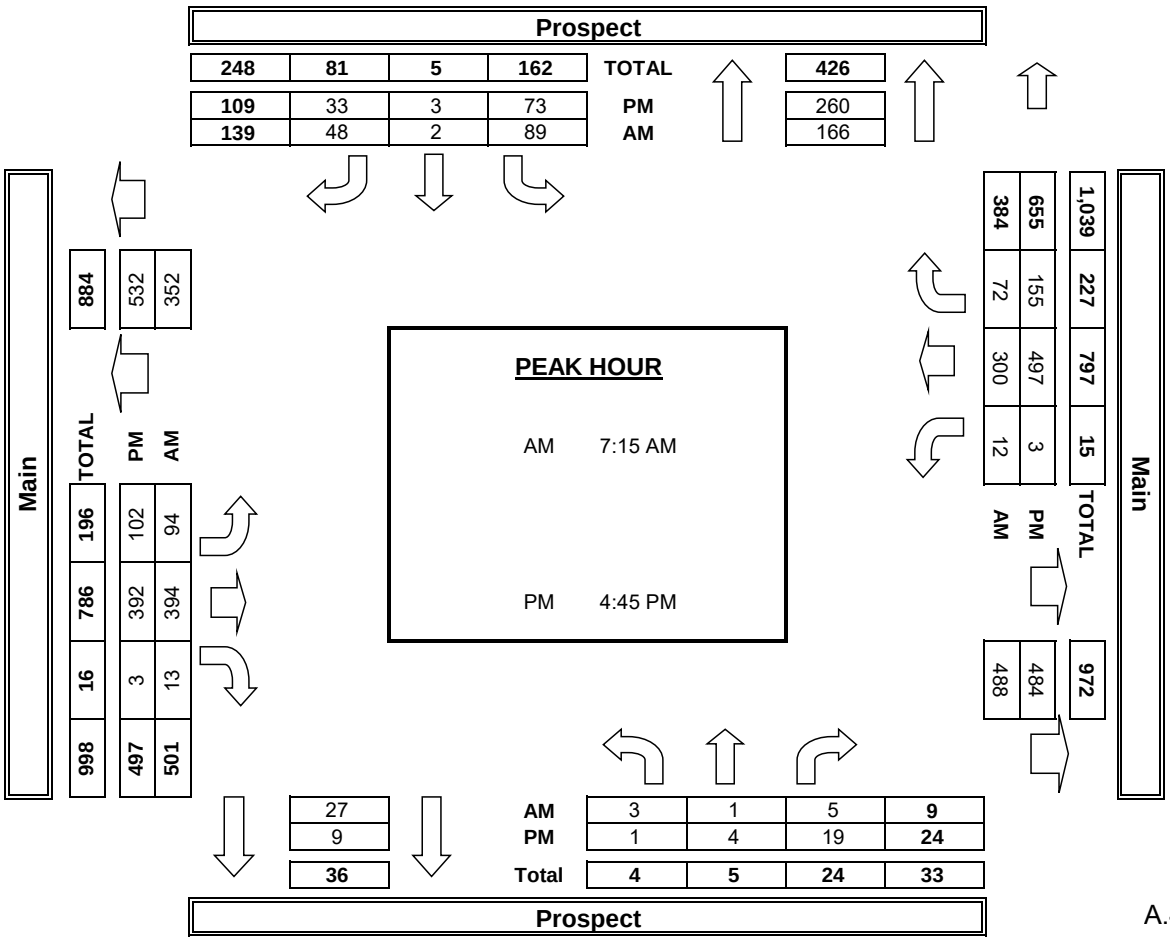


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

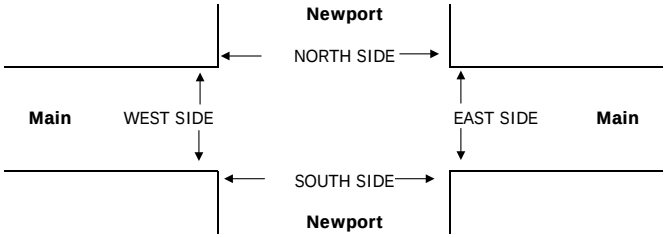
DATE:				
Tue, Mar 8, 16	LOCATION:	Tustin	PROJECT #:	SC0878
	NORTH & SOUTH:	Newport	LOCATION #:	6
	EAST & WEST:	Main	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ◄ W ▲ N S ▼ E ►

☑Add U-Turns to Left Turns

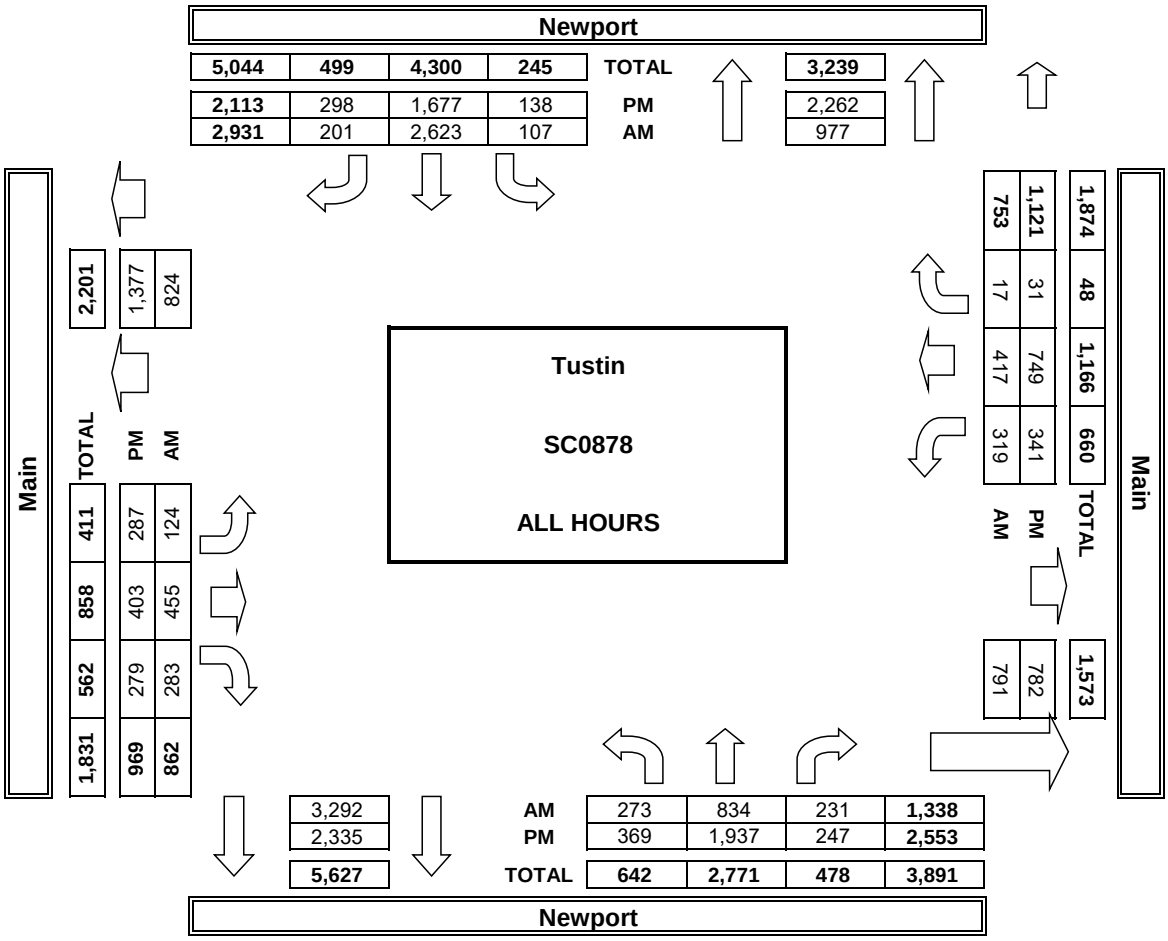
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND Main			WESTBOUND Main				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	19	71	7	6	236	19	10	58	28	12	20	0	486	6	1	0	0	7
	7:15 AM	29	101	31	17	311	15	9	78	39	28	38	4	700	6	0	0	0	6
	7:30 AM	45	134	77	16	402	25	20	58	42	59	49	3	930	12	0	0	0	12
	7:45 AM	48	121	44	11	341	30	15	65	53	66	102	0	896	5	0	0	0	5
	8:00 AM	49	134	24	21	418	29	22	64	33	38	47	3	882	8	0	0	0	8
	8:15 AM	26	85	19	8	380	33	15	50	22	52	57	2	749	6	0	0	0	6
	8:30 AM	29	90	18	17	315	21	14	30	34	35	46	2	651	15	1	0	0	16
	8:45 AM	28	98	11	11	220	29	19	52	32	29	58	3	590	9	0	0	0	9
	VOLUMES	273	834	231	107	2,623	201	124	455	283	319	417	17	5,884	67	2	0	0	69
	APPROACH %	20%	62%	17%	4%	89%	7%	14%	53%	33%	42%	55%	2%						
	APP/DEPART	1,338	/	977	2,931	/	3,292	862	/	791	753	/	824	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	168	474	164	56	1,541	117	72	237	150	215	255	8	3,457					
	APPROACH %	21%	59%	20%	3%	90%	7%	16%	52%	33%	45%	53%	2%						
	PEAK HR FACTOR		0.787			0.916			0.863			0.711		0.929					
	APP/DEPART	806	/	554	1,714	/	1,937	459	/	457	478	/	509	0					
PM	4:00 PM	49	217	27	10	206	51	30	32	32	34	83	6	777	4	0	0	0	4
	4:15 PM	46	238	18	17	183	31	35	46	27	28	94	6	769	1	2	0	0	3
	4:30 PM	46	261	26	18	201	39	37	41	41	44	66	4	824	5	0	0	0	5
	4:45 PM	45	241	28	22	194	41	35	48	35	41	101	3	834	6	0	0	1	7
	5:00 PM	47	243	40	21	255	40	40	59	41	49	101	4	940	9	1	0	0	10
	5:15 PM	37	256	36	15	222	34	33	57	38	47	109	0	884	7	1	0	0	8
	5:30 PM	55	252	48	13	233	32	29	59	37	46	83	2	889	5	1	0	0	6
	5:45 PM	44	229	24	22	183	30	48	61	28	52	112	6	839	2	2	0	0	4
	VOLUMES	369	1,937	247	138	1,677	298	287	403	279	341	749	31	6,756	39	7	0	1	47
	APPROACH %	14%	76%	10%	7%	79%	14%	30%	42%	29%	30%	67%	3%						
	APP/DEPART	2,553	/	2,262	2,113	/	2,335	969	/	782	1,121	/	1,377	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	183	980	148	71	893	136	150	236	144	194	405	12	3,552					
	APPROACH %	14%	75%	11%	6%	81%	12%	28%	45%	27%	32%	66%	2%						
	PEAK HR FACTOR		0.923			0.870			0.946			0.899		0.945					
	APP/DEPART	1,311	/	1,147	1,100	/	1,254	530	/	450	611	/	701	0					

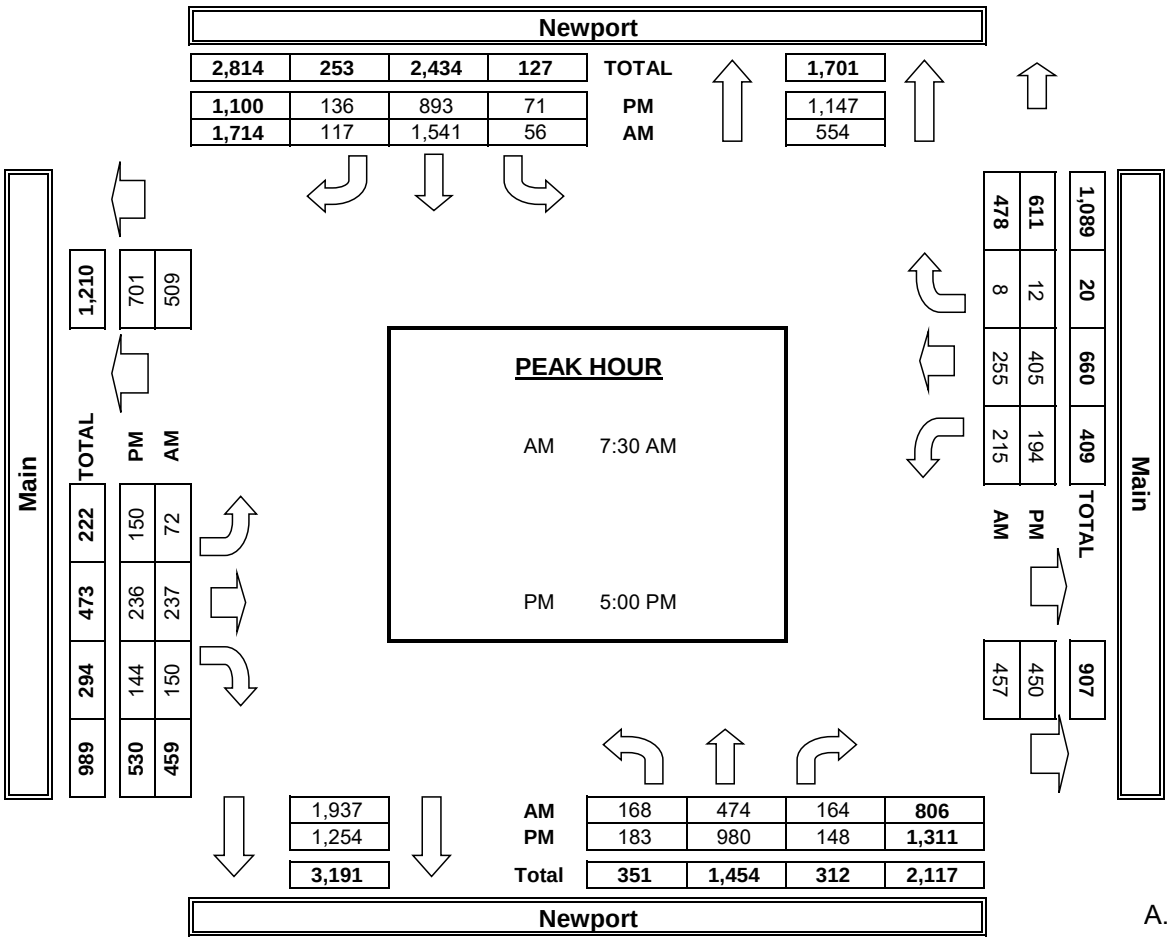


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

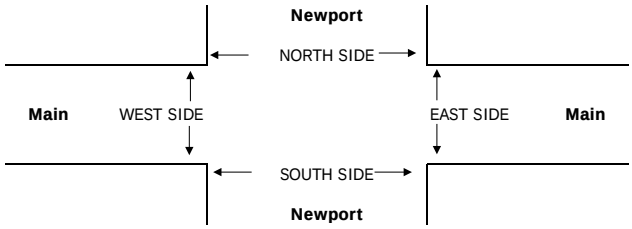
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	19
	EAST & WEST:	Main	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

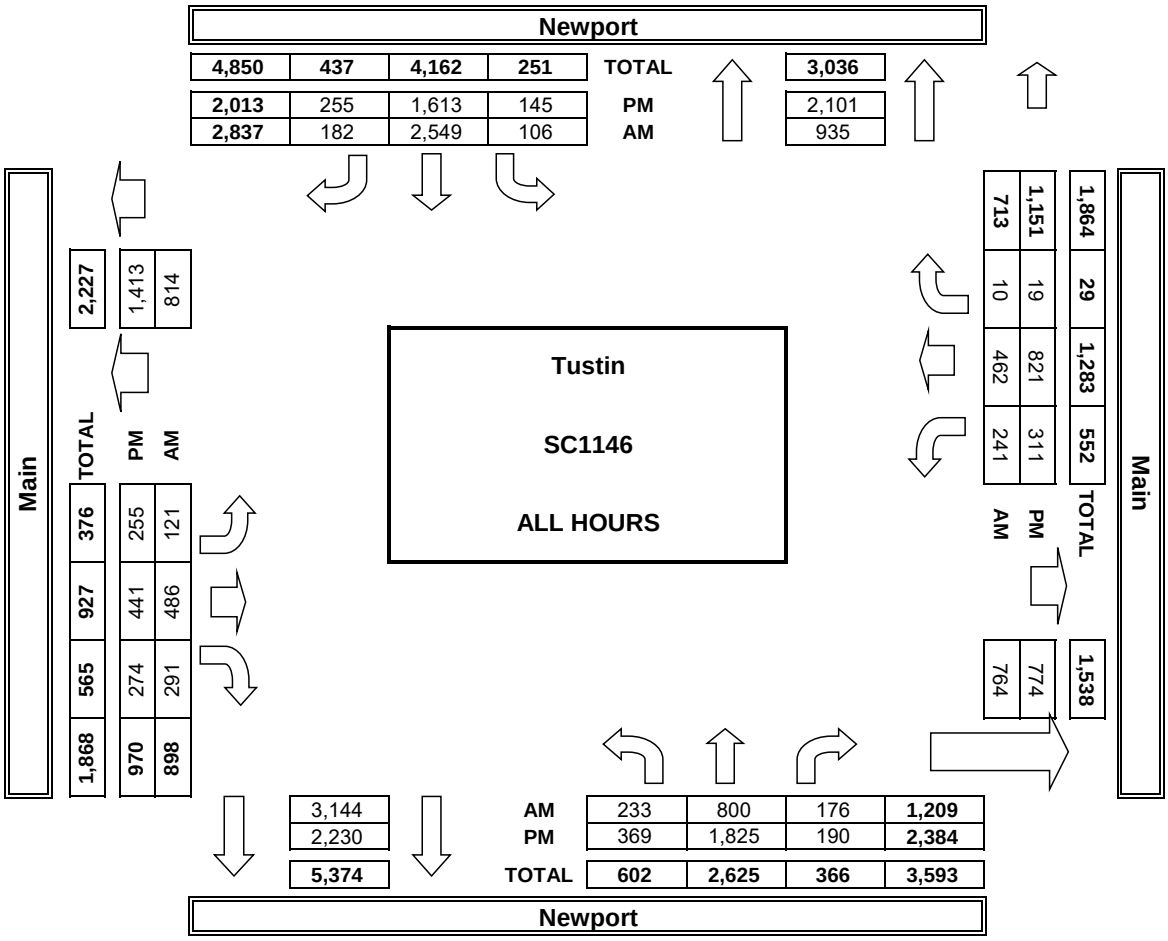
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND Main			WESTBOUND Main				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	14	55	14	12	225	26	9	66	25	23	39	2	510	4	2	0	0	6
	7:15 AM	35	109	25	9	303	14	17	98	29	20	57	2	718	9	0	0	0	9
	7:30 AM	44	128	58	18	407	21	13	65	41	36	70	1	902	8	0	0	0	8
	7:45 AM	34	144	22	13	327	32	22	73	38	43	91	1	840	8	0	0	0	8
	8:00 AM	22	111	24	12	375	23	12	50	39	35	51	1	755	9	0	0	0	9
	8:15 AM	32	80	12	15	329	22	15	45	33	39	53	1	676	10	0	0	0	10
	8:30 AM	23	75	7	13	338	25	14	43	41	22	36	0	637	6	2	0	0	8
	8:45 AM	29	98	14	14	245	19	19	46	45	23	65	2	619	9	0	0	0	9
	VOLUMES	233	800	176	106	2,549	182	121	486	291	241	462	10	5,657	63	4	0	0	67
	APPROACH %	19%	66%	15%	4%	90%	6%	13%	54%	32%	34%	65%	1%						
	APP/DEPART	1,209	/	935	2,837	/	3,144	898	/	764	713	/	814	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	135	492	129	52	1,412	90	64	286	147	134	269	5	3,215					
	APPROACH %	18%	65%	17%	3%	91%	6%	13%	58%	30%	33%	66%	1%						
	PEAK HR FACTOR		0.822			0.871			0.863			0.756		0.891					
	APP/DEPART	756	/	561	1,554	/	1,727	497	/	467	408	/	460	0					
PM	4:00 PM	48	217	28	11	203	34	32	48	34	40	93	2	790	5	1	0	0	6
	4:15 PM	45	225	21	22	190	38	29	57	38	37	102	1	805	2	0	0	0	2
	4:30 PM	44	228	30	17	203	23	39	48	27	41	102	1	803	2	0	0	0	2
	4:45 PM	55	247	26	14	200	29	29	57	31	30	125	2	845	6	0	0	0	6
	5:00 PM	44	219	22	23	212	34	30	68	38	42	97	5	834	3	1	0	0	4
	5:15 PM	46	220	15	21	182	30	31	62	34	50	105	2	798	2	0	0	0	2
	5:30 PM	38	226	28	22	212	40	27	45	38	30	93	1	800	5	0	0	0	5
	5:45 PM	49	243	20	15	211	27	38	56	34	41	104	5	843	7	0	0	0	7
	VOLUMES	369	1,825	190	145	1,613	255	255	441	274	311	821	19	6,518	32	2	0	0	34
	APPROACH %	15%	77%	8%	7%	80%	13%	26%	45%	28%	27%	71%	2%						
	APP/DEPART	2,384	/	2,101	2,013	/	2,230	970	/	774	1,151	/	1,413	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	188	919	99	76	805	124	127	230	134	150	426	9	3,287					
	APPROACH %	16%	76%	8%	8%	80%	12%	26%	47%	27%	26%	73%	2%						
	PEAK HR FACTOR		0.919			0.934			0.903			0.932		0.972					
	APP/DEPART	1,206	/	1,056	1,005	/	1,102	491	/	404	585	/	725	0					

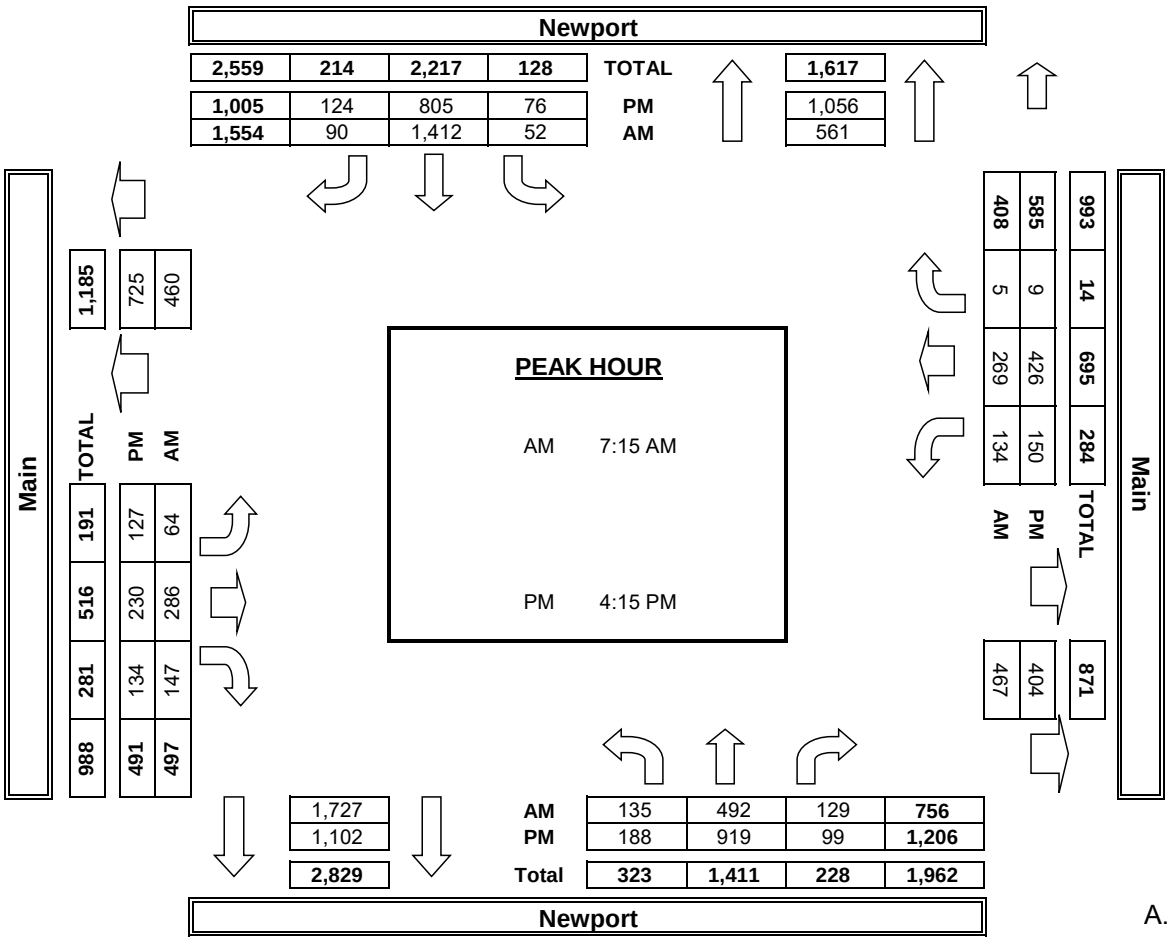


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

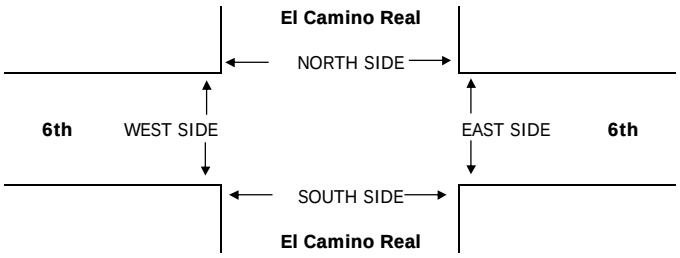
DATE:	LOCATION:	Tustin	PROJECT #:	SC0826
Thu, Jan 14, 16	NORTH & SOUTH:	El Camino Real	LOCATION #:	3
	EAST & WEST:	6th	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND El Camino Real			SOUTHBOUND El Camino Real			EASTBOUND 6th			WESTBOUND 6th				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	0	0	1	0	0	1	0	0	1	0		0	0	0	0	
AM	7:00 AM	15	27	3	1	44	2	0	2	15	1	6	4	120	0	0	0	0	0
	7:15 AM	4	47	0	5	63	2	3	5	30	3	4	4	170	0	0	0	0	0
	7:30 AM	13	57	2	8	95	0	3	26	33	3	6	4	250	0	0	0	0	0
	7:45 AM	12	68	2	6	85	3	6	9	30	3	7	3	234	0	0	0	1	1
	8:00 AM	7	45	2	3	67	1	1	7	28	4	9	3	177	0	0	0	0	0
	8:15 AM	10	40	3	3	69	1	3	3	22	3	5	1	163	1	0	0	0	1
	8:30 AM	9	33	4	5	48	3	5	3	18	1	4	3	136	0	0	0	0	0
	8:45 AM	16	39	2	3	54	1	2	6	20	4	6	1	154	0	0	0	0	0
	VOLUMES	86	356	18	34	525	13	23	61	196	22	47	23	1,404	1	0	0	1	2
	APPROACH %	19%	77%	4%	6%	92%	2%	8%	22%	70%	24%	51%	25%						
	APP/DEPART	460	/	402	572	/	743	280	/	114	92	/	145	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	36	217	6	22	310	6	13	47	121	13	26	14	831					
	APPROACH %	14%	84%	2%	7%	92%	2%	7%	26%	67%	25%	49%	26%						
	PEAK HR FACTOR		0.790			0.820			0.730			0.828		0.831					
	APP/DEPART	259	/	244	338	/	443	181	/	76	53	/	68	0					
PM	4:00 PM	23	78	3	4	44	3	5	6	27	1	7	6	207	0	0	0	0	0
	4:15 PM	21	91	5	4	64	5	4	9	30	5	4	5	247	0	0	0	0	0
	4:30 PM	26	85	2	3	54	8	7	6	29	0	5	11	236	0	0	0	0	0
	4:45 PM	21	90	2	4	55	3	10	7	29	4	15	10	250	0	0	0	0	0
	5:00 PM	26	113	6	4	61	12	9	9	31	6	6	8	291	0	0	0	0	0
	5:15 PM	30	103	7	2	67	7	7	10	21	3	7	6	270	0	0	0	0	0
	5:30 PM	35	98	1	3	52	8	3	7	28	5	8	7	255	0	0	0	0	0
	5:45 PM	25	96	9	3	53	3	5	10	23	6	5	8	246	0	0	0	0	0
	VOLUMES	207	754	35	27	450	49	50	64	218	30	57	61	2,002	0	0	0	0	0
	APPROACH %	21%	76%	4%	5%	86%	9%	15%	19%	66%	20%	39%	41%						
	APP/DEPART	996	/	865	526	/	698	332	/	126	148	/	313	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	112	404	16	13	235	30	29	33	109	18	36	31	1,066					
	APPROACH %	21%	76%	3%	5%	85%	11%	17%	19%	64%	21%	42%	36%						
	PEAK HR FACTOR		0.917			0.903			0.872			0.733		0.916					
	APP/DEPART	532	/	464	278	/	362	171	/	62	85	/	178	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

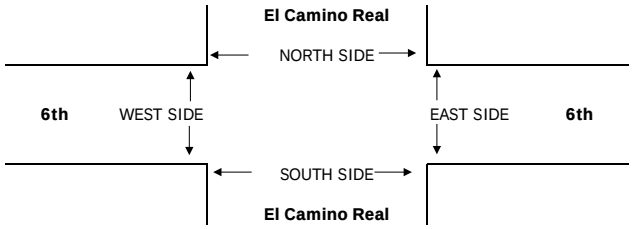
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	El Camino Real	LOCATION #:	20
	EAST & WEST:	6th	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

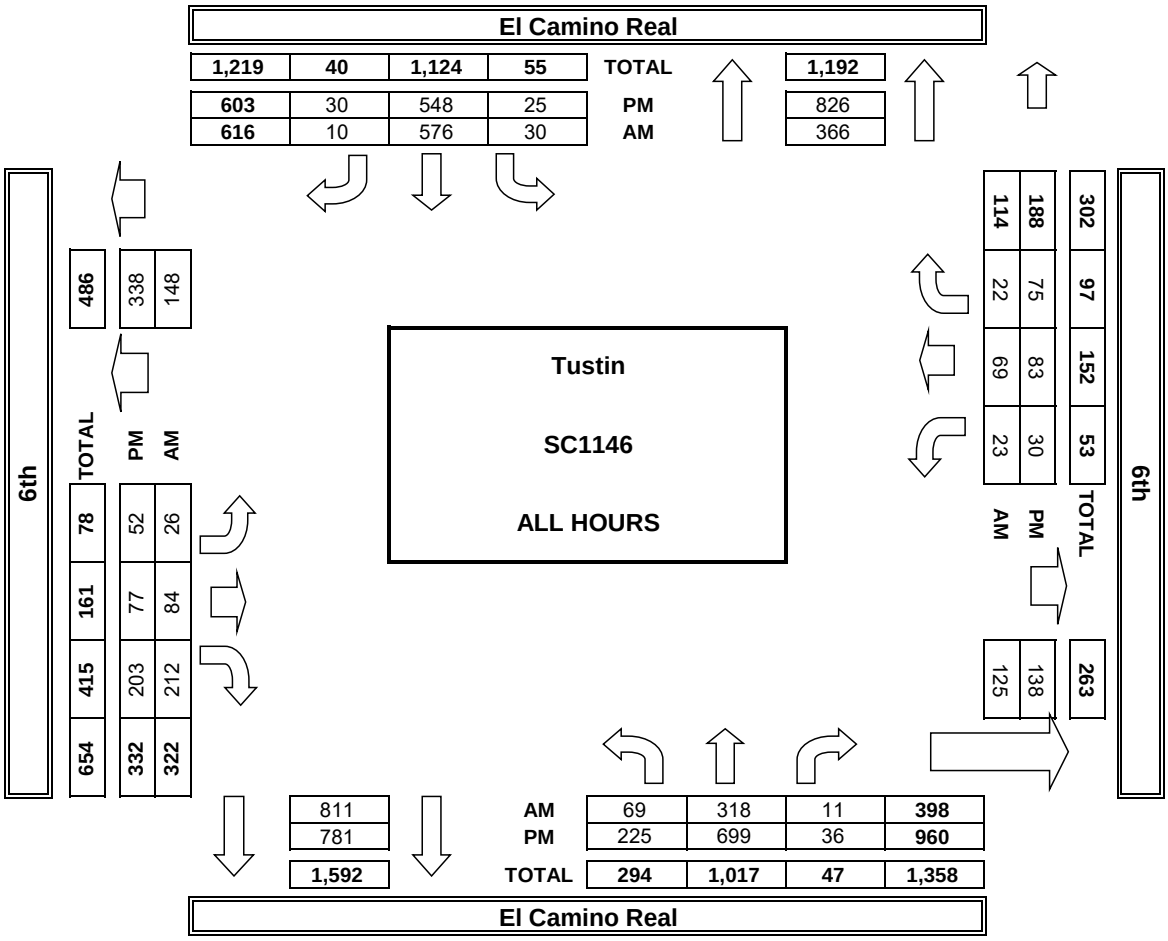
		NORTHBOUND El Camino Real			SOUTHBOUND El Camino Real			EASTBOUND 6th			WESTBOUND 6th				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	1	1	0	1	0	0	1	0	0	1	0		0	0	0	0	
AM	7:00 AM	5	19	0	4	57	0	3	5	20	1	11	0	125	0	0	0	0	0
	7:15 AM	4	37	0	4	71	1	3	13	29	2	4	3	171	0	0	0	0	0
	7:30 AM	9	43	1	4	100	0	4	40	44	5	12	2	264	0	0	0	0	0
	7:45 AM	9	60	2	4	81	0	4	10	32	3	13	3	221	0	0	0	0	0
	8:00 AM	16	48	0	8	82	0	2	5	29	4	10	4	208	0	0	0	0	0
	8:15 AM	11	33	4	3	70	3	2	2	16	3	6	3	156	0	0	0	0	0
	8:30 AM	10	32	3	2	61	2	4	6	24	1	5	4	154	0	0	0	0	0
	8:45 AM	5	46	1	1	54	4	4	3	18	4	8	3	151	0	0	0	0	0
	VOLUMES	69	318	11	30	576	10	26	84	212	23	69	22	1,450	0	0	0	0	0
	APPROACH %	17%	80%	3%	5%	94%	2%	8%	26%	66%	20%	61%	19%						
	APP/DEPART	398	/	366	616	/	811	322	/	125	114	/	148	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	38	188	3	20	334	1	13	68	134	14	39	12	864					
	APPROACH %	17%	82%	1%	6%	94%	0%	6%	32%	62%	22%	60%	18%						
	PEAK HR FACTOR		0.806			0.853			0.611			0.855		0.818					
	APP/DEPART	229	/	213	355	/	482	215	/	91	65	/	78	0					
PM	4:00 PM	18	62	2	5	73	4	8	9	23	6	3	7	220	0	0	0	0	0
	4:15 PM	24	77	4	3	50	4	4	8	13	3	7	12	209	0	0	0	0	0
	4:30 PM	25	90	9	3	48	3	6	7	35	2	14	5	247	0	0	0	0	0
	4:45 PM	27	99	3	4	77	3	4	10	19	4	15	9	274	0	0	0	0	0
	5:00 PM	21	95	3	4	93	6	11	16	31	3	9	6	298	0	0	0	0	0
	5:15 PM	32	86	4	4	69	6	7	11	29	5	17	10	280	0	0	0	0	0
	5:30 PM	35	82	3	2	75	2	5	8	30	4	13	16	275	0	0	0	0	0
	5:45 PM	43	108	8	0	63	2	7	8	23	3	5	10	280	0	0	0	0	0
	VOLUMES	225	699	36	25	548	30	52	77	203	30	83	75	2,083	0	0	0	0	0
	APPROACH %	23%	73%	4%	4%	91%	5%	16%	23%	61%	16%	44%	40%						
	APP/DEPART	960	/	826	603	/	781	332	/	138	188	/	338	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	131	371	18	10	300	16	30	43	113	15	44	42	1,133					
	APPROACH %	25%	71%	3%	3%	92%	5%	16%	23%	61%	15%	44%	42%						
	PEAK HR FACTOR		0.818			0.791			0.802			0.765		0.951					
	APP/DEPART	520	/	443	326	/	428	186	/	71	101	/	191	0					

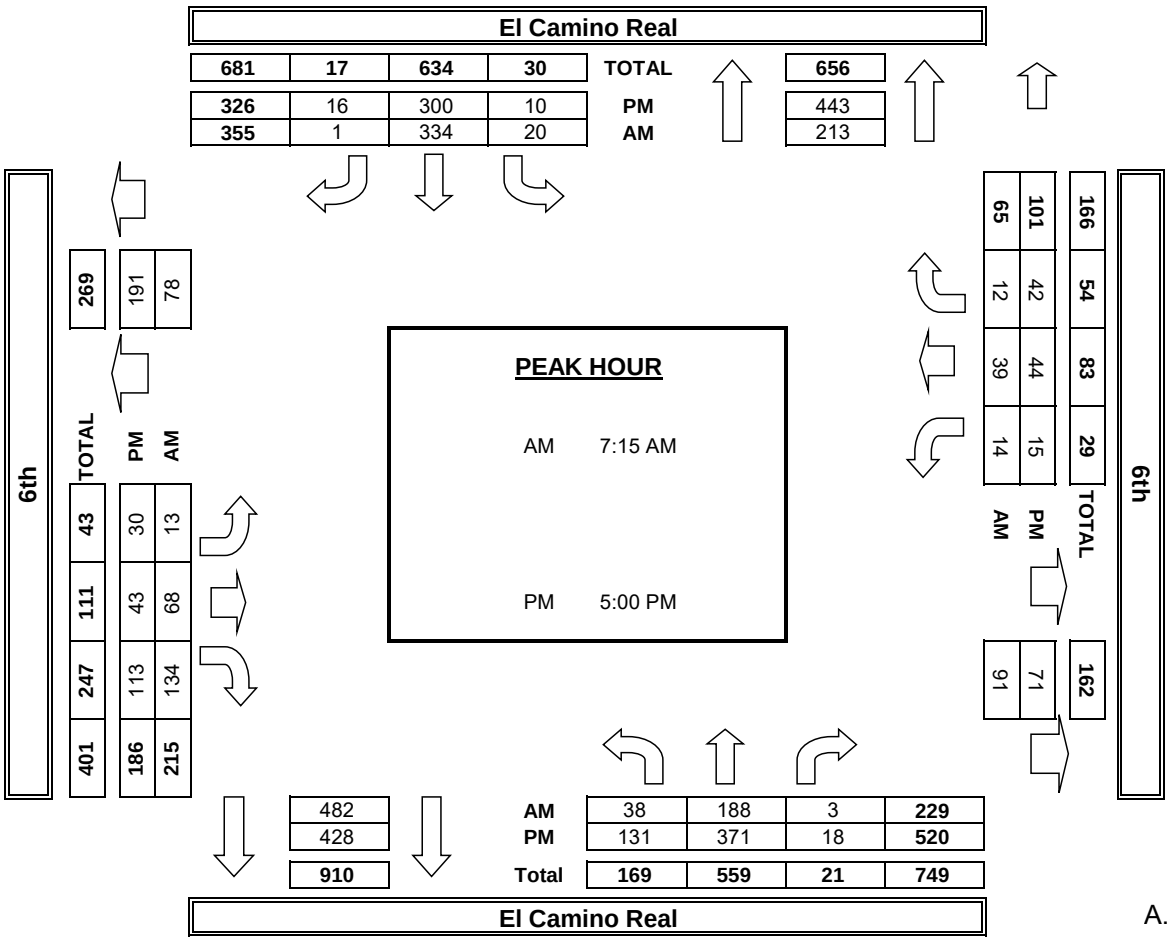


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	21
	EAST & WEST:	6th	CONTROL:	SIGNAL

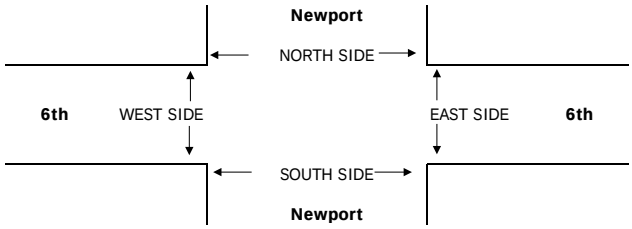
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

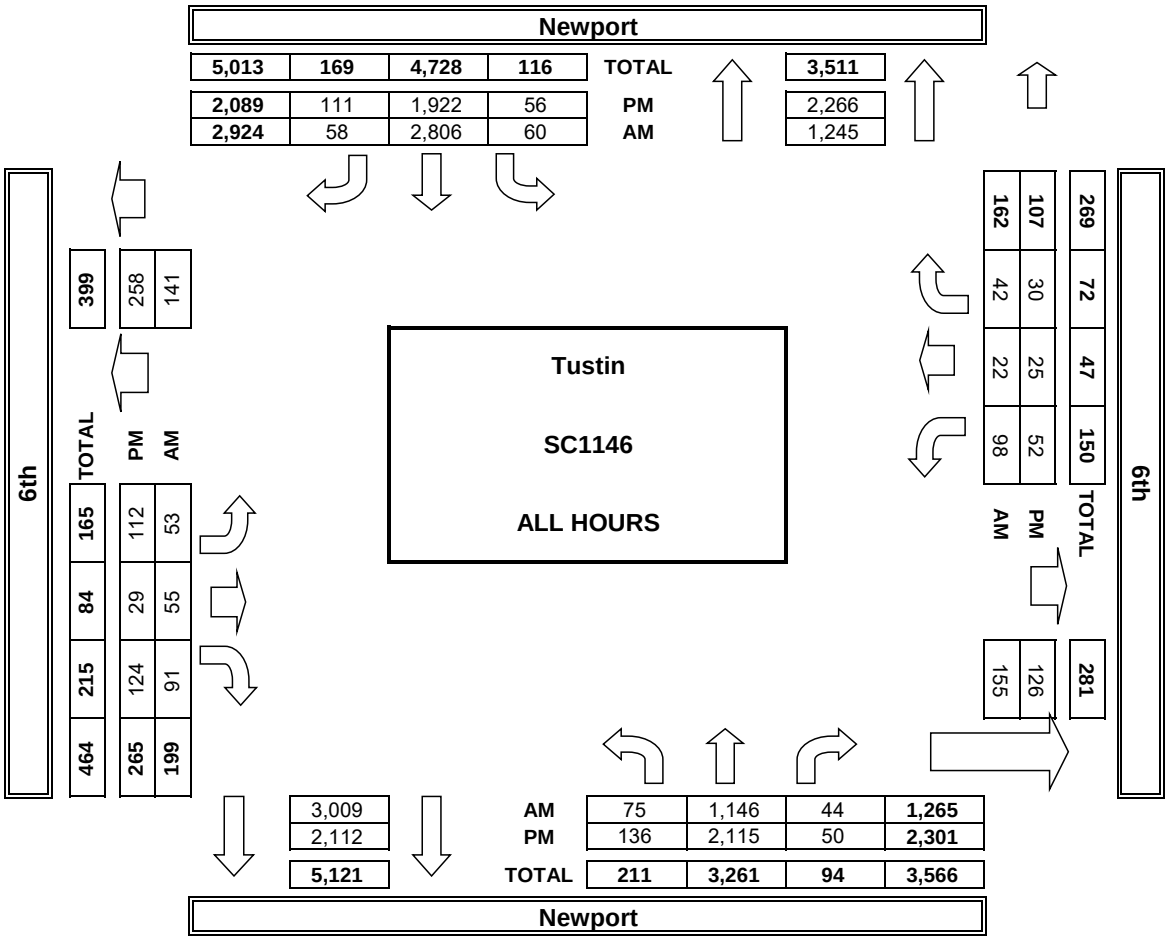
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND 6th			WESTBOUND 6th				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	6	88	5	6	242	5	3	3	7	11	2	3	381	0	0	0	0	0
	7:15 AM	9	161	6	10	323	4	8	7	4	17	1	6	556	3	0	0	0	3
	7:30 AM	18	225	16	12	427	4	14	28	12	23	7	8	794	5	1	0	0	6
	7:45 AM	15	184	1	6	367	10	9	7	17	23	4	8	651	4	0	0	0	4
	8:00 AM	5	144	5	4	401	7	4	5	14	6	4	4	603	0	1	0	0	1
	8:15 AM	6	117	2	7	382	8	3	1	8	2	0	5	541	2	0	0	0	2
	8:30 AM	7	109	7	7	373	6	5	3	14	10	2	3	546	0	1	0	0	1
	8:45 AM	9	118	2	8	291	14	7	1	15	6	2	5	478	0	1	0	0	1
	VOLUMES	75	1,146	44	60	2,806	58	53	55	91	98	22	42	4,550	14	4	0	0	18
	APPROACH %	6%	91%	3%	2%	96%	2%	27%	28%	46%	60%	14%	26%						
	APP/DEPART	1,265	/	1,245	2,924	/	3,009	199	/	155	162	/	141	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	47	714	28	32	1,518	25	35	47	47	69	16	26	2,604					
	APPROACH %	6%	90%	4%	2%	96%	2%	27%	36%	36%	62%	14%	23%						
	PEAK HR FACTOR		0.762			0.889			0.597			0.730		0.820					
	APP/DEPART	789	/	777	1,575	/	1,646	129	/	105	111	/	76	0					
PM	4:00 PM	18	236	7	6	259	10	15	4	18	10	0	3	586	4	1	0	0	5
	4:15 PM	20	237	6	7	225	10	9	4	15	5	3	5	546	1	0	0	0	1
	4:30 PM	16	271	2	12	233	14	20	1	12	6	6	2	595	2	0	0	0	2
	4:45 PM	15	262	6	4	234	15	20	3	11	2	3	3	578	0	1	0	0	1
	5:00 PM	16	268	9	9	268	14	16	6	14	8	2	4	634	2	2	0	0	4
	5:15 PM	21	265	5	4	230	15	12	5	16	10	5	4	592	2	1	0	0	3
	5:30 PM	5	274	7	5	246	20	12	1	15	8	2	3	598	1	1	0	0	2
	5:45 PM	25	302	8	9	227	13	8	5	23	3	4	6	633	2	3	0	0	5
	VOLUMES	136	2,115	50	56	1,922	111	112	29	124	52	25	30	4,762	14	9	0	0	23
	APPROACH %	6%	92%	2%	3%	92%	5%	42%	11%	47%	49%	23%	28%						
	APP/DEPART	2,301	/	2,266	2,089	/	2,112	265	/	126	107	/	258	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	67	1,109	29	27	971	62	48	17	68	29	13	17	2,457					
	APPROACH %	6%	92%	2%	3%	92%	6%	36%	13%	51%	49%	22%	29%						
	PEAK HR FACTOR		0.899			0.911			0.924			0.776		0.969					
	APP/DEPART	1,205	/	1,181	1,060	/	1,075	133	/	66	59	/	135	0					

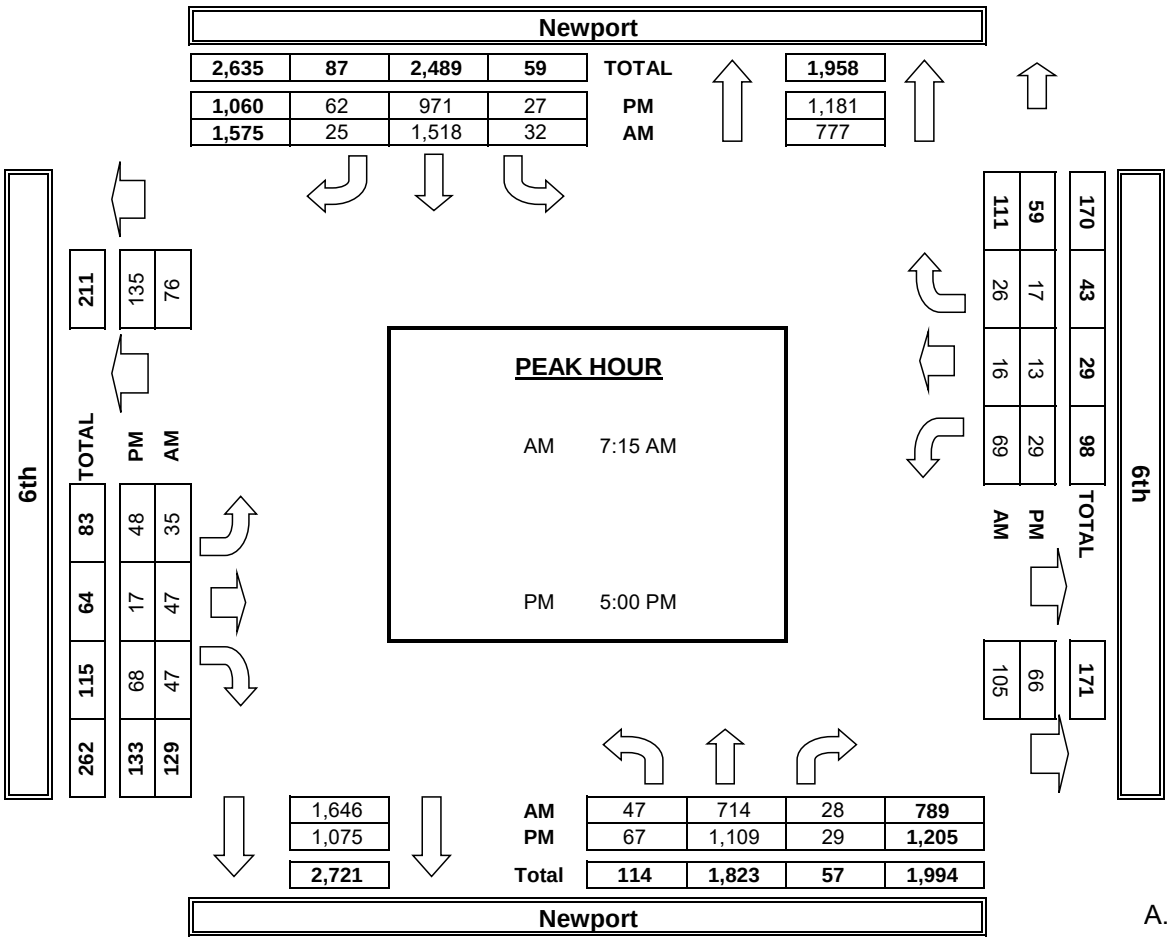


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	22
	EAST & WEST:	El Camino Real	CONTROL:	SIGNAL

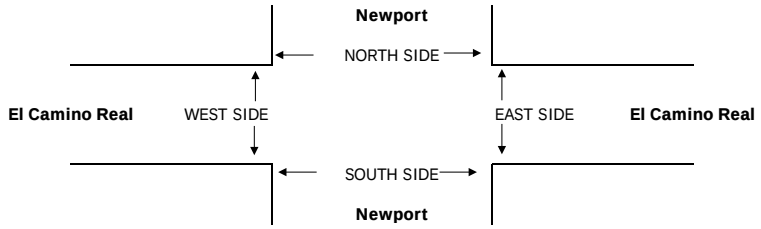
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

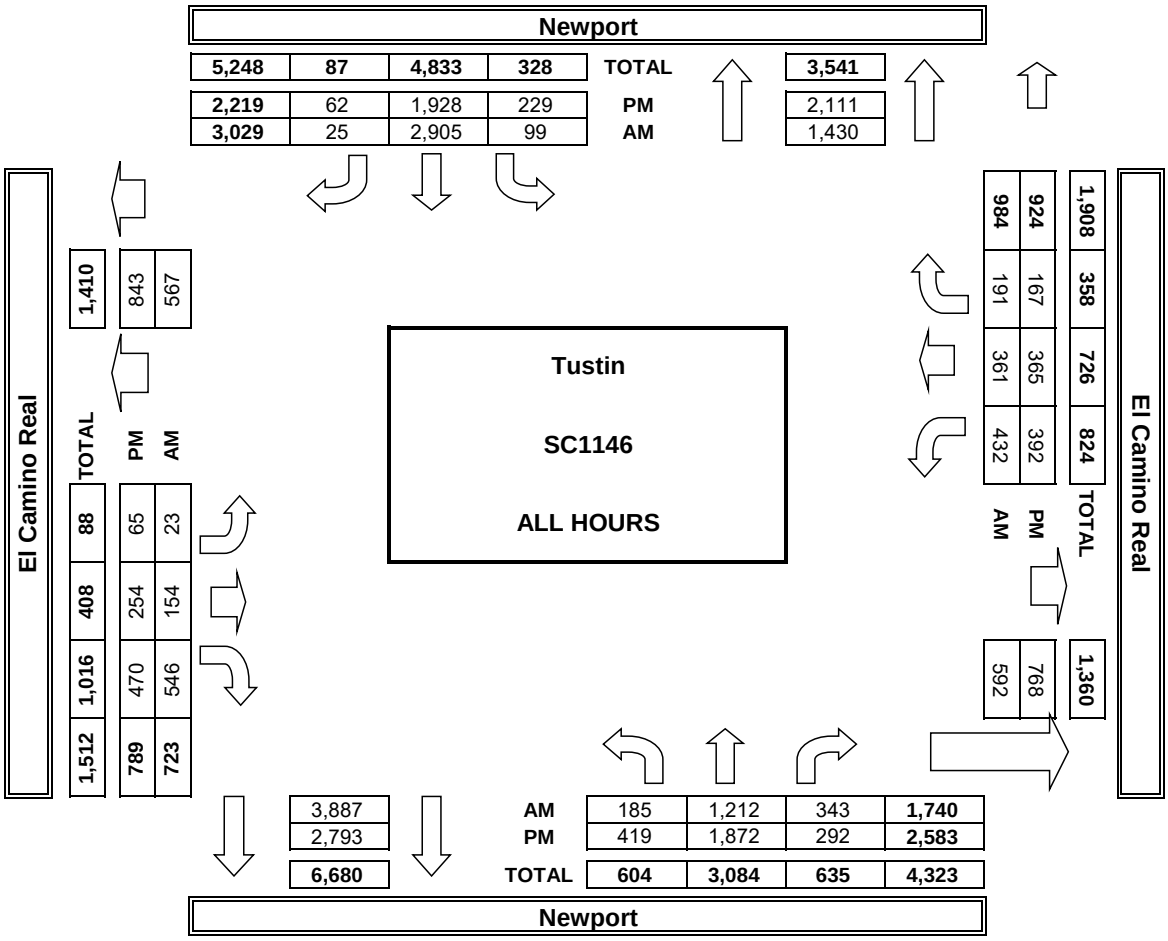
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND El Camino Real			WESTBOUND El Camino Real				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 1	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	26	132	37	15	277	3	0	33	44	41	19	24	651	1	0	0	0	1
	7:15 AM	23	207	74	10	326	1	1	17	58	60	53	18	848	0	0	0	0	0
	7:30 AM	20	212	98	25	427	2	3	41	96	58	80	17	1,079	0	2	0	0	2
	7:45 AM	35	177	52	8	421	1	6	12	89	76	72	29	978	1	1	0	0	2
	8:00 AM	22	135	21	8	414	5	2	18	74	77	44	26	846	0	0	0	0	0
	8:15 AM	18	107	18	15	401	4	0	8	79	43	24	31	748	0	1	0	0	1
	8:30 AM	24	121	24	7	354	7	3	13	63	44	32	27	719	0	0	0	0	0
	8:45 AM	17	121	19	11	285	2	8	12	43	33	37	19	607	2	0	0	0	2
	VOLUMES	185	1,212	343	99	2,905	25	23	154	546	432	361	191	6,476	4	4	0	0	8
	APPROACH %	11%	70%	20%	3%	96%	1%	3%	21%	76%	44%	37%	19%						
	APP/DEPART	1,740	/	1,430	3,029	/	3,887	723	/	592	984	/	567	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	100	731	245	51	1,588	9	12	88	317	271	249	90	3,751					
	APPROACH %	9%	68%	23%	3%	96%	1%	3%	21%	76%	44%	41%	15%						
	PEAK HR FACTOR		0.815			0.907			0.745			0.862		0.869					
	APP/DEPART	1,076	/	836	1,648	/	2,177	417	/	381	610	/	357	0					
PM	4:00 PM	37	217	20	17	292	8	10	15	59	46	53	23	797	0	0	0	0	0
	4:15 PM	44	241	33	23	200	9	9	34	75	39	45	12	764	0	1	0	0	1
	4:30 PM	53	252	47	29	213	7	13	47	60	50	50	26	847	0	1	0	0	1
	4:45 PM	55	248	49	35	234	4	12	44	61	56	39	21	858	0	2	0	0	2
	5:00 PM	73	214	36	38	284	12	8	32	57	48	55	23	880	2	0	0	0	2
	5:15 PM	65	219	41	29	261	4	4	31	58	36	48	24	820	0	1	0	0	1
	5:30 PM	37	237	37	30	232	8	6	28	54	63	40	22	794	0	0	0	0	0
	5:45 PM	55	244	29	28	212	10	3	23	46	54	35	16	755	1	2	0	0	3
	VOLUMES	419	1,872	292	229	1,928	62	65	254	470	392	365	167	6,515	3	7	0	0	10
	APPROACH %	16%	72%	11%	10%	87%	3%	8%	32%	60%	42%	40%	18%						
	APP/DEPART	2,583	/	2,111	2,219	/	2,793	789	/	768	924	/	843	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	246	933	173	131	992	27	37	154	236	190	192	94	3,405					
	APPROACH %	18%	69%	13%	11%	86%	2%	9%	36%	55%	40%	40%	20%						
	PEAK HR FACTOR		0.960			0.861			0.890			0.944		0.967					
	APP/DEPART	1,352	/	1,068	1,150	/	1,420	427	/	454	476	/	463	0					

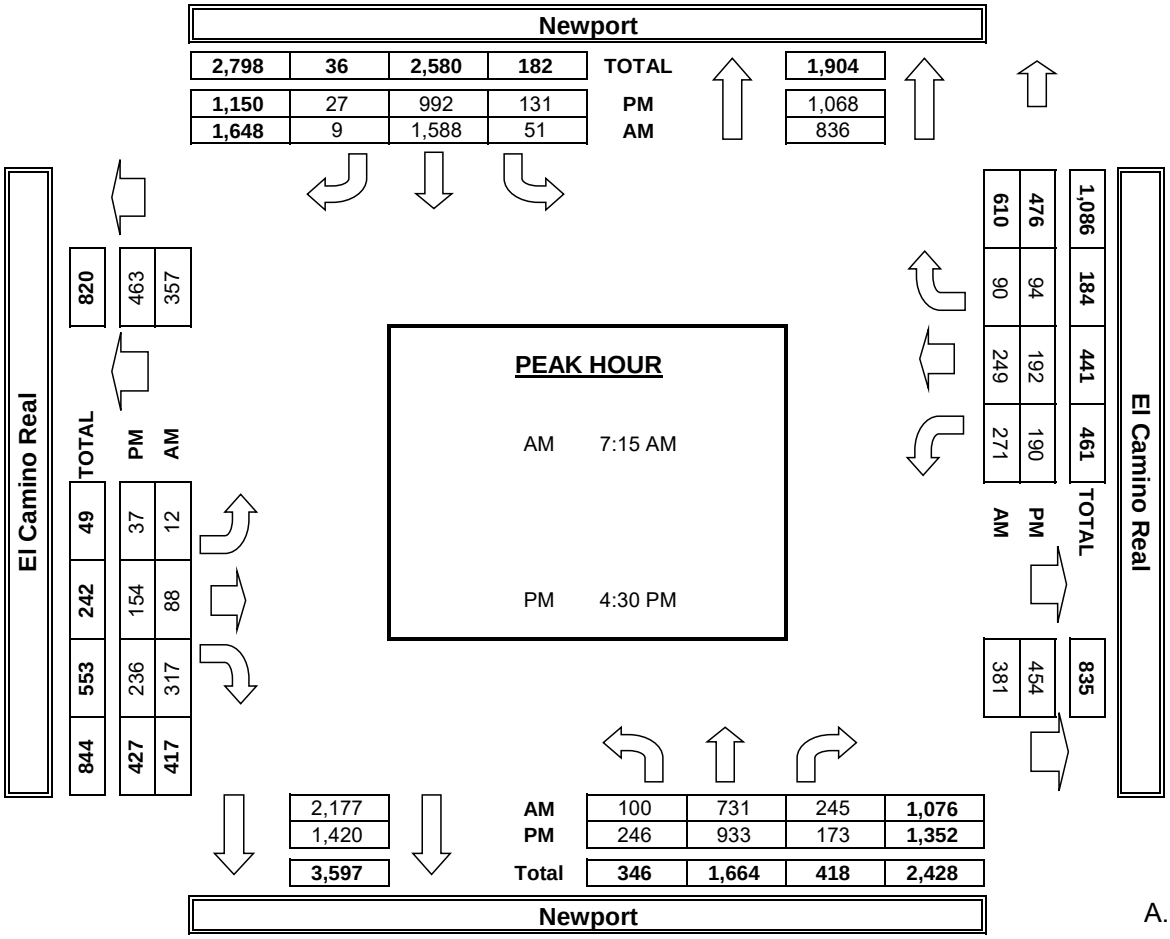


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

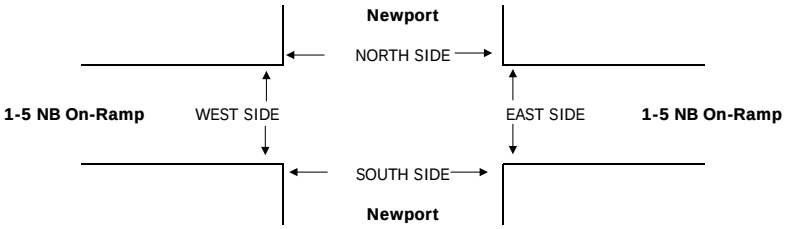
DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	23
	EAST & WEST:	1-5 NB On-Ramp	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

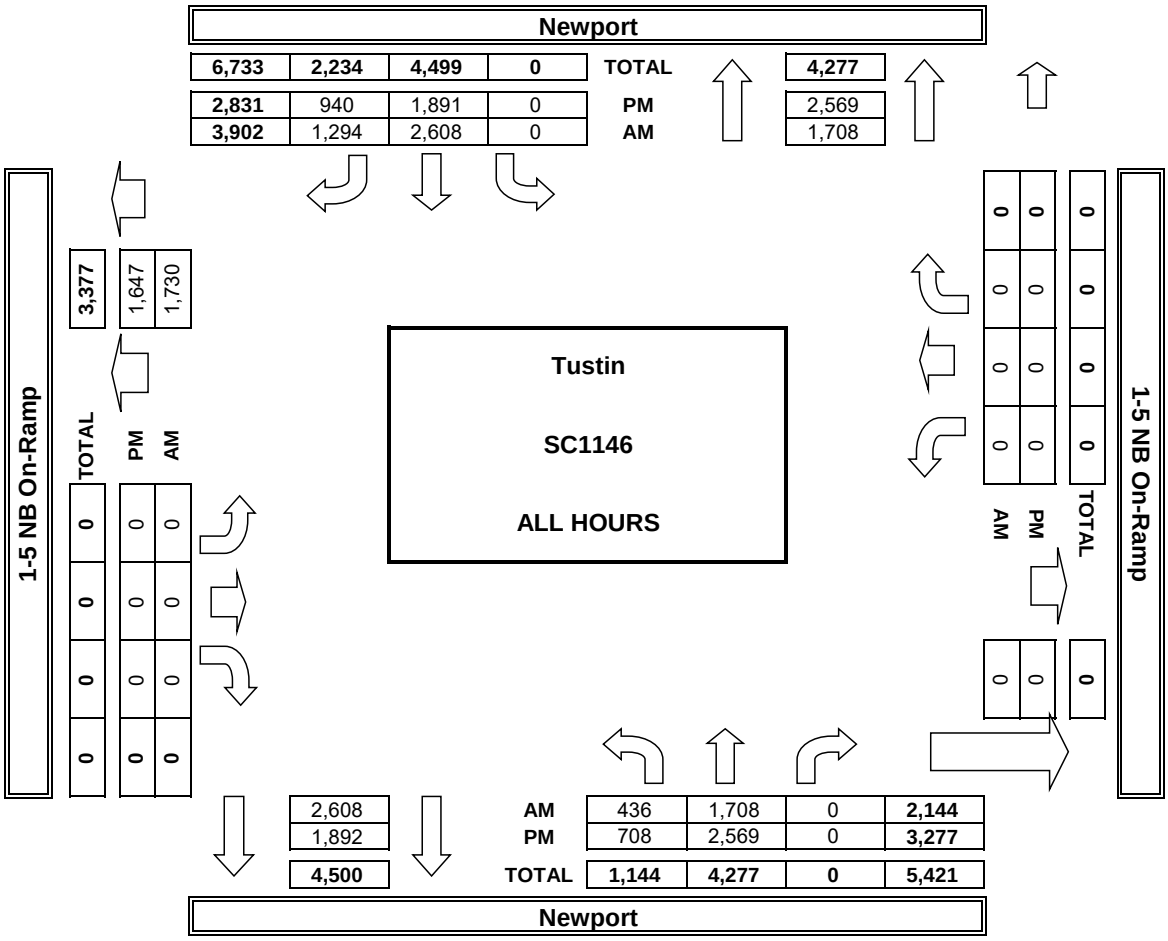
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND 1-5 NB On-Ramp			WESTBOUND 1-5 NB On-Ramp				U-TURNS				
	LANES:	NL 1	NT 3	NR X	SL X	ST 3	SR 0	EL X	ET X	ER X	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	48	143	0	0	211	134	0	0	0	0	0	0	536	0	0	0	0	0
	7:15 AM	73	290	0	0	265	178	0	0	0	0	0	0	806	0	0	0	0	0
	7:30 AM	43	345	0	0	423	208	0	0	0	0	0	0	1,019	0	0	0	0	0
	7:45 AM	56	248	0	0	438	203	0	0	0	0	0	0	945	0	0	0	0	0
	8:00 AM	53	180	0	0	369	164	0	0	0	0	0	0	766	0	0	0	0	0
	8:15 AM	57	157	0	0	356	147	0	0	0	0	0	0	717	0	0	0	0	0
	8:30 AM	50	169	0	0	299	143	0	0	0	0	0	0	661	0	0	0	0	0
	8:45 AM	56	176	0	0	247	117	0	0	0	0	0	0	596	0	0	0	0	0
	VOLUMES	436	1,708	0	0	2,608	1,294	0	0	0	0	0	0	6,046	0	0	0	0	0
	APPROACH %	20%	80%	0%	0%	67%	33%	0%	0%	0%	0%	0%	0%						
	APP/DEPART	2,144	/	1,708	3,902	/	2,608	0	/	0	0	/	1,730	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	225	1,063	0	0	1,495	753	0	0	0	0	0	0	3,536					
	APPROACH %	17%	83%	0%	0%	67%	33%	0%	0%	0%	0%	0%	0%						
	PEAK HR FACTOR		0.830			0.877			0.000			0.000		0.868					
	APP/DEPART	1,288	/	1,063	2,248	/	1,495	0	/	0	0	/	978	0					
PM	4:00 PM	66	280	0	0	265	136	0	0	0	0	0	0	747	0	0	0	0	0
	4:15 PM	93	327	0	0	230	95	0	0	0	0	0	0	745	0	0	0	0	0
	4:30 PM	98	325	0	0	212	113	0	0	0	0	0	0	748	0	0	0	0	0
	4:45 PM	110	340	0	0	207	104	0	0	0	0	0	0	761	0	0	0	0	0
	5:00 PM	86	301	0	0	258	135	0	0	0	0	0	0	780	0	0	0	0	0
	5:15 PM	79	320	0	0	263	111	0	0	0	0	0	0	773	0	0	0	0	0
	5:30 PM	87	324	0	0	253	125	0	0	0	0	0	0	789	1	0	0	0	1
	5:45 PM	89	352	0	0	203	121	0	0	0	0	0	0	765	0	0	0	0	0
	VOLUMES	708	2,569	0	0	1,891	940	0	0	0	0	0	0	6,108	1	0	0	0	1
	APPROACH %	22%	78%	0%	0%	67%	33%	0%	0%	0%	0%	0%	0%						
	APP/DEPART	3,277	/	2,569	2,831	/	1,892	0	/	0	0	/	1,647	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	341	1,297	0	0	977	492	0	0	0	0	0	0	3,107					
	APPROACH %	21%	79%	0%	0%	67%	33%	0%	0%	0%	0%	0%	0%						
	PEAK HR FACTOR		0.929			0.934			0.000			0.000		0.984					
	APP/DEPART	1,638	/	1,297	1,469	/	978	0	/	0	0	/	832	0					

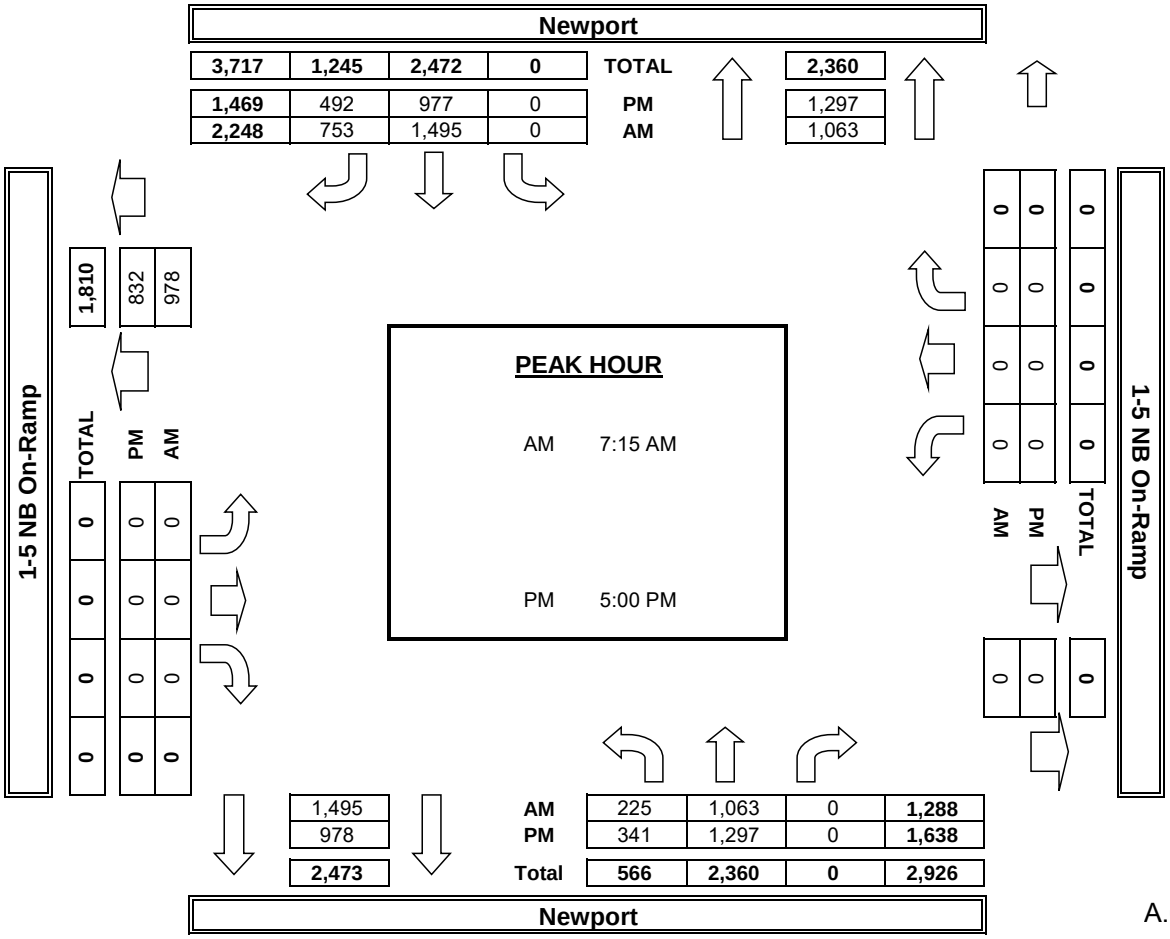


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC1146
Tue, Dec 6, 16	NORTH & SOUTH:	Newport	LOCATION #:	24
	EAST & WEST:	Nisson	CONTROL:	SIGNAL

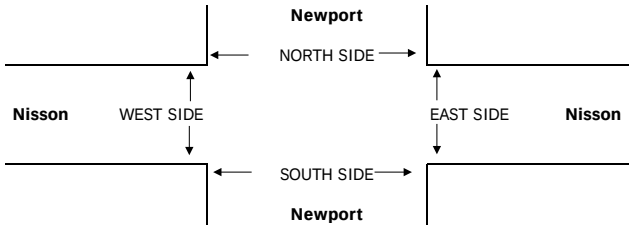
NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

☑dd U-Turns to Left Turns

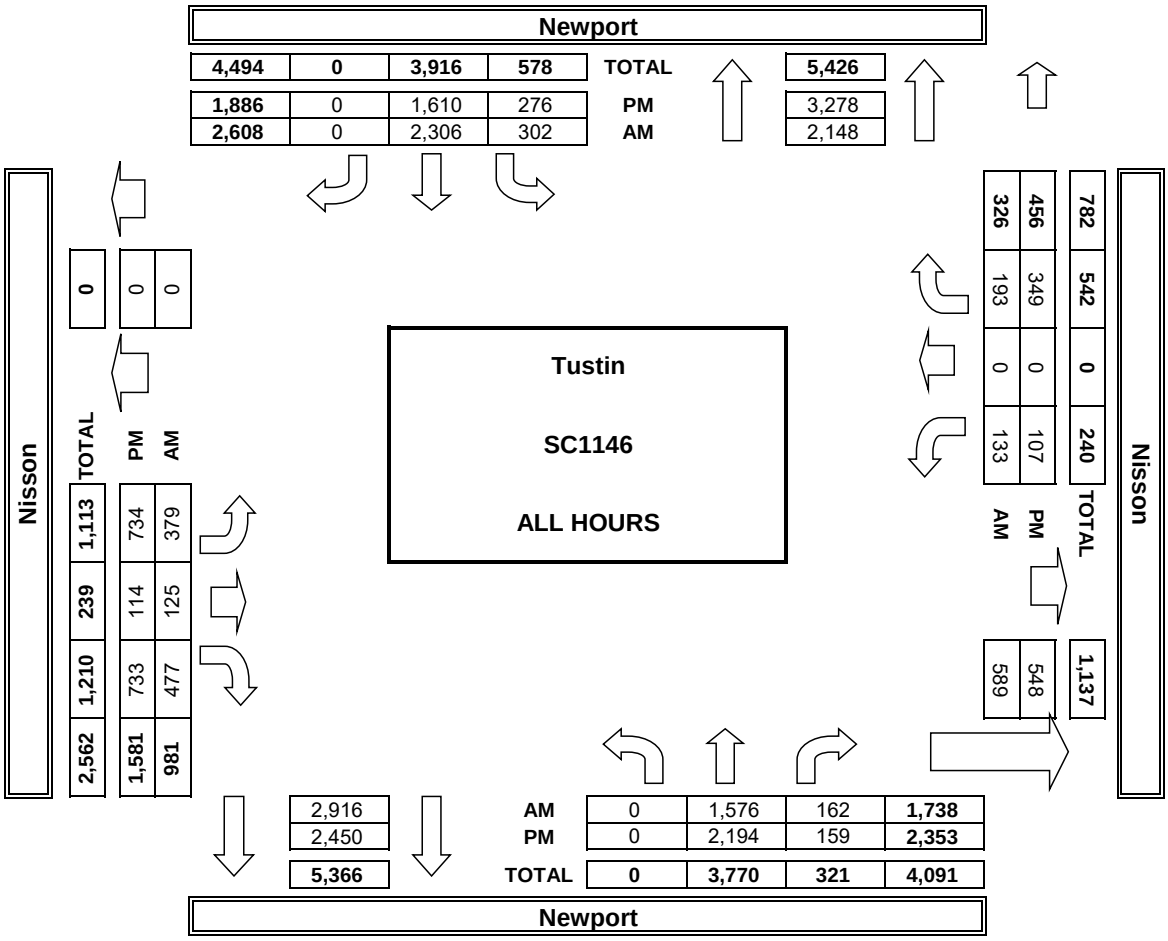
		NORTHBOUND Newport			SOUTHBOUND Newport			EASTBOUND Nisson			WESTBOUND Nisson				U-TURNS				
	LANES:	NL X	NT 3	NR 0	SL 1	ST 3	SR X	EL 1,5	ET 0.5	ER 1	WL 1	WT X	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	144	11	15	185	0	37	16	61	15	0	8	492	0	0	0	0	0
	7:15 AM	0	251	31	27	217	0	62	17	63	16	0	27	711	0	0	0	0	0
	7:30 AM	0	334	22	56	372	0	63	19	46	18	0	33	963	0	0	0	0	0
	7:45 AM	0	218	17	59	370	0	42	21	58	32	0	40	857	0	0	0	0	0
	8:00 AM	0	177	28	45	338	0	34	8	65	21	0	27	743	0	0	0	0	0
	8:15 AM	0	148	22	40	312	0	41	22	58	13	0	16	672	0	0	0	0	0
	8:30 AM	0	164	20	28	284	0	38	9	63	8	0	17	631	0	0	0	0	0
	8:45 AM	0	140	11	32	228	0	62	13	63	10	0	25	584	0	0	0	0	0
	VOLUMES	0	1,576	162	302	2,306	0	379	125	477	133	0	193	5,653	0	0	0	0	0
	APPROACH %	0%	91%	9%	12%	88%	0%	39%	13%	49%	41%	0%	59%						
	APP/DEPART	1,738	/	2,148	2,608	/	2,916	981	/	589	326	/	0	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	980	98	187	1,297	0	201	65	232	87	0	127	3,274					
	APPROACH %	0%	91%	9%	13%	87%	0%	40%	13%	47%	41%	0%	59%						
	PEAK HR FACTOR		0.757			0.865			0.877			0.743		0.850					
	APP/DEPART	1,078	/	1,308	1,484	/	1,616	498	/	350	214	/	0	0					
PM	4:00 PM	0	202	17	32	201	0	77	10	73	9	0	32	653	0	0	0	0	0
	4:15 PM	0	273	19	34	211	0	105	12	103	12	0	33	802	0	0	0	0	0
	4:30 PM	0	283	27	39	192	0	91	17	96	11	0	33	789	0	0	0	0	0
	4:45 PM	0	315	14	21	156	0	96	11	93	14	0	62	782	0	0	0	0	0
	5:00 PM	0	250	21	49	221	0	89	17	90	22	0	52	811	0	0	0	0	0
	5:15 PM	0	288	20	31	232	0	87	18	79	14	0	31	800	0	0	0	0	0
	5:30 PM	0	273	23	45	229	0	87	14	106	9	0	45	831	0	1	0	0	1
	5:45 PM	0	310	18	25	168	0	102	15	93	16	0	61	808	0	0	0	0	0
	VOLUMES	0	2,194	159	276	1,610	0	734	114	733	107	0	349	6,276	0	1	0	0	1
	APPROACH %	0%	93%	7%	15%	85%	0%	46%	7%	46%	23%	0%	77%						
	APP/DEPART	2,353	/	3,278	1,886	/	2,450	1,581	/	548	456	/	0	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	1,121	82	150	850	0	365	64	368	61	0	189	3,250					
	APPROACH %	0%	93%	7%	15%	85%	0%	46%	8%	46%	24%	0%	76%						
	PEAK HR FACTOR		0.917			0.912			0.949			0.812		0.978					
	APP/DEPART	1,203	/	1,676	1,000	/	1,279	797	/	295	250	/	0	0					

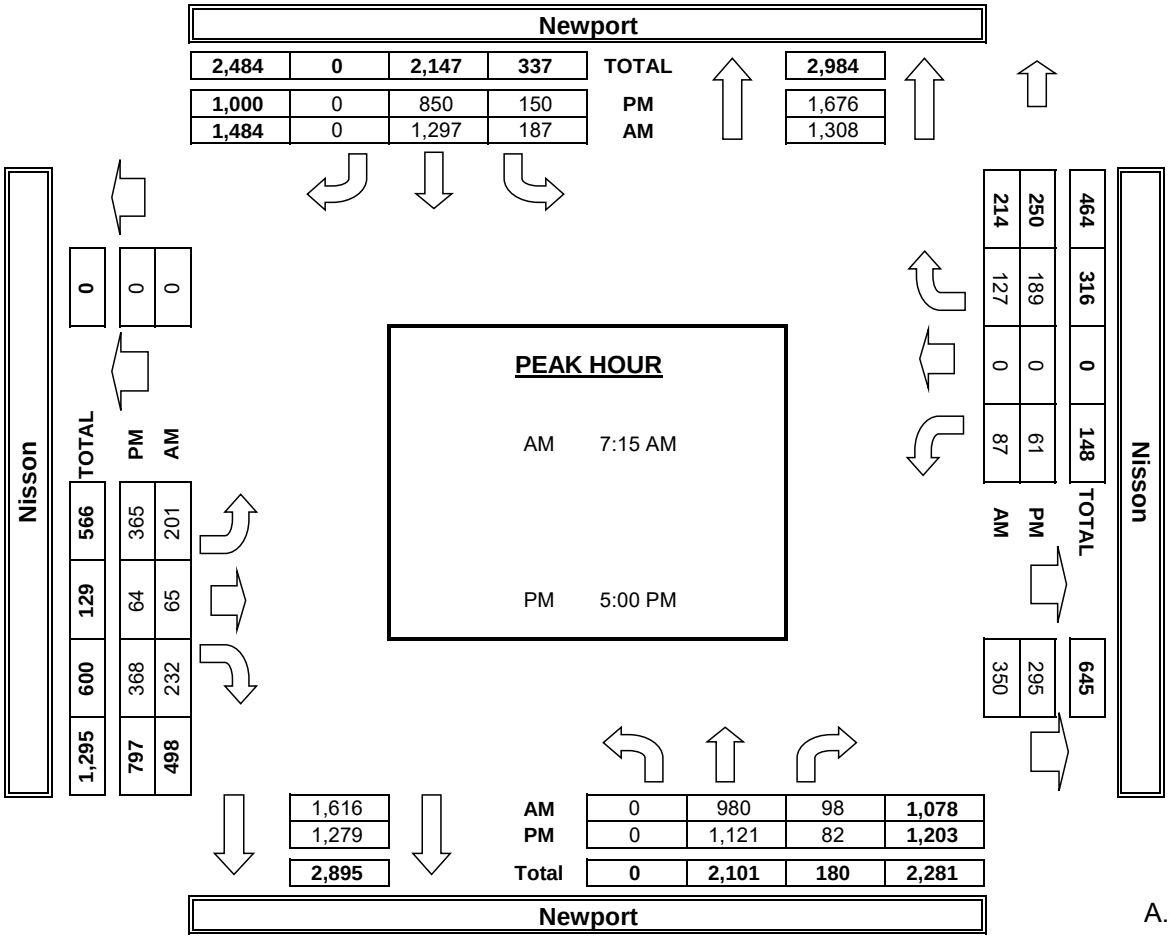


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





Tuesday, September 20, 2016 CITY: Tustin PROJECT: SC0801

ADT1 Second Street between Prospect Avenue and C Street

PREPARED BY: AimTD LLC. tel: 714 253 7888

AM Period	EB		WB			PM Period	EB		WB		
00:00	0		0			12:00	15		4		
00:15	0		0			12:15	9		6		
00:30	0		0			12:30	11		7		
00:45	0	0	0	0		12:45	11	46	7	24	70
01:00	0		0			13:00	10		18		
01:15	0		0			13:15	14		7		
01:30	0		0			13:30	5		4		
01:45	0	0	0	0		13:45	8	37	8	37	74
02:00	0		0			14:00	9		9		
02:15	0		0			14:15	5		13		
02:30	0		0			14:30	7		6		
02:45	0	0	0	0		14:45	10	31	1	29	60
03:00	0		0			15:00	13		12		
03:15	0		0			15:15	6		4		
03:30	0		0			15:30	9		6		
03:45	0	0	0	0		15:45	6	34	5	27	61
04:00	0		0			16:00	11		6		
04:15	0		0			16:15	10		4		
04:30	0		0			16:30	7		1		
04:45	0	0	0	0		16:45	6	34	8	19	53
05:00	0		0			17:00	20		4		
05:15	0		1			17:15	11		12		
05:30	1		0			17:30	8		7		
05:45	2	3	1	2	5	17:45	6	45	4	27	72
06:00	1		0			18:00	11		8		
06:15	0		0			18:15	11		9		
06:30	2		1			18:30	11		5		
06:45	0	3	3	4	7	18:45	4	37	2	24	61
07:00	2		1			19:00	11		5		
07:15	1		3			19:15	4		4		
07:30	3		4			19:30	8		0		
07:45	0	6	2	10	16	19:45	11	34	6	15	49
08:00	5		7			20:00	3		2		
08:15	2		5			20:15	2		1		
08:30	2		4			20:30	1		0		
08:45	3	12	8	24	36	20:45	0	6	0	3	9
09:00	5		8			21:00	1		2		
09:15	0		7			21:15	2		2		
09:30	5		8			21:30	1		3		
09:45	2	12	13	36	48	21:45	0	4	1	8	12
10:00	12		14			22:00	1		0		
10:15	6		3			22:15	0		0		
10:30	3		5			22:30	0		0		
10:45	6	27	6	28	55	22:45	0	1	0	0	1
11:00	5		7			23:00	0		0		
11:15	14		9			23:15	0		0		
11:30	11		3			23:30	1		0		
11:45	12	42	7	26	68	23:45	1	2	0	0	2
Total Vol.		105		130	**235**			311		213	**524**

Daily Totals

EB	WB	Combined
416	343	**759**

	AM			PM		
Split %	44.7%	55.3%	**31.0%**	59.4%	40.6%	**69.0%**
Peak Hour	11:15	09:15	**11:15**	12:00	12:30	**12:30**
Volume	52	42	**75**	46	39	**85**
P.H.F.	0.87	0.75	**0.82**	0.77	0.54	**0.76**

Wednesday, September 21, 2016 CITY: Tustin PROJECT: SC0801

ADT1 Second Street between Prospect Avenue and C Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
00:00	0		0			12:00	11		9		
00:15	0		0			12:15	9		14		
00:30	0		0			12:30	8		10		
00:45	1	1	4	4	5	12:45	14	42	14	47	89
01:00	0		0			13:00	7		15		
01:15	0		0			13:15	8		6		
01:30	0		0			13:30	4		5		
01:45	0	0	0	0		13:45	4	23	8	34	57
02:00	0		0			14:00	10		9		
02:15	0		0			14:15	7		5		
02:30	0		0			14:30	8		4		
02:45	0	0	0	0		14:45	7	32	9	27	59
03:00	0		0			15:00	7		8		
03:15	0		0			15:15	10		4		
03:30	0		0			15:30	6		9		
03:45	0	0	0	0		15:45	13	36	7	28	64
04:00	0		0			16:00	10		5		
04:15	1		0			16:15	7		9		
04:30	0		0			16:30	8		4		
04:45	0	1	0	0	1	16:45	15	40	7	25	65
05:00	0		0			17:00	12		6		
05:15	0		0			17:15	11		7		
05:30	0		0			17:30	8		6		
05:45	0	0	0	0		17:45	7	38	1	20	58
06:00	1		0			18:00	8		1		
06:15	0		0			18:15	9		10		
06:30	1		0			18:30	11		4		
06:45	0	2	1	1	3	18:45	10	38	3	18	56
07:00	2		2			19:00	8		5		
07:15	1		3			19:15	7		5		
07:30	4		5			19:30	7		2		
07:45	1	8	6	16	24	19:45	3	25	2	14	39
08:00	0		4			20:00	2		5		
08:15	1		4			20:15	6		2		
08:30	2		7			20:30	0		1		
08:45	7	10	8	23	33	20:45	3	11	1	9	20
09:00	5		9			21:00	4		0		
09:15	4		10			21:15	1		0		
09:30	5		7			21:30	1		1		
09:45	3	17	7	33	50	21:45	1	7	0	1	8
10:00	4		8			22:00	0		1		
10:15	5		5			22:15	0		0		
10:30	22		13			22:30	0		1		
10:45	11	42	7	33	75	22:45	0	0	2	4	4
11:00	11		13			23:00	1		2		
11:15	10		6			23:15	1		1		
11:30	9		10			23:30	0		1		
11:45	9	39	10	39	78	23:45	1	3	0	4	7
Total Vol.		120		149	**269**			295		231	**526**

Daily Totals

EB	WB	**Combined**
415	380	**795**

	AM			**PM**		
Split %	44.6%	55.4%	**33.8%**	56.1%	43.9%	**66.2%**
Peak Hour	10:30	11:30	**10:30**	16:30	12:15	**12:15**
Volume	54	43	**93**	46	53	**91**
P.H.F.	0.61	0.77	**0.66**	0.78	0.88	**0.81**

Thursday, September 22, 2016 CITY: Tustin PROJECT: SC0801

ADT1 Second Street between Prospect Avenue and C Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
00:00	0		0			12:00	8		7		
00:15	0		0			12:15	8		5		
00:30	0		0			12:30	8		9		
00:45	0	0	0	0		12:45	10	34	7	28	62
01:00	0		3			13:00	8		13		
01:15	0		0			13:15	10		6		
01:30	0		2			13:30	5		9		
01:45	0	0	0	5	5	13:45	3	26	5	33	59
02:00	0		0			14:00	11		7		
02:15	0		0			14:15	8		11		
02:30	0		1			14:30	4		8		
02:45	0	0	0	1	1	14:45	4	27	8	34	61
03:00	0		0			15:00	6		8		
03:15	0		0			15:15	10		11		
03:30	0		0			15:30	10		6		
03:45	0	0	0	0		15:45	7	33	7	32	65
04:00	0		0			16:00	6		6		
04:15	0		1			16:15	6		6		
04:30	0		0			16:30	11		6		
04:45	0	0	0	1	1	16:45	7	30	7	25	55
05:00	0		0			17:00	7		7		
05:15	0		0			17:15	9		3		
05:30	1		0			17:30	12		4		
05:45	1	2	0	0	2	17:45	8	36	8	22	58
06:00	0		1			18:00	9		7		
06:15	0		0			18:15	6		8		
06:30	1		0			18:30	2		5		
06:45	1	2	0	1	3	18:45	7	24	6	26	50
07:00	1		2			19:00	7		6		
07:15	3		3			19:15	9		7		
07:30	5		8			19:30	4		2		
07:45	4	13	6	19	32	19:45	3	23	3	18	41
08:00	1		4			20:00	4		2		
08:15	0		6			20:15	6		4		
08:30	4		11			20:30	3		0		
08:45	6	11	7	28	39	20:45	3	16	2	8	24
09:00	6		5			21:00	1		0		
09:15	4		5			21:15	4		1		
09:30	5		8			21:30	4		1		
09:45	4	19	4	22	41	21:45	0	9	0	2	11
10:00	10		6			22:00	0		0		
10:15	10		4			22:15	1		0		
10:30	8		8			22:30	1		0		
10:45	4	32	3	21	53	22:45	0	2	0	0	2
11:00	4		4			23:00	2		0		
11:15	8		5			23:15	1		0		
11:30	7		3			23:30	1		0		
11:45	8	27	12	24	51	23:45	1	5	0	0	5
Total Vol.		106		122	**228**			265		228	**493**

Daily Totals

EB	WB	**Combined**
371	350	**721**

	AM			**PM**		
Split %	46.5%	53.5%	**31.6%**	53.8%	46.2%	**68.4%**
Peak Hour	09:45	11:45	**11:45**	17:15	12:30	**12:30**
Volume	32	33	**65**	38	35	**71**
P.H.F.	0.80	0.69	**0.81**	0.77	0.67	**0.85**

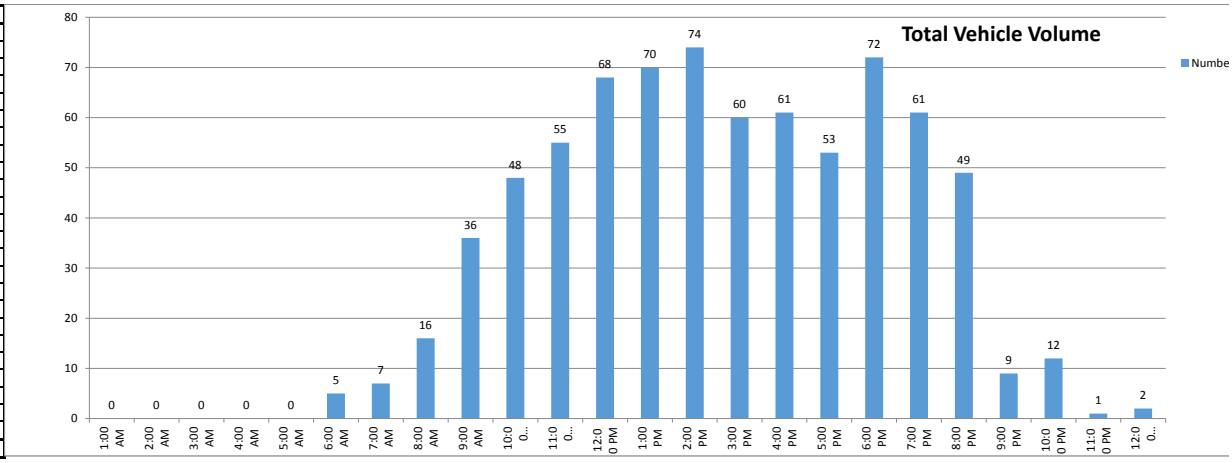
24 Hour Volume Plot

Tustin

ADT1 Second Street between Prospect Avenue and C Street

9/20/2016

Start Time	Volume
1:00 AM	
2:00 AM	
3:00 AM	
4:00 AM	
5:00 AM	
6:00 AM	5
7:00 AM	7
8:00 AM	16
9:00 AM	36
10:00 AM	48
11:00 AM	55
12:00 PM	68
1:00 PM	70
2:00 PM	74
3:00 PM	60
4:00 PM	61
5:00 PM	53
6:00 PM	72
7:00 PM	61
8:00 PM	49
9:00 PM	9
10:00 PM	12
11:00 PM	1
12:00 AM	2
Total	759



Volumes represent the combined totals for both directions

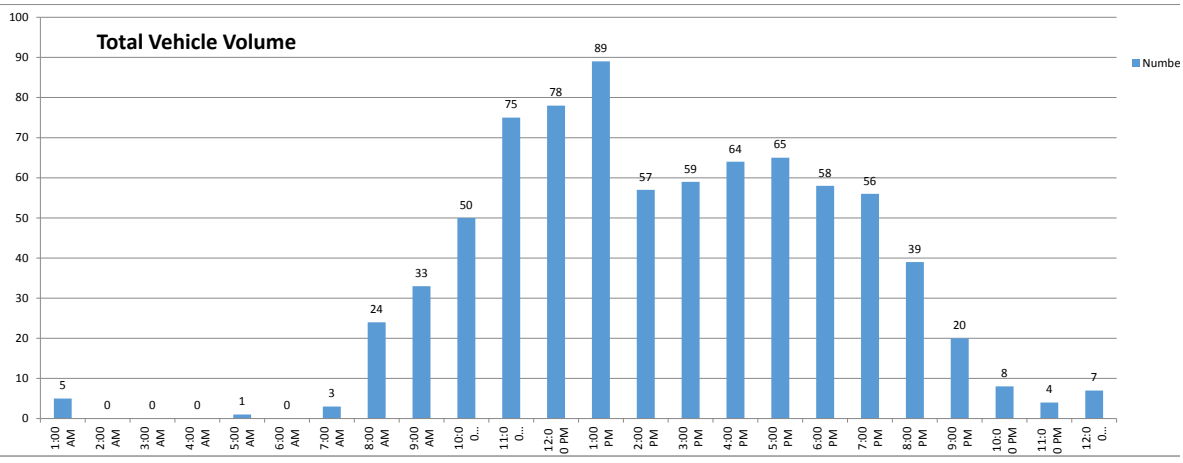
24 Hour Volume Plot

Tustin

ADT1 Second Street between Prospect Avenue and C Street

9/21/2016

Start Time	Volume
1:00 AM	5
2:00 AM	
3:00 AM	
4:00 AM	
5:00 AM	1
6:00 AM	
7:00 AM	3
8:00 AM	24
9:00 AM	33
10:00 AM	50
11:00 AM	75
12:00 PM	78
1:00 PM	89
2:00 PM	57
3:00 PM	59
4:00 PM	64
5:00 PM	65
6:00 PM	58
7:00 PM	56
8:00 PM	39
9:00 PM	20
10:00 PM	8
11:00 PM	4
12:00 AM	7
Total	795



Volumes represent the combined totals for both directions

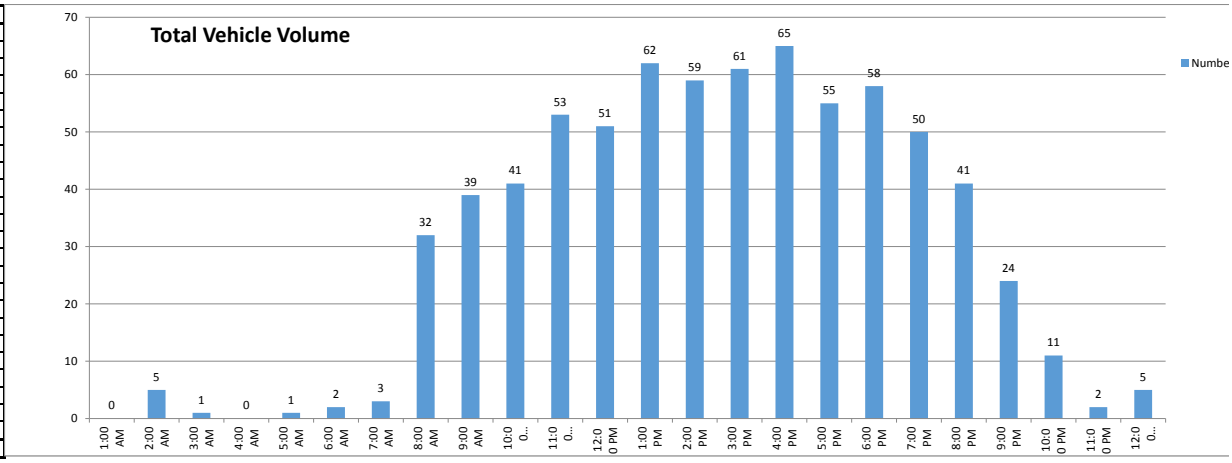
24 Hour Volume Plot

Tustin

ADT1 Second Street between Prospect Avenue and C Street

9/22/2016

Start Time	Volume
1:00 AM	
2:00 AM	5
3:00 AM	1
4:00 AM	
5:00 AM	1
6:00 AM	2
7:00 AM	3
8:00 AM	32
9:00 AM	39
10:00 AM	41
11:00 AM	53
12:00 PM	51
1:00 PM	62
2:00 PM	59
3:00 PM	61
4:00 PM	65
5:00 PM	55
6:00 PM	58
7:00 PM	50
8:00 PM	41
9:00 PM	24
10:00 PM	11
11:00 PM	2
12:00 AM	5
Total	721



Volumes represent the combined totals for both directions

Tuesday, September 20, 2016 CITY: Tustin PROJECT: SC1057

ADT2 Third Street between Prospect Avenue and C Street

PREPARED BY: AimTD LLC. tel: 714 253 7888

AM Period	EB		WB			PM Period	EB		WB		
00:00	1		0			12:00	7		4		
00:15	0		0			12:15	11		6		
00:30	0		0			12:30	9		5		
00:45	0	1	0	0	1	12:45	9	36	9	24	60
01:00	0		0			13:00	15		4		
01:15	0		0			13:15	6		7		
01:30	0		0			13:30	10		14		
01:45	1	1	0	0	1	13:45	11	42	5	30	72
02:00	0		0			14:00	10		6		
02:15	0		0			14:15	9		3		
02:30	0		0			14:30	16		7		
02:45	0	0	0	0		14:45	10	45	6	22	67
03:00	0		0			15:00	10		3		
03:15	0		0			15:15	18		7		
03:30	0		0			15:30	9		8		
03:45	0	0	0	0		15:45	11	48	9	27	75
04:00	0		0			16:00	12		5		
04:15	0		0			16:15	11		9		
04:30	0		0			16:30	14		11		
04:45	0	0	0	0		16:45	7	44	7	32	76
05:00	1		0			17:00	22		12		
05:15	2		1			17:15	12		4		
05:30	1		1			17:30	10		8		
05:45	2	6	0	2	8	17:45	6	50	8	32	82
06:00	0		1			18:00	19		15		
06:15	0		0			18:15	13		7		
06:30	3		0			18:30	11		3		
06:45	3	6	1	2	8	18:45	4	47	0	25	72
07:00	1		3			19:00	19		8		
07:15	5		1			19:15	6		5		
07:30	4		8			19:30	8		10		
07:45	4	14	8	20	34	19:45	0	33	3	26	59
08:00	3		5			20:00	4		1		
08:15	7		3			20:15	7		4		
08:30	4		3			20:30	2		0		
08:45	6	20	4	15	35	20:45	1	14	1	6	20
09:00	10		5			21:00	4		3		
09:15	5		3			21:15	8		5		
09:30	12		4			21:30	0		0		
09:45	8	35	3	15	50	21:45	0	12	2	10	22
10:00	10		8			22:00	2		0		
10:15	9		7			22:15	0		1		
10:30	4		4			22:30	3		1		
10:45	8	31	1	20	51	22:45	3	8	0	2	10
11:00	12		5			23:00	5		0		
11:15	5		8			23:15	1		0		
11:30	9		5			23:30	0		1		
11:45	6	32	2	20	52	23:45	0	6	2	3	9
Total Vol.		146		94	**240**			385		239	**624**

Daily Totals

EB	WB	**Combined**
531	333	**864**

	AM			**PM**		
Split %	60.8%	39.2%	**27.8%**	61.7%	38.3%	**72.2%**
Peak Hour	09:30	07:30	**09:30**	16:30	16:15	**16:15**
Volume	39	24	**61**	55	39	**93**
P.H.F.	0.81	0.75	**0.85**	0.74	0.81	**0.68**

PREPARED BY: AimTD LLC. tel: 714 253 7888 sc@aimtd.com

Wednesday, September 21, 2016 CITY: Tustin PROJECT: SC1057

ADT2 Third Street between Prospect Avenue and C Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
00:00	2		0			12:00	12		14		
00:15	0		0			12:15	20		13		
00:30	0		0			12:30	11		10		
00:45	0	2	0	0	2	12:45	11	54	11	48	102
01:00	0		0			13:00	20		7		
01:15	0		0			13:15	12		6		
01:30	0		0			13:30	9		5		
01:45	0	0	1	1	1	13:45	9	50	5	23	73
02:00	0		0			14:00	12		10		
02:15	0		0			14:15	16		12		
02:30	1		0			14:30	10		7		
02:45	0	1	0	0	1	14:45	13	51	3	32	83
03:00	0		0			15:00	5		2		
03:15	0		0			15:15	10		5		
03:30	0		0			15:30	11		8		
03:45	0	0	0	0		15:45	6	32	14	29	61
04:00	0		0			16:00	19		9		
04:15	0		0			16:15	13		5		
04:30	0		0			16:30	8		5		
04:45	0	0	0	0		16:45	5	45	5	24	69
05:00	0		0			17:00	20		5		
05:15	2		1			17:15	19		12		
05:30	4		0			17:30	7		4		
05:45	1	7	0	1	8	17:45	13	59	6	27	86
06:00	2		0			18:00	4		4		
06:15	1		1			18:15	15		5		
06:30	3		1			18:30	9		9		
06:45	4	10	0	2	12	18:45	12	40	4	22	62
07:00	4		3			19:00	10		7		
07:15	3		2			19:15	4		4		
07:30	4		7			19:30	3		5		
07:45	4	15	2	14	29	19:45	6	23	3	19	42
08:00	5		1			20:00	3		3		
08:15	9		1			20:15	7		8		
08:30	7		8			20:30	3		2		
08:45	8	29	8	18	47	20:45	5	18	1	14	32
09:00	5		3			21:00	12		1		
09:15	4		5			21:15	4		4		
09:30	9		5			21:30	1		0		
09:45	14	32	6	19	51	21:45	2	19	1	6	25
10:00	11		5			22:00	0		0		
10:15	9		1			22:15	0		2		
10:30	20		9			22:30	0		0		
10:45	14	54	5	20	74	22:45	2	2	0	2	4
11:00	9		6			23:00	1		0		
11:15	10		6			23:15	0		0		
11:30	6		3			23:30	0		0		
11:45	10	35	5	20	55	23:45	0	1	0	0	1
Total Vol.		185		95	**280**			394		246	**640**

Daily Totals

EB	WB	Combined
579	341	**920**

	AM			PM		
Split %	66.1%	33.9%	**30.4%**	61.6%	38.4%	**69.6%**
Peak Hour	09:45	11:45	**11:45**	12:15	12:00	**12:15**
Volume	54	42	**95**	62	48	**103**
P.H.F.	0.68	0.75	**0.72**	0.66	0.86	**0.78**

Thursday, September 22, 2016 CITY: Tustin PROJECT: SC1057

ADT2 Third Street between Prospect Avenue and C Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
00:00	0		0			12:00	24		4		
00:15	2		0			12:15	13		11		
00:30	1		1			12:30	11		10		
00:45	0	3	0	1	4	12:45	18	66	4	29	95
01:00	0		0			13:00	14		11		
01:15	1		1			13:15	11		8		
01:30	1		1			13:30	4		2		
01:45	1	3	1	3	6	13:45	8	37	0	21	58
02:00	0		0			14:00	12		6		
02:15	0		0			14:15	10		4		
02:30	0		0			14:30	8		11		
02:45	0	0	0	0		14:45	11	41	8	29	70
03:00	0		0			15:00	6		3		
03:15	0		0			15:15	10		6		
03:30	0		0			15:30	13		6		
03:45	0	0	0	0		15:45	4	33	9	24	57
04:00	0		0			16:00	7		3		
04:15	0		0			16:15	9		9		
04:30	0		0			16:30	13		8		
04:45	0	0	0	0		16:45	11	40	12	32	72
05:00	2		0			17:00	23		12		
05:15	3		1			17:15	10		17		
05:30	0		0			17:30	12		6		
05:45	1	6	1	2	8	17:45	14	59	9	44	103
06:00	4		0			18:00	16		7		
06:15	3		1			18:15	14		3		
06:30	1		1			18:30	7		4		
06:45	2	10	2	4	14	18:45	5	42	2	16	58
07:00	4		0			19:00	11		5		
07:15	4		1			19:15	13		9		
07:30	5		7			19:30	4		7		
07:45	4	17	3	11	28	19:45	2	30	6	27	57
08:00	6		1			20:00	8		3		
08:15	4		0			20:15	4		10		
08:30	5		3			20:30	3		1		
08:45	8	23	4	8	31	20:45	4	19	5	19	38
09:00	5		5			21:00	9		2		
09:15	5		4			21:15	3		7		
09:30	6		3			21:30	4		1		
09:45	8	24	6	18	42	21:45	4	20	0	10	30
10:00	5		3			22:00	4		0		
10:15	9		0			22:15	2		2		
10:30	6		2			22:30	1		2		
10:45	6	26	3	8	34	22:45	6	13	1	5	18
11:00	3		8			23:00	1		1		
11:15	6		9			23:15	1		2		
11:30	7		2			23:30	0		1		
11:45	9	25	6	25	50	23:45	2	4	0	4	8
Total Vol.		137		80	**217**			404		260	**664**

Daily Totals

EB	WB	**Combined**
541	340	**881**

	AM			**PM**		
Split %	63.1%	36.9%	**24.6%**	60.8%	39.2%	**75.4%**
Peak Hour	11:45	11:45	**11:45**	12:00	16:30	**16:30**
Volume	57	31	**88**	66	49	**106**
P.H.F.	0.59	0.70	**0.79**	0.61	0.72	**0.76**

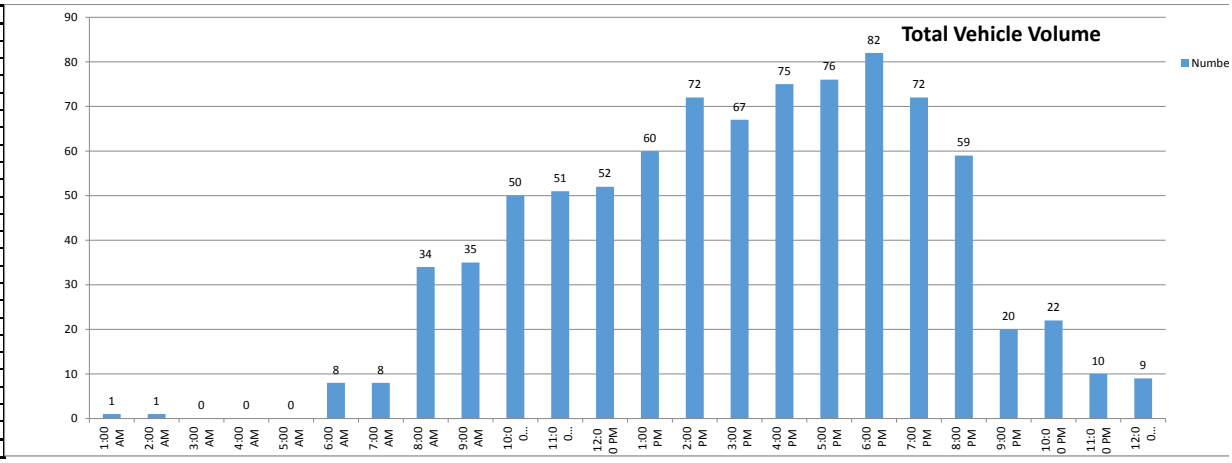
24 Hour Volume Plot

Tustin

ADT2 Third Street between Prospect Avenue and C Street

9/20/2016

Start Time	Volume
1:00 AM	1
2:00 AM	1
3:00 AM	
4:00 AM	
5:00 AM	
6:00 AM	8
7:00 AM	8
8:00 AM	34
9:00 AM	35
10:00 AM	50
11:00 AM	51
12:00 PM	52
1:00 PM	60
2:00 PM	72
3:00 PM	67
4:00 PM	75
5:00 PM	76
6:00 PM	82
7:00 PM	72
8:00 PM	59
9:00 PM	20
10:00 PM	22
11:00 PM	10
12:00 AM	9
Total	864



Volumes represent the combined totals for both directions

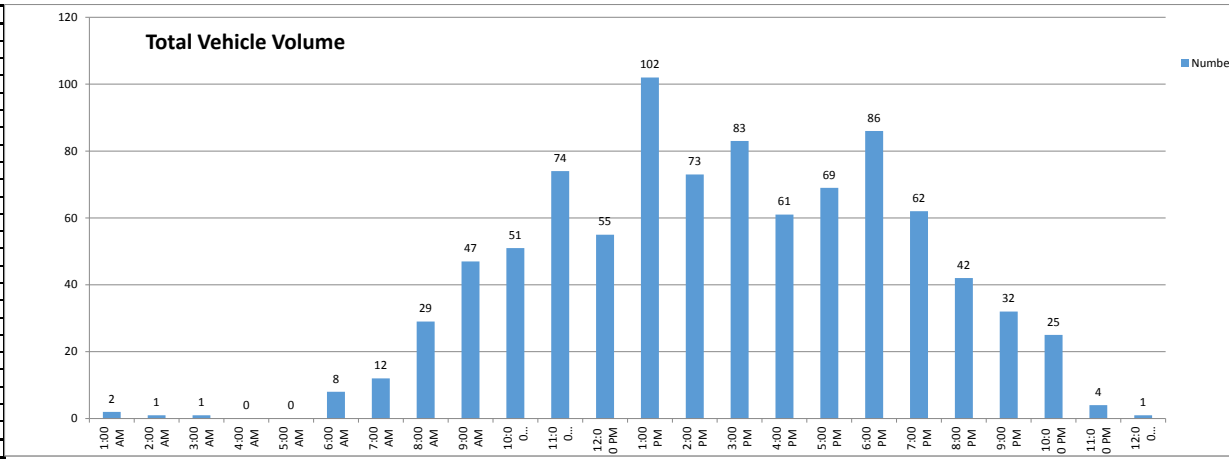
24 Hour Volume Plot

Tustin

ADT2 Third Street between Prospect Avenue and C Street

9/21/2016

Start Time	Volume
1:00 AM	2
2:00 AM	1
3:00 AM	1
4:00 AM	
5:00 AM	
6:00 AM	8
7:00 AM	12
8:00 AM	29
9:00 AM	47
10:00 AM	51
11:00 AM	74
12:00 PM	55
1:00 PM	102
2:00 PM	73
3:00 PM	83
4:00 PM	61
5:00 PM	69
6:00 PM	86
7:00 PM	62
8:00 PM	42
9:00 PM	32
10:00 PM	25
11:00 PM	4
12:00 AM	1
Total	920



Volumes represent the combined totals for both directions

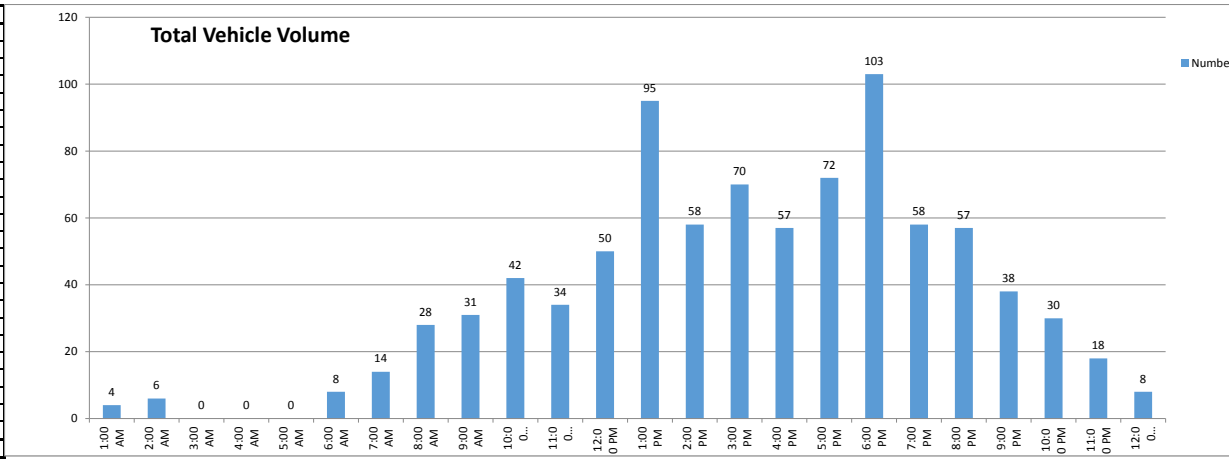
24 Hour Volume Plot

Tustin

ADT2 Third Street between Prospect Avenue and C Street

9/22/2016

Start Time	Volume
1:00 AM	4
2:00 AM	6
3:00 AM	
4:00 AM	
5:00 AM	
6:00 AM	8
7:00 AM	14
8:00 AM	28
9:00 AM	31
10:00 AM	42
11:00 AM	34
12:00 PM	50
1:00 PM	95
2:00 PM	58
3:00 PM	70
4:00 PM	57
5:00 PM	72
6:00 PM	103
7:00 PM	58
8:00 PM	57
9:00 PM	38
10:00 PM	30
11:00 PM	18
12:00 AM	8
Total	881



Volumes represent the combined totals for both directions

Tuesday, September 20, 2016 CITY: Tustin PROJECT: SC1057

ADT3 C Street between First Street and Sixth Street

PREPARED BY: AimTD LLC. tel: 714 253 7888

AM Period	NB		SB			PM Period	NB		SB		
00:00	2		2			12:00	20		30		
00:15	2		0			12:15	22		38		
00:30	0		0			12:30	30		32		
00:45	0	4	8	10	14	12:45	24	96	50	150	246
01:00	0		0			13:00	32		30		
01:15	0		0			13:15	26		30		
01:30	4		0			13:30	26		10		
01:45	0	4	0	0	4	13:45	16	100	20	90	190
02:00	0		0			14:00	28		20		
02:15	0		0			14:15	32		14		
02:30	0		0			14:30	28		26		
02:45	0	0	0	0		14:45	26	114	22	82	196
03:00	0		0			15:00	24		16		
03:15	0		0			15:15	20		30		
03:30	0		0			15:30	36		28		
03:45	0	0	0	0		15:45	22	102	24	98	200
04:00	0		0			16:00	10		16		
04:15	0		0			16:15	22		28		
04:30	0		0			16:30	22		26		
04:45	0	0	0	0		16:45	6	60	24	94	154
05:00	0		0			17:00	18		32		
05:15	4		0			17:15	22		12		
05:30	2		0			17:30	18		14		
05:45	0	6	4	4	10	17:45	10	68	30	88	156
06:00	12		2			18:00	12		46		
06:15	0		2			18:15	22		22		
06:30	2		4			18:30	20		28		
06:45	10	24	4	12	36	18:45	20	74	18	114	188
07:00	4		10			19:00	52		34		
07:15	8		18			19:15	20		16		
07:30	4		56			19:30	30		10		
07:45	16	32	26	110	142	19:45	4	106	10	70	176
08:00	12		28			20:00	24		20		
08:15	12		12			20:15	24		16		
08:30	24		36			20:30	12		12		
08:45	22	70	34	110	180	20:45	2	62	2	50	112
09:00	30		38			21:00	0		12		
09:15	22		20			21:15	16		14		
09:30	10		10			21:30	8		8		
09:45	32	94	22	90	184	21:45	16	40	10	44	84
10:00	18		20			22:00	10		4		
10:15	18		26			22:15	4		0		
10:30	20		16			22:30	8		2		
10:45	18	74	20	82	156	22:45	6	28	0	6	34
11:00	20		16			23:00	4		0		
11:15	12		28			23:15	8		2		
11:30	12		24			23:30	4		4		
11:45	14	58	38	106	164	23:45	4	20	4	10	30
Total Vol.		366		524	**890**			870		896	**1766**

Daily Totals

NB	SB	**Combined**
1236	1420	**2656**

	AM			**PM**		
Split %	41.1%	58.9%	**33.5%**	49.3%	50.7%	**66.5%**
Peak Hour	08:30	11:45	**08:30**	18:45	12:00	**12:15**
Volume	98	138	**226**	122	150	**258**
P.H.F.	0.82	0.91	**0.83**	0.54	0.75	**0.87**

Wednesday, September 21, 2016 CITY: Tustin PROJECT: SC1057

ADT3 C Street between First Street and Sixth Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
00:00	4		0			12:00	38		34		
00:15	2		2			12:15	34		36		
00:30	0		0			12:30	12		36		
00:45	0	6	0	2	8	12:45	18	102	38	144	246
01:00	0		2			13:00	28		40		
01:15	0		0			13:15	14		32		
01:30	2		2			13:30	30		26		
01:45	0	2	0	4	6	13:45	26	98	18	116	214
02:00	0		2			14:00	32		24		
02:15	2		0			14:15	18		18		
02:30	0		0			14:30	30		40		
02:45	0	2	0	2	4	14:45	32	112	14	96	208
03:00	0		0			15:00	20		14		
03:15	0		0			15:15	14		26		
03:30	0		0			15:30	16		18		
03:45	0	0	0	0		15:45	38	88	20	78	166
04:00	0		0			16:00	26		18		
04:15	0		2			16:15	12		16		
04:30	0		0			16:30	18		12		
04:45	0	0	0	2	2	16:45	18	74	14	60	134
05:00	0		0			17:00	14		28		
05:15	2		0			17:15	22		14		
05:30	0		0			17:30	14		16		
05:45	4	6	4	4	10	17:45	20	70	28	86	156
06:00	8		0			18:00	6		20		
06:15	4		2			18:15	20		24		
06:30	2		0			18:30	12		30		
06:45	2	16	2	4	20	18:45	26	64	14	88	152
07:00	4		8			19:00	28		26		
07:15	10		16			19:15	14		10		
07:30	10		20			19:30	18		14		
07:45	8	32	18	62	94	19:45	8	68	6	56	124
08:00	6		28			20:00	4		6		
08:15	22		20			20:15	40		10		
08:30	18		32			20:30	26		22		
08:45	28	74	34	114	188	20:45	10	80	10	48	128
09:00	24		56			21:00	10		14		
09:15	10		46			21:15	12		2		
09:30	12		26			21:30	12		0		
09:45	18	64	22	150	214	21:45	8	42	4	20	62
10:00	28		18			22:00	6		2		
10:15	18		8			22:15	6		4		
10:30	28		20			22:30	2		0		
10:45	22	96	12	58	154	22:45	8	22	4	10	32
11:00	12		14			23:00	4		2		
11:15	18		22			23:15	4		0		
11:30	14		34			23:30	2		0		
11:45	26	70	22	92	162	23:45	2	12	2	4	16
Total Vol.		368		494	**862**			832		806	**1638**

Daily Totals

NB	SB	**Combined**
1200	1300	**2500**

	AM			**PM**		
Split %	42.7%	57.3%	**34.5%**	50.8%	49.2%	**65.5%**
Peak Hour	11:30	08:30	**08:30**	14:00	12:15	**12:00**
Volume	112	168	**248**	112	150	**246**
P.H.F.	0.74	0.75	**0.78**	0.86	0.94	**0.85**

Thursday, September 22, 2016 CITY: Tustin PROJECT: SC1057

ADT3 C Street between First Street and Sixth Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
00:00	4		2			12:00	36		58		
00:15	4		2			12:15	34		16		
00:30	0		0			12:30	28		36		
00:45	0	8	4	8	16	12:45	36	134	48	158	292
01:00	0		0			13:00	32		26		
01:15	0		0			13:15	24		26		
01:30	6		0			13:30	20		26		
01:45	2	8	2	2	10	13:45	14	90	24	102	192
02:00	0		0			14:00	22		18		
02:15	0		0			14:15	28		26		
02:30	0		0			14:30	38		18		
02:45	0	0	0	0		14:45	42	130	16	78	208
03:00	0		0			15:00	34		24		
03:15	0		0			15:15	20		40		
03:30	0		0			15:30	36		32		
03:45	0	0	0	0		15:45	44	134	22	118	252
04:00	0		2			16:00	28		28		
04:15	6		0			16:15	14		16		
04:30	4		0			16:30	26		22		
04:45	0	10	0	2	12	16:45	26	94	18	84	178
05:00	2		2			17:00	20		20		
05:15	4		0			17:15	20		46		
05:30	2		0			17:30	22		48		
05:45	4	12	2	4	16	17:45	24	86	24	138	224
06:00	4		2			18:00	24		26		
06:15	6		4			18:15	12		18		
06:30	4		4			18:30	18		18		
06:45	8	22	2	12	34	18:45	42	96	24	86	182
07:00	8		6			19:00	16		38		
07:15	16		18			19:15	42		16		
07:30	10		34			19:30	30		18		
07:45	16	50	24	82	132	19:45	16	104	16	88	192
08:00	16		16			20:00	14		12		
08:15	8		8			20:15	12		10		
08:30	20		36			20:30	10		6		
08:45	18	62	22	82	144	20:45	30	66	12	40	106
09:00	20		40			21:00	8		6		
09:15	20		24			21:15	8		6		
09:30	20		22			21:30	6		0		
09:45	22	82	14	100	182	21:45	8	30	4	16	46
10:00	24		28			22:00	12		2		
10:15	14		16			22:15	22		6		
10:30	10		12			22:30	8		4		
10:45	16	64	12	68	132	22:45	8	50	0	12	62
11:00	14		22			23:00	2		4		
11:15	14		16			23:15	2		6		
11:30	28		20			23:30	2		0		
11:45	24	80	28	86	166	23:45	2	8	4	14	22
Total Vol.		398		446	**844**			1022		934	**1956**

Daily Totals

NB	SB	Combined
1420	1380	**2800**

	AM			PM		
Split %	47.2%	52.8%	**30.1%**	52.2%	47.8%	**69.9%**
Peak Hour	11:30	11:45	**11:45**	14:15	12:00	**12:00**
Volume	122	138	**260**	142	158	**292**
P.H.F.	0.85	0.59	**0.69**	0.89	0.68	**0.78**

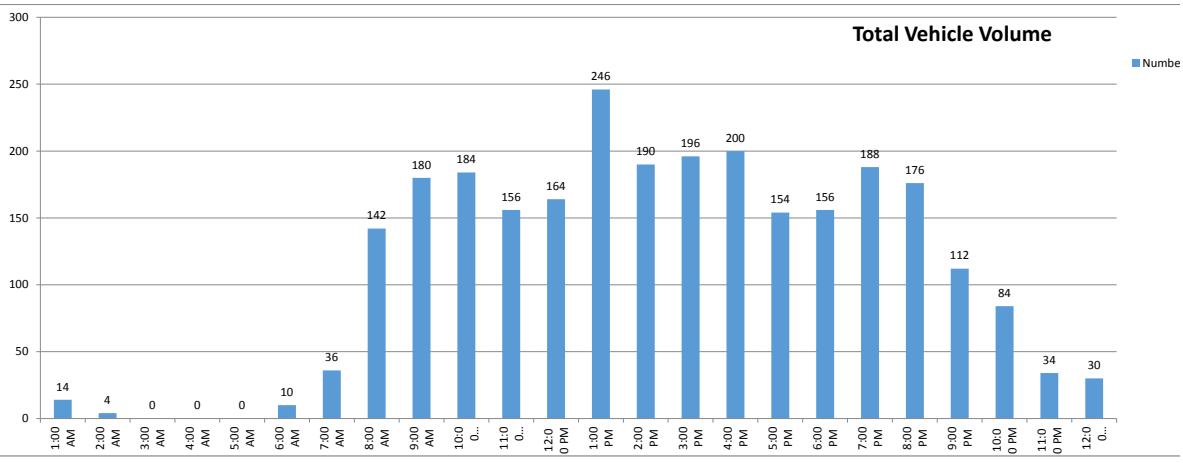
24 Hour Volume Plot

Tustin

ADT3 C Street between First Street and Sixth Street

9/20/2016

Start Time	Volume
1:00 AM	14
2:00 AM	4
3:00 AM	
4:00 AM	
5:00 AM	
6:00 AM	10
7:00 AM	36
8:00 AM	142
9:00 AM	180
10:00 AM	184
11:00 AM	156
12:00 PM	164
1:00 PM	246
2:00 PM	190
3:00 PM	196
4:00 PM	200
5:00 PM	154
6:00 PM	156
7:00 PM	188
8:00 PM	176
9:00 PM	112
10:00 PM	84
11:00 PM	34
12:00 AM	30
Total	2656



Volumes represent the combined totals for both directions

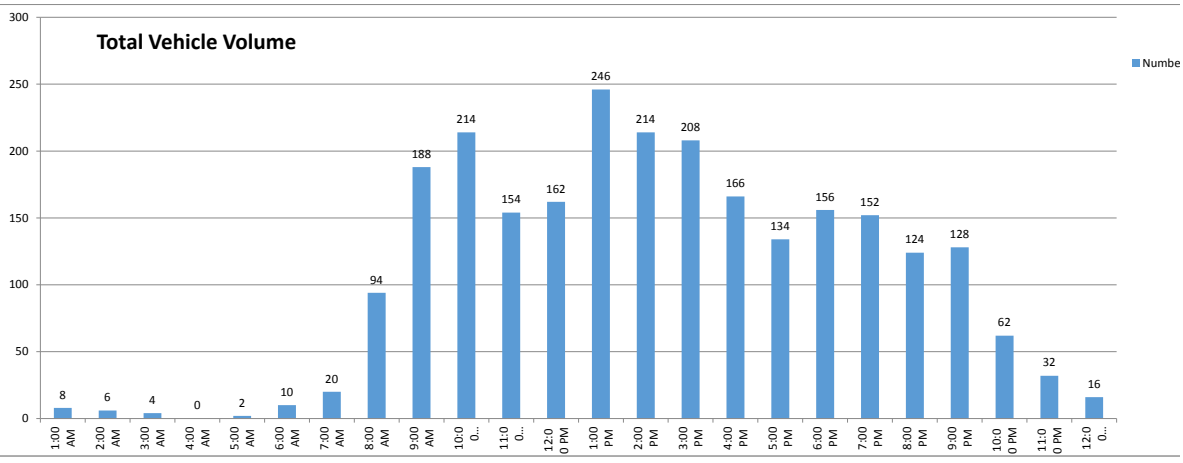
24 Hour Volume Plot

Tustin

ADT3 C Street between First Street and Sixth Street

9/21/2016

Start Time	Volume
1:00 AM	8
2:00 AM	6
3:00 AM	4
4:00 AM	
5:00 AM	2
6:00 AM	10
7:00 AM	20
8:00 AM	94
9:00 AM	188
10:00 AM	214
11:00 AM	154
12:00 PM	162
1:00 PM	246
2:00 PM	214
3:00 PM	208
4:00 PM	166
5:00 PM	134
6:00 PM	156
7:00 PM	152
8:00 PM	124
9:00 PM	128
10:00 PM	62
11:00 PM	32
12:00 AM	16
Total	2500



Volumes represent the combined totals for both directions

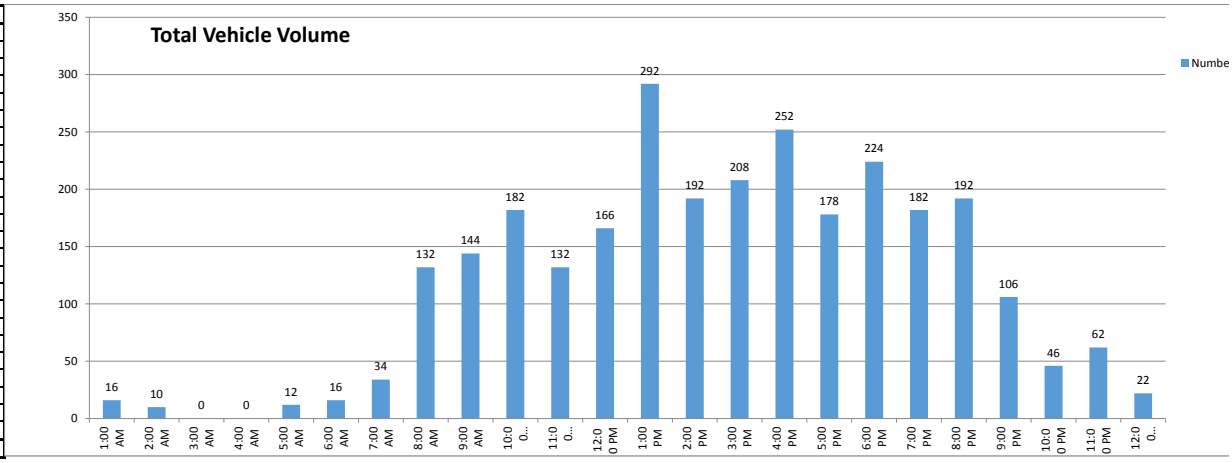
24 Hour Volume Plot

Tustin

ADT3 C Street between First Street and Sixth Street

9/22/2016

Start Time	Volume
1:00 AM	16
2:00 AM	10
3:00 AM	
4:00 AM	
5:00 AM	12
6:00 AM	16
7:00 AM	34
8:00 AM	132
9:00 AM	144
10:00 AM	182
11:00 AM	132
12:00 PM	166
1:00 PM	292
2:00 PM	192
3:00 PM	208
4:00 PM	252
5:00 PM	178
6:00 PM	224
7:00 PM	182
8:00 PM	192
9:00 PM	106
10:00 PM	46
11:00 PM	62
12:00 AM	22
Total	2800



Volumes represent the combined totals for both directions

Tuesday, September 20, 2016 CITY: Tustin PROJECT: SC1057

ADT4 B Street between First Street and Sixth Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
00:00	0		2			12:00	31		21		
00:15	2		0			12:15	21		32		
00:30	0		1			12:30	19		13		
00:45	0	2	0	3	5	12:45	19	90	15	81	171
01:00	1		0			13:00	38		24		
01:15	0		0			13:15	40		21		
01:30	0		0			13:30	29		23		
01:45	1	2	0	0	2	13:45	19	126	51	119	245
02:00	0		0			14:00	26		34		
02:15	0		0			14:15	29		23		
02:30	0		1			14:30	22		22		
02:45	0	0	0	1	1	14:45	28	105	22	101	206
03:00	0		0			15:00	20		17		
03:15	0		0			15:15	24		12		
03:30	1		0			15:30	25		16		
03:45	0	1	2	2	3	15:45	26	95	32	77	172
04:00	0		2			16:00	38		22		
04:15	1		2			16:15	28		37		
04:30	2		0			16:30	41		29		
04:45	4	7	4	8	15	16:45	30	137	21	109	246
05:00	3		7			17:00	28		34		
05:15	3		1			17:15	23		21		
05:30	8		2			17:30	19		16		
05:45	3	17	12	22	39	17:45	21	91	17	88	179
06:00	18		10			18:00	16		15		
06:15	11		24			18:15	17		9		
06:30	21		23			18:30	13		4		
06:45	55	105	55	112	217	18:45	15	61	8	36	97
07:00	35		53			19:00	14		16		
07:15	8		50			19:15	24		11		
07:30	15		26			19:30	5		8		
07:45	10	68	19	148	216	19:45	12	55	4	39	94
08:00	14		20			20:00	4		4		
08:15	9		15			20:15	8		5		
08:30	20		12			20:30	2		4		
08:45	21	64	25	72	136	20:45	4	18	5	18	36
09:00	7		20			21:00	5		3		
09:15	21		20			21:15	6		2		
09:30	11		10			21:30	3		2		
09:45	10	49	12	62	111	21:45	7	21	2	9	30
10:00	9		14			22:00	4		2		
10:15	25		13			22:15	0		4		
10:30	18		21			22:30	2		4		
10:45	20	72	27	75	147	22:45	1	7	0	10	17
11:00	23		32			23:00	1		2		
11:15	23		14			23:15	0		0		
11:30	28		19			23:30	0		0		
11:45	14	88	29	94	182	23:45	0	1	0	2	3
Total Vol.		475		599	**1074**			807		689	**1496**

Daily Totals

NB	SB	**Combined**
1282	1288	**2570**

	AM			**PM**		
Split %	44.2%	55.8%	**41.8%**	53.9%	46.1%	**58.2%**
Peak Hour	06:15	06:45	**06:30**	16:00	13:30	**15:45**
Volume	122	184	**300**	137	131	**253**
P.H.F.	0.55	0.84	**0.68**	0.90	0.64	**0.90**

PREPARED BY: AimTD LLC. tel: 714 253 7888 sc@aimtd.com

Wednesday, September 21, 2016 CITY: Tustin PROJECT: SC1057

ADT4 B Street between First Street and Sixth Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
00:00	1		1			12:00	44		21		
00:15	0		1			12:15	43		27		
00:30	1		0			12:30	19		59		
00:45	1	3	0	2	5	12:45	24	130	18	125	255
01:00	0		0			13:00	22		23		
01:15	0		0			13:15	19		15		
01:30	0		0			13:30	25		20		
01:45	0	0	0	0		13:45	28	94	41	99	193
02:00	1		0			14:00	18		26		
02:15	1		0			14:15	23		17		
02:30	0		0			14:30	19		28		
02:45	0	2	0	0	2	14:45	18	78	15	86	164
03:00	0		0			15:00	15		14		
03:15	0		0			15:15	27		17		
03:30	1		1			15:30	31		18		
03:45	0	1	0	1	2	15:45	24	97	20	69	166
04:00	0		1			16:00	29		29		
04:15	2		1			16:15	38		34		
04:30	0		1			16:30	38		28		
04:45	3	5	3	6	11	16:45	40	145	27	118	263
05:00	1		7			17:00	38		27		
05:15	0		7			17:15	29		17		
05:30	7		5			17:30	26		20		
05:45	10	18	7	26	44	17:45	25	118	16	80	198
06:00	10		12			18:00	27		13		
06:15	13		19			18:15	16		7		
06:30	21		27			18:30	11		16		
06:45	50	94	47	105	199	18:45	10	64	7	43	107
07:00	41		42			19:00	6		9		
07:15	15		38			19:15	2		10		
07:30	21		21			19:30	3		10		
07:45	16	93	30	131	224	19:45	11	22	7	36	58
08:00	21		28			20:00	6		1		
08:15	15		11			20:15	3		4		
08:30	23		19			20:30	8		1		
08:45	21	80	27	85	165	20:45	2	19	6	12	31
09:00	11		28			21:00	5		3		
09:15	17		12			21:15	5		0		
09:30	15		19			21:30	1		0		
09:45	22	65	19	78	143	21:45	3	14	3	6	20
10:00	8		18			22:00	1		1		
10:15	19		13			22:15	2		0		
10:30	23		30			22:30	1		0		
10:45	20	70	28	89	159	22:45	0	4	0	1	5
11:00	21		24			23:00	0		0		
11:15	26		22			23:15	1		1		
11:30	20		23			23:30	1		2		
11:45	23	90	18	87	177	23:45	0	2	1	4	6
Total Vol.		521		610	**1131**			787		679	**1466**

Daily Totals

NB	SB	Combined
1308	1289	**2597**

	AM			PM		
Split %	46.1%	53.9%	**43.6%**	53.7%	46.3%	**56.4%**
Peak Hour	11:30	06:30	**06:30**	16:15	12:15	**16:15**
Volume	130	154	**281**	154	127	**270**
P.H.F.	0.74	0.82	**0.72**	0.98	0.54	**0.94**

Thursday, September 22, 2016 CITY: Tustin PROJECT: SC1057

ADT4 B Street between First Street and Sixth Street **PREPARED BY: AimTD LLC. tel: 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
00:00	0		1			12:00	32		17		
00:15	2		0			12:15	16		30		
00:30	1		2			12:30	15		20		
00:45	0	3	0	3	6	12:45	18	81	11	78	159
01:00	0		2			13:00	32		20		
01:15	0		1			13:15	39		20		
01:30	1		0			13:30	44		34		
01:45	0	1	1	4	5	13:45	26	141	67	141	282
02:00	0		0			14:00	25		30		
02:15	0		1			14:15	23		31		
02:30	0		0			14:30	23		20		
02:45	0	0	0	1	1	14:45	16	87	33	114	201
03:00	0		0			15:00	26		25		
03:15	0		0			15:15	33		14		
03:30	1		2			15:30	33		19		
03:45	0	1	0	2	3	15:45	21	113	22	80	193
04:00	2		3			16:00	41		20		
04:15	0		0			16:15	31		28		
04:30	2		3			16:30	32		24		
04:45	2	6	2	8	14	16:45	39	143	23	95	238
05:00	2		8			17:00	31		32		
05:15	3		3			17:15	23		32		
05:30	3		3			17:30	25		22		
05:45	7	15	14	28	43	17:45	17	96	21	107	203
06:00	10		11			18:00	19		16		
06:15	18		22			18:15	13		14		
06:30	23		21			18:30	17		21		
06:45	51	102	49	103	205	18:45	12	61	25	76	137
07:00	27		53			19:00	7		12		
07:15	18		52			19:15	20		7		
07:30	10		20			19:30	9		7		
07:45	11	66	20	145	211	19:45	10	46	10	36	82
08:00	19		15			20:00	2		5		
08:15	14		14			20:15	8		9		
08:30	22		15			20:30	4		3		
08:45	19	74	25	69	143	20:45	5	19	3	20	39
09:00	13		16			21:00	9		2		
09:15	10		19			21:15	11		2		
09:30	8		10			21:30	6		5		
09:45	11	42	20	65	107	21:45	3	29	1	10	39
10:00	17		20			22:00	1		2		
10:15	26		14			22:15	0		0		
10:30	23		35			22:30	2		3		
10:45	26	92	25	94	186	22:45	1	4	0	5	9
11:00	30		29			23:00	0		2		
11:15	27		24			23:15	0		0		
11:30	20		18			23:30	1		2		
11:45	20	97	21	92	189	23:45	1	2	0	4	6
Total Vol.		499		614	**1113**			822		766	**1588**

Daily Totals

NB	SB	**Combined**
1321	1380	**2701**

	AM			**PM**		
Split %	44.8%	55.2%	**41.2%**	51.8%	48.2%	**58.8%**
Peak Hour	06:15	06:30	**06:30**	16:00	13:30	**13:15**
Volume	119	175	**294**	143	162	**285**
P.H.F.	0.58	0.83	**0.74**	0.83	0.60	**0.77**

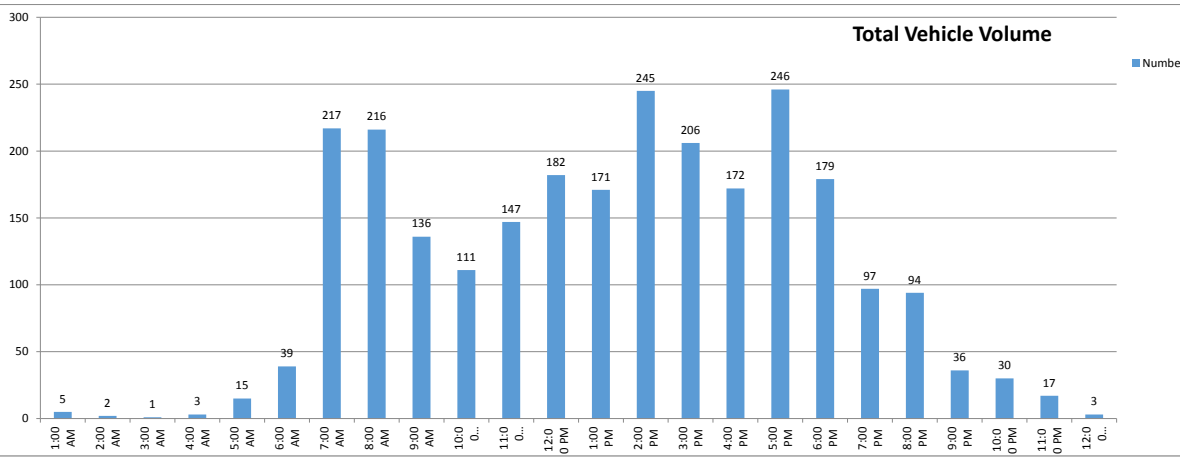
24 Hour Volume Plot

Tustin

ADT4 B Street between First Street and Sixth Street

9/20/2016

Start Time	Volume
1:00 AM	5
2:00 AM	2
3:00 AM	1
4:00 AM	3
5:00 AM	15
6:00 AM	39
7:00 AM	217
8:00 AM	216
9:00 AM	136
10:00 AM	111
11:00 AM	147
12:00 PM	182
1:00 PM	171
2:00 PM	245
3:00 PM	206
4:00 PM	172
5:00 PM	246
6:00 PM	179
7:00 PM	97
8:00 PM	94
9:00 PM	36
10:00 PM	30
11:00 PM	17
12:00 AM	3
Total	2570



Volumes represent the combined totals for both directions

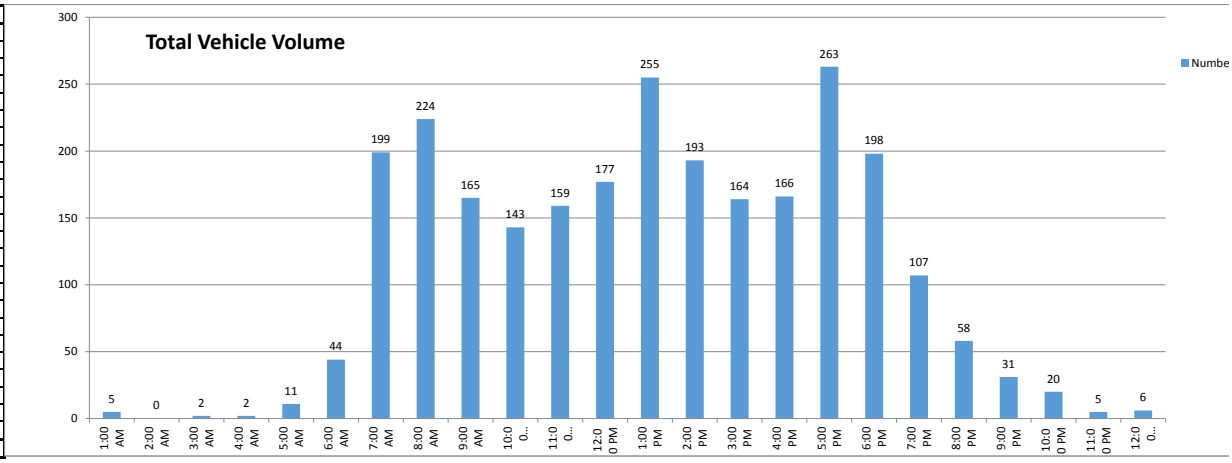
24 Hour Volume Plot

Tustin

ADT4 B Street between First Street and Sixth Street

9/21/2016

Start Time	Volume
1:00 AM	5
2:00 AM	
3:00 AM	2
4:00 AM	2
5:00 AM	11
6:00 AM	44
7:00 AM	199
8:00 AM	224
9:00 AM	165
10:00 AM	143
11:00 AM	159
12:00 PM	177
1:00 PM	255
2:00 PM	193
3:00 PM	164
4:00 PM	166
5:00 PM	263
6:00 PM	198
7:00 PM	107
8:00 PM	58
9:00 PM	31
10:00 PM	20
11:00 PM	5
12:00 AM	6
Total	2597



Volumes represent the combined totals for both directions

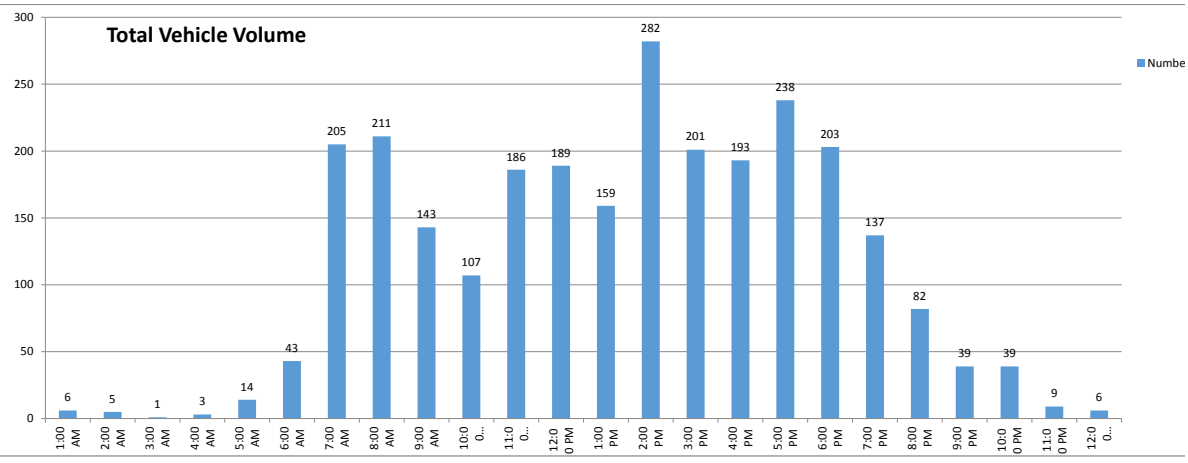
24 Hour Volume Plot

Tustin

ADT4 B Street between First Street and Sixth Street

9/22/2016

Start Time	Volume
1:00 AM	6
2:00 AM	5
3:00 AM	1
4:00 AM	3
5:00 AM	14
6:00 AM	43
7:00 AM	205
8:00 AM	211
9:00 AM	143
10:00 AM	107
11:00 AM	186
12:00 PM	189
1:00 PM	159
2:00 PM	282
3:00 PM	201
4:00 PM	193
5:00 PM	238
6:00 PM	203
7:00 PM	137
8:00 PM	82
9:00 PM	39
10:00 PM	39
11:00 PM	9
12:00 AM	6
Total	2701



Volumes represent the combined totals for both directions

Prepared by NDS/ATD

VOLUME

Irvine Blvd Bet. Yorba St & Prospect Ave

Day: Tuesday
Date: 10/11/2016

City: Tustin
Project #: CA16_1201_047

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,938	15,647	26,585

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			10		13		23		12:00			190		191		381	
0:15			17		10		27		12:15			192		194		386	
0:30			14		8		22		12:30			181		183		364	
0:45			8	49	5	36	13	85	12:45			212	775	217	785	429	1560
1:00			12		8		20		13:00			200		223		423	
1:15			11		5		16		13:15			185		197		382	
1:30			6		2		8		13:30			158		222		380	
1:45			3	32	1	16	4	48	13:45			200	743	207	849	407	1592
2:00			5		3		8		14:00			169		243		412	
2:15			4		4		8		14:15			181		230		411	
2:30			4		1		5		14:30			189		269		458	
2:45			2	15	2	10	4	25	14:45			182	721	299	1041	481	1762
3:00			3		1		4		15:00			169		319		488	
3:15			1		3		4		15:15			172		340		512	
3:30			3		1		4		15:30			195		347		542	
3:45			5	12	2	7	7	19	15:45			232	768	368	1374	600	2142
4:00			7		4		11		16:00			176		354		530	
4:15			11		9		20		16:15			222		398		620	
4:30			15		16		31		16:30			232		386		618	
4:45			19	52	20	49	39	101	16:45			267	897	376	1514	643	2411
5:00			20		19		39		17:00			259		385		644	
5:15			32		38		70		17:15			262		409		671	
5:30			45		40		85		17:30			221		384		605	
5:45			50	147	50	147	100	294	17:45			278	1020	390	1568	668	2588
6:00			76		46		122		18:00			208		387		595	
6:15			69		66		135		18:15			194		402		596	
6:30			109		133		242		18:30			189		349		538	
6:45			120	374	192	437	312	811	18:45			147	738	328	1466	475	2204
7:00			137		231		368		19:00			159		255		414	
7:15			155		323		478		19:15			168		154		322	
7:30			160		357		517		19:30			123		139		262	
7:45			190	642	392	1303	582	1945	19:45			99	549	122	670	221	1219
8:00			186		345		531		20:00			103		90		193	
8:15			158		392		550		20:15			74		63		137	
8:30			166		343		509		20:30			77		82		159	
8:45			169	679	280	1360	449	2039	20:45			74	328	93	328	167	656
9:00			150		235		385		21:00			77		68		145	
9:15			158		223		381		21:15			77		61		138	
9:30			139		176		315		21:30			61		64		125	
9:45			168	615	209	843	377	1458	21:45			46	261	46	239	92	500
10:00			164		179		343		22:00			40		39		79	
10:15			133		156		289		22:15			32		36		68	
10:30			145		155		300		22:30			36		40		76	
10:45			164	606	190	680	354	1286	22:45			20	128	29	144	49	272
11:00			147		140		287		23:00			25		20		45	
11:15			174		185		359		23:15			16		16		32	
11:30			189		189		378		23:30			13		13		26	
11:45			209	719	209	723	418	1442	23:45			14	68	9	58	23	126
TOTALS				3942		5611		9553	TOTALS				6996		10036		17032
SPLIT %				41.3%		58.7%		35.9%	SPLIT %				41.1%		58.9%		64.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,938	15,647	26,585

AM Peak Hour			11:30	7:30	7:30	PM Peak Hour			16:30	17:15	17:00
AM Pk Volume			780	1486	2180	PM Pk Volume			1020	1570	2588
Pk Hr Factor			0.933	0.948	0.936	Pk Hr Factor			0.955	0.960	0.964
7 - 9 Volume	0	0	1321	2663	3984	4 - 6 Volume	0	0	1917	3082	4999
7 - 9 Peak Hour			7:45	7:30	7:30	4 - 6 Peak Hour			16:30	17:00	17:00
7 - 9 Pk Volume	0	0	700	1486	2180	4 - 6 Pk Volume	0	0	1020	1568	2588
Pk Hr Factor	0.000	0.000	0.921	0.948	0.936	Pk Hr Factor	0.000	0.000	0.955	0.958	0.964

Prepared by NDS/ATD

VOLUME

Irvine Blvd Bet. Prospect Ave & Newport Ave

Day: Tuesday
Date: 10/11/2016

City: Tustin
Project #: CA16_1201_048

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	11,583	16,209	27,792

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			11		8		19		12:00			202		215		417	
0:15			8		10		18		12:15			218		185		403	
0:30			9		7		16		12:30			193		184		377	
0:45			5	33	10	35	15	68	12:45			223	836	219	803	442	1639
1:00			2		4		6		13:00			224		232		456	
1:15			5		6		11		13:15			223		203		426	
1:30			7		6		13		13:30			173		232		405	
1:45			8	22	5	21	13	43	13:45			198	818	195	862	393	1680
2:00			9		5		14		14:00			202		266		468	
2:15			2		4		6		14:15			186		223		409	
2:30			3		4		7		14:30			192		265		457	
2:45			4	18	2	15	6	33	14:45			209	789	293	1047	502	1836
3:00			5		4		9		15:00			192		365		557	
3:15			5		3		8		15:15			193		337		530	
3:30			4		4		8		15:30			211		404		615	
3:45			6	20	5	16	11	36	15:45			241	837	345	1451	586	2288
4:00			9		2		11		16:00			196		407		603	
4:15			8		5		13		16:15			219		394		613	
4:30			13		10		23		16:30			243		421		664	
4:45			17	47	22	39	39	86	16:45			270	928	381	1603	651	2531
5:00			17		19		36		17:00			291		413		704	
5:15			29		30		59		17:15			294		416		710	
5:30			42		45		87		17:30			253		431		684	
5:45			55	143	41	135	96	278	17:45			286	1124	406	1666	692	2790
6:00			69		55		124		18:00			230		399		629	
6:15			75		59		134		18:15			202		396		598	
6:30			102		108		210		18:30			215		384		599	
6:45			126	372	199	421	325	793	18:45			156	803	330	1509	486	2312
7:00			136		206		342		19:00			177		298		475	
7:15			158		315		473		19:15			181		184		365	
7:30			165		369		534		19:30			143		145		288	
7:45			190	649	407	1297	597	1946	19:45			107	608	125	752	232	1360
8:00			207		359		566		20:00			96		94		190	
8:15			157		400		557		20:15			88		77		165	
8:30			172		389		561		20:30			71		70		141	
8:45			166	702	303	1451	469	2153	20:45			92	347	90	331	182	678
9:00			159		261		420		21:00			68		71		139	
9:15			155		237		392		21:15			84		60		144	
9:30			146		190		336		21:30			65		66		131	
9:45			178	638	212	900	390	1538	21:45			48	265	44	241	92	506
10:00			170		193		363		22:00			43		43		86	
10:15			154		157		311		22:15			32		33		65	
10:30			136		153		289		22:30			35		42		77	
10:45			172	632	181	684	353	1316	22:45			23	133	29	147	52	280
11:00			161		153		314		23:00			24		23		47	
11:15			166		160		326		23:15			19		16		35	
11:30			203		213		416		23:30			12		11		23	
11:45			218	748	196	722	414	1470	23:45			16	71	11	61	27	132
TOTALS				4024		5736		9760	TOTALS				7559		10473		18032
SPLIT %				41.2%		58.8%		35.1%	SPLIT %				41.9%		58.1%		64.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	11,583	16,209	27,792

AM Peak Hour			11:30	7:45	7:45	PM Peak Hour			17:00	17:00	17:00
AM Pk Volume			841	1555	2281	PM Pk Volume			1124	1666	2790
Pk Hr Factor			0.964	0.955	0.955	Pk Hr Factor			0.956	0.966	0.982
7 - 9 Volume	0	0	1351	2748	4099	4 - 6 Volume	0	0	2052	3269	5321
7 - 9 Peak Hour			7:45	7:45	7:45	4 - 6 Peak Hour			17:00	17:00	17:00
7 - 9 Pk Volume	0	0	726	1555	2281	4 - 6 Pk Volume	0	0	1124	1666	2790
Pk Hr Factor	0.000	0.000	0.877	0.955	0.955	Pk Hr Factor	0.000	0.000	0.956	0.966	0.982

Prepared by NDS/ATD

VOLUME

Main St Bet. Williams St & El Camino Real

Day: Wednesday
Date: 11/9/2016

City: Tustin
Project #: CA16_1201_074

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	5,297	6,285	11,582

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		9		10		12:00			108		94		202	
00:15			6		7		13		12:15			93		94		187	
00:30			0		8		8		12:30			94		103		197	
00:45			3	10	4	28	7	38	12:45			97	392	117	408	214	800
01:00			5		0		5		13:00			87		85		172	
01:15			1		4		5		13:15			115		106		221	
01:30			1		2		3		13:30			76		97		173	
01:45			5	12	1	7	6	19	13:45			85	363	85	373	170	736
02:00			3		2		5		14:00			85		105		190	
02:15			1		2		3		14:15			91		113		204	
02:30			1		3		4		14:30			96		86		182	
02:45			2	7	3	10	5	17	14:45			73	345	166	470	239	815
03:00			7		4		11		15:00			94		160		254	
03:15			1		1		2		15:15			83		127		210	
03:30			2		3		5		15:30			95		139		234	
03:45			3	13	1	9	4	22	15:45			85	357	135	561	220	918
04:00			5		2		7		16:00			118		158		276	
04:15			3		1		4		16:15			111		174		285	
04:30			8		3		11		16:30			69		145		214	
04:45			8	24	2	8	10	32	16:45			106	404	156	633	262	1037
05:00			10		8		18		17:00			110		170		280	
05:15			14		5		19		17:15			109		178		287	
05:30			10		6		16		17:30			112		151		263	
05:45			30	64	15	34	45	98	17:45			102	433	169	668	271	1101
06:00			23		14		37		18:00			84		135		219	
06:15			47		18		65		18:15			104		133		237	
06:30			66		37		103		18:30			90		145		235	
06:45			92	228	61	130	153	358	18:45			60	338	113	526	173	864
07:00			107		70		177		19:00			73		88		161	
07:15			109		93		202		19:15			70		79		149	
07:30			122		98		220		19:30			57		61		118	
07:45			131	469	132	393	263	862	19:45			33	233	32	260	65	493
08:00			117		77		194		20:00			48		56		104	
08:15			100		76		176		20:15			41		49		90	
08:30			87		84		171		20:30			41		51		92	
08:45			81	385	86	323	167	708	20:45			36	166	38	194	74	360
09:00			73		89		162		21:00			35		44		79	
09:15			65		89		154		21:15			23		36		59	
09:30			58		85		143		21:30			25		33		58	
09:45			77	273	74	337	151	610	21:45			18	101	24	137	42	238
10:00			62		85		147		22:00			19		30		49	
10:15			60		64		124		22:15			9		16		25	
10:30			75		69		144		22:30			18		19		37	
10:45			80	277	90	308	170	585	22:45			8	54	19	84	27	138
11:00			66		80		146		23:00			10		11		21	
11:15			86		83		169		23:15			4		10		14	
11:30			86		90		176		23:30			8		3		11	
11:45			80	318	102	355	182	673	23:45			9	31	5	29	14	60
TOTALS				2080		1942		4022	TOTALS				3217		4343		7560
SPLIT %				51.7%		48.3%		34.7%	SPLIT %				42.6%		57.4%		65.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	5,297	6,285	11,582

AM Peak Hour			07:15	07:15	07:15	PM Peak Hour			16:45	17:00	17:00
AM Pk Volume			479	400	879	PM Pk Volume			437	668	1101
Pk Hr Factor			0.914	0.758	0.836	Pk Hr Factor			0.975	0.938	0.959
7 - 9 Volume	0	0	854	716	1570	4 - 6 Volume	0	0	837	1301	2138
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour			16:45	17:00	17:00
7 - 9 Pk Volume	0	0	479	400	879	4 - 6 Pk Volume	0	0	437	668	1101
Pk Hr Factor	0.000	0.000	0.914	0.758	0.836	Pk Hr Factor	0.000	0.000	0.975	0.938	0.959

Prepared by NDS/ATD

VOLUME

Main St Bet. El Camino Real & Newport Ave

Day: Wednesday
Date: 11/9/2016

City: Tustin
Project #: CA16_1201_075

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	5,920	5,221	11,141

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			2		0		2		12:00			66		74		140	
00:15			5		1		6		12:15			72		64		136	
00:30			10		0		10		12:30			78		70		148	
00:45			5	22	3	4	8	26	12:45			98	314	73	281	171	595
01:00			1		1		2		13:00			86		71		157	
01:15			1		2		3		13:15			86		90		176	
01:30			2		1		3		13:30			53		87		140	
01:45			2	6	3	7	5	13	13:45			73	298	96	344	169	642
02:00			0		1		1		14:00			81		97		178	
02:15			1		1		2		14:15			98		85		183	
02:30			5		2		7		14:30			114		102		216	
02:45			2	8	1	5	3	13	14:45			77	370	133	417	210	787
03:00			1		2		3		15:00			101		124		225	
03:15			1		2		3		15:15			105		135		240	
03:30			13		3		16		15:30			97		100		197	
03:45			1	16	2	9	3	25	15:45			139	442	127	486	266	928
04:00			6		5		11		16:00			146		126		272	
04:15			4		2		6		16:15			145		138		283	
04:30			13		5		18		16:30			129		130		259	
04:45			11	34	9	21	20	55	16:45			146	566	135	529	281	1095
05:00			15		6		21		17:00			128		153		281	
05:15			20		10		30		17:15			155		153		308	
05:30			22		15		37		17:30			139		138		277	
05:45			51	108	15	46	66	154	17:45			141	563	136	580	277	1143
06:00			33		19		52		18:00			123		127		250	
06:15			60		25		85		18:15			142		127		269	
06:30			107		30		137		18:30			105		114		219	
06:45			94	294	46	120	140	414	18:45			64	434	96	464	160	898
07:00			128		60		188		19:00			62		68		130	
07:15			176		70		246		19:15			68		53		121	
07:30			179		109		288		19:30			47		34		81	
07:45			164	647	131	370	295	1017	19:45			34	211	46	201	80	412
08:00			148		85		233		20:00			41		34		75	
08:15			135		88		223		20:15			31		36		67	
08:30			128		70		198		20:30			34		30		64	
08:45			76	487	81	324	157	811	20:45			43	149	23	123	66	272
09:00			71		70		141		21:00			49		26		75	
09:15			59		55		114		21:15			28		34		62	
09:30			71		59		130		21:30			32		25		57	
09:45			68	269	61	245	129	514	21:45			27	136	17	102	44	238
10:00			52		67		119		22:00			22		15		37	
10:15			38		59		97		22:15			19		13		32	
10:30			57		44		101		22:30			14		17		31	
10:45			52	199	55	225	107	424	22:45			13	68	10	55	23	123
11:00			51		52		103		23:00			9		8		17	
11:15			64		59		123		23:15			5		2		7	
11:30			68		55		123		23:30			6		1		7	
11:45			70	253	84	250	154	503	23:45			6	26	2	13	8	39
TOTALS				2343		1626		3969	TOTALS				3577		3595		7172
SPLIT %				59.0%		41.0%		35.6%	SPLIT %				49.9%		50.1%		64.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	5,920	5,221	11,141

AM Peak Hour			07:15	07:30	07:15	PM Peak Hour			16:45	17:00	16:45
AM Pk Volume			667	413	1062	PM Pk Volume			568	580	1147
Pk Hr Factor			0.932	0.788	0.900	Pk Hr Factor			0.916	0.948	0.931
7 - 9 Volume	0	0	1134	694	1828	4 - 6 Volume	0	0	1129	1109	2238
7 - 9 Peak Hour			07:15	07:30	07:15	4 - 6 Peak Hour			16:45	17:00	16:45
7 - 9 Pk Volume	0	0	667	413	1062	4 - 6 Pk Volume	0	0	568	580	1147
Pk Hr Factor	0.000	0.000	0.932	0.788	0.900	Pk Hr Factor	0.000	0.000	0.916	0.948	0.931

Transportation Studies, Inc.

2640 Walnut Avenue, Suite H
Tustin, CA. 92780

Location : IRVINE BOULEVARD
Segment : SR-55 FWY TO YORBA ST
Client : CITY OF TUSTIN

Site: TUSTIN
Date: 10/23/14

Interval	EB				WB				Combined				Day: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	29	78	256	1,058	20	65	300	1,101	49	143	556	2,159	
12:15	22		252		13		237		35		489		
12:30	22		256		17		276		39		532		
12:45	5		294		15		288		20		582		
01:00	8	48	278	1,075	10	31	260	1,117	18	79	538	2,192	
01:15	12		272		11		296		23		568		
01:30	14		251		4		266		18		517		
01:45	14		274		6		295		20		569		
02:00	11	31	254	1,018	1	27	280	1,361	12	58	534	2,379	
02:15	4		264		7		300		11		564		
02:30	13		260		10		385		23		645		
02:45	3		240		9		396		12		636		
03:00	6	59	277	1.000	3	28	401	1.663	9	87	678	2.663	
03:15	12		250		3		438		15		688		
03:30	21		225		7		450		28		675		
03:45	20		248		15		374		35		622		
04:00	8	77	263	1,064	10	71	476	1,875	18	148	739	2,939	
04:15	19		248		9		481		28		729		
04:30	24		244		24		456		48		700		
04:45	26		309		28		462		54		771		
05:00	34	234	304	1,145	24	214	471	1,902	58	448	775	3,047	
05:15	44		274		46		490		90		764		
05:30	72		272		70		480		142		752		
05:45	84		295		74		461		158		756		
06:00	83	416	287	957	80	584	518	1,750	163	1,000	805	2,707	
06:15	90		232		110		438		200		670		
06:30	104		232		172		426		276		658		
06:45	139		206		222		368		361		574		
07:00	122	659	187	687	286	1,626	296	934	408	2,285	483	1,621	
07:15	165		185		356		256		521		441		
07:30	192		164		467		224		659		388		
07:45	180		151		517		158		697		309		
08:00	168	757	144	488	496	1.759	150	520	664	2.516	294	1.008	
08:15	175		126		470		124		645		250		
08:30	174		104		414		136		588		240		
08:45	240		114		379		110		619		224		
09:00	204	925	110	439	272	1,056	133	439	476	1,981	243	878	
09:15	233		120		268		122		501		242		
09:30	224		105		280		106		504		211		
09:45	264		104		236		78		500		182		
10:00	210	868	66	246	244	900	92	256	454	1,768	158	502	
10:15	204		66		212		55		416		121		
10:30	216		49		204		61		420		110		
10:45	238		65		240		48		478		113		
11:00	268	1,050	37	165	224	952	32	122	492	2,002	69	287	
11:15	250		38		240		32		490		70		
11:30	268		50		266		34		534		84		
11:45	264		40		222		24		486		64		
Totals	5,202		9,342		7,313		13,040		12,515		22,382		
Split%	41.6		41.7		58.4		58.3						
Day Totals		14,544				20,353				34,897			
Day Splits		41.7				58.3							
Peak Hour	11:00		04:45		07:30		05:15		07:30		05:15		
Volume	1,050		1,159		1,950		1,949		2,665		3,077		
Factor	0.98		0.94		0.94		0.94		0.96		0.96		

* Data File : D1409048 Printed : 11/5/2014

CITY OF TUSTIN 2016
AVERAGE DAILY TRAFFIC (ADT) VOLUMES
(24 HOUR TWO-WAY TRAFFIC)

LOCATION	2016
CENTENNIAL WAY	
First St. to Main St.	4,076
EL CAMINO REAL	
First St. to Main St.	5,883
Main St. to Newport Av.	11,297
Newport Av. to Red Hill Av.	13,494
FIRST STREET	
Tustin Av. to Yorba St./Pacific St.	20,142
Yorba St./Pacific St. to Prospect Av.	17,069
Prospect Av. to Newport Av.	13,858
Newport Av. to Red Hill Av.	4,723

LOCATION	2016
MAIN STREET	
Williams St. to El Camino Real	11,582
El Camino Real to Newport Av.	11,141
NEWPORT AVENUE	
Irvine Bl. to Bryan Av.	26,588
Bryan Av. to San Juan St.	26,641
San Juan St. to El Camino Real	28,670
PROSPECT AVENUE	
Santa Clara Av. to Seventeenth St.	7,094
Seventeenth St. to Irvine Bl.	10,439
Irvine Bl. to First St.	10,330
First St. to Main St.	3,570

LOCATION	2016
SIXTH STREET	
B St. to El Camino Real	1,944

Appendix B ICU WORKSHEETS

Peak hour intersection volume/capacity ratios are calculated by means of intersection capacity utilization (ICU) values. ICU calculations were performed for the intersections shown in **Figure B-1**.

The procedure is based on the critical movement methodology, and shows the amount of capacity utilized by each critical move. A "de-facto" right-turn lane is used in the ICU calculation for cases where a curb lane is wide enough to separately serve both through and right-turn traffic (typically with a width of 19 feet from curb to outside of through-lane with parking prohibited during peak periods). Such lanes are treated the same as striped right-turn lanes during the ICU calculations, but they are denoted on the ICU calculation worksheets using the letter "d" in place of a numerical entry for right-turn lanes.

The methodology also incorporates a check for right-turn capacity utilization. Both right-turn-on-green (RTOG) and right-turn-on-red (RTOR) capacity availability are calculated and checked against the total right-turn capacity need. If insufficient capacity is available, then an adjustment is made to the total capacity utilization value. The following example shows how this adjustment is made.

Example of Right-turn Capacity Utilization For Northbound Right

1. Right-Turn-On-Green (RTOG)

If NBT is critical move, then:
RTOG = V/C (NBT)
Otherwise,
RTOG = V/C (NBL) + V/C (SBT) - V/C (SBL)

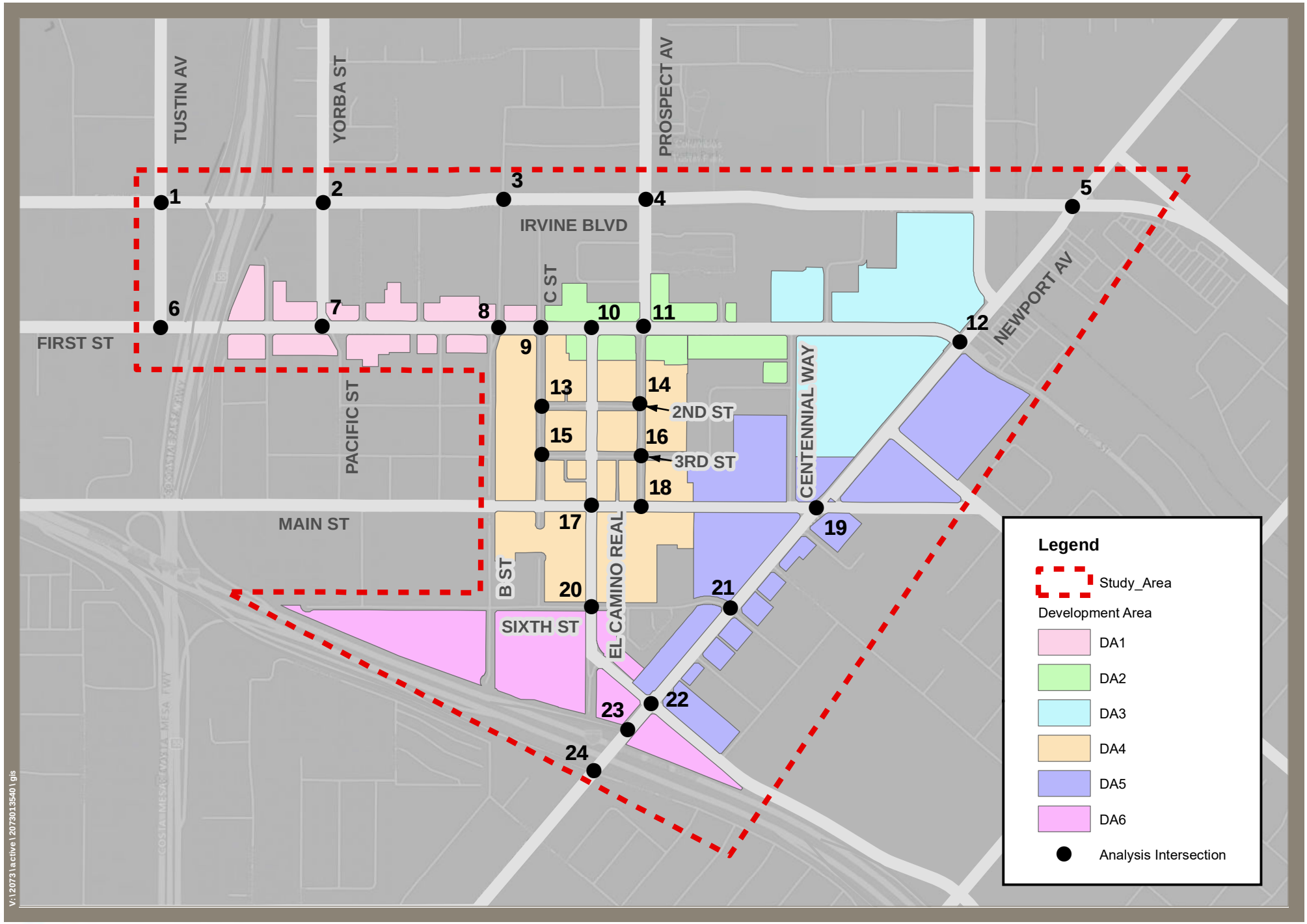
2. Right-Turn-On-Red (RTOR)

If WBL is critical move, then:
RTOR = V/C (WBL)
Otherwise,
RTOR = V/C (EBL) + V/C (WBT) - V/C (EBT)

3. Right-Turn Overlap Adjustment

If the northbound right is assumed to overlap with the adjacent westbound left, adjustments to the RTOG and RTOR values are made as follows:

RTOG = RTOG + V/C (WBL)
RTOR = RTOR - V/C (WBL)



Stantec

N

Figure B-1

Intersection Location Map

4. Total Right-Turn Capacity (RTC) Availability For NBR

RTC = RTOG + factor x RTOR
Where factor = RTOR saturation flow factor (typically 75%)

5. Right-turn Adjustment for ICU Calculation

Right-turn adjustment is then as follows: Additional ICU = V/C (NBR) - RTC

A zero or negative value indicates that adequate capacity is available and no adjustment is necessary. A positive value indicates that the available RTOR and RTOG capacity does not adequately accommodate the right-turn V/C, therefore the right-turn is essentially considered to be a critical movement. In such cases, the right-turn adjustment is noted on the ICU worksheet and it is included in the total capacity utilization value. When it is determined that a right-turn adjustment is required for more than one right-turn movement, the word "multi" is printed on the worksheet instead of an actual right-turn movement reference, and the right-turn adjustments are cumulatively added to the total capacity utilization value. In such cases, further operational evaluation is typically carried out to determine if under actual operational conditions, the critical right-turns would operate simultaneously, and therefore a right-turn adjustment credit should be applied.

Shared Lane V/C Methodology

For intersection approaches where shared usage of a lane is permitted by more than one turn movement (e.g., left/through, through/right, left/through/right), the individual turn volumes are evaluated to determine whether dedication of the shared lane is warranted to any one given turn movement. The following example demonstrates how this evaluation is carried out:

Example of Shared Lane Utilization for Shared Left/Through Lane

1. Average Lane Volume (ALV)

$$ALV = \frac{\text{Left-Turn Volume + Through Volume}}{\text{Total Left + Through Approach Lanes (including shared lane)}}$$

2. ALV for Each Approach

$$ALV\ (Left) = \frac{\text{Left-Turn Volume}}{\text{Left Approach Lanes (including shared lane)}}$$

$$ALV\ (Through) = \frac{\text{Through Volume}}{\text{Through Approach Lanes (including shared lane)}}$$

3. Lane Dedication is Warranted

If ALV (Left) is greater than ALV then full dedication of the shared lane to the left-turn approach is warranted. Left-turn and through V/C ratios for this case are calculated as follows:

$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (including shared lane)}}$$

$$\text{V/C (Through)} = \frac{\text{Through Volume}}{\text{Through Approach Capacity (excluding shared lane)}}$$

Similarly, if ALV (Through) is greater than ALV then full dedication to the through approach is warranted, and left-turn and through V/C ratios are calculated as follows:

$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Left Approach Capacity (excluding shared lane)}}$$

$$\text{V/C (Through)} = \frac{\text{Through Volume}}{\text{Through Approach Capacity (including shared lane)}}$$

4. Lane Dedication is Not Warranted

If ALV (Left) and ALV (Through) are both less than ALV, the left/through lane is assumed to be truly shared and each left, left/through or through approach lane carries an evenly distributed volume of traffic equal to ALV. A combined left/through V/C ratio is calculated as follows:

$$\text{V/C (Left/Through)} = \frac{\text{Left-Turn Volume + Through Volume}}{\text{Total Left + Through Approach Capacity (including shared lane)}}$$

This V/C (Left/Through) ratio is assigned as the V/C (Through) ratio for the critical movement analysis and ICU summary listing.

If split phasing has not been designated for this approach, the relative proportion of V/C (Through) that is attributed to the left-turn volume is estimated as follows:

If approach has more than one left-turn (including shared lane), then:

$$\text{V/C (Left)} = \text{V/C (Through)}$$

If approach has only one left-turn lane (shared lane), then:

$$\text{V/C (Left)} = \frac{\text{Left-Turn Volume}}{\text{Single Approach Lane Capacity}}$$

If this left-turn movement is determined to be a critical movement, the V/C (Left) value is posted in brackets on the ICU summary printout.

These same steps are carried out for shared through/right lanes. If full dedication of a shared through/right lane to the right-turn movement is warranted, the right-turn V/C value calculated in step three is checked against the RTOR and RTOG capacity availability if the option to include right-turns in the V/C ratio calculations is selected. If the V/C value that is determined using the shared lane methodology described here is reduced due to RTOR and RTOG capacity availability, the V/C value for the through/right lanes is posted in brackets.

When an approach contains more than one shared lane (e.g., left/through and through/right), steps one and two listed above are carried out for the three turn movements combined. Step four is carried out if dedication is not warranted for either of the shared lanes. If dedication of one of the shared lanes is warranted to one movement or another, step three is carried out for the two movements involved, and then steps one through four are repeated for the two movements involved in the other shared lane.

1. Tustin at 4th

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	59	.03*	95	.06
NBT	3	5100	221	.07	787	.19*
NBR	0	0	221	.13	201	
SBL	2	3400	643	.19	440	.13*
SBT	2	3400	850	.25*	434	.13
SBR	1	1700	277	.16	164	.10
EBL	1	1700	101	.06*	217	.13*
EBT	3	5100	612	.13	683	.14
EBR	0	0	29		36	
WBL	1	1700	102	.06	129	.08
WBT	3	5100	687	.20*	875	.25*
WBR	0	0	393	.23	399	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.75**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	39	.02	95	.06
NBT	3	5100	141	.04*	787	.19*
NBR	0	0	171	.10	201	
SBL	2	3400	723	.21*	500	.15*
SBT	2	3400	590	.17	294	.09
SBR	1	1700	267	.16	164	.10
EBL	1	1700	91	.05*	227	.13*
EBT	3	5100	632	.13	713	.14
EBR	0	0	19		16	
WBL	1	1700	72	.04	89	.05
WBT	3	5100	727	.21*	915	.27*
WBR	0	0	423	.25	469	.28
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.79**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	39	.02	95	.06
NBT	3	5100	141	.04*	797	.20*
NBR	0	0	171	.10	201	
SBL	2	3400	723	.21*	500	.15*
SBT	2	3400	600	.18	294	.09
SBR	1	1700	267	.16	164	.10
EBL	1	1700	91	.05*	227	.13*
EBT	3	5100	632	.13	713	.14
EBR	0	0	19		16	
WBL	1	1700	72	.04	89	.05
WBT	3	5100	727	.21*	915	.27*
WBR	0	0	423	.25	469	.28
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.80**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05*	120	.07
NBT	3	5100	270	.08	960	.24*
NBR	0	0	280	.16	270	
SBL	2	3400	680	.20	460	.14*
SBT	2	3400	950	.28*	540	.16
SBR	1	1700	290	.17	170	.10
EBL	1	1700	110	.06*	220	.13*
EBT	3	5100	690	.14	770	.16
EBR	0	0	40		50	
WBL	1	1700	140	.08	170	.10
WBT	3	5100	780	.23*	980	.27*
WBR	0	0	420	.25	410	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.83**

1. Tustin at 4th

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	120	.07
NBT	3	5100	190	.06*	960	.24*
NBR	0	0	230	.14	270	
SBL	2	3400	760	.22*	520	.15*
SBT	2	3400	690	.20	400	.12
SBR	1	1700	280	.16	170	.10
EBL	1	1700	100	.06*	230	.14*
EBT	3	5100	710	.15	800	.16
EBR	0	0	30		30	
WBL	1	1700	110	.06	130	.08
WBT	3	5100	820	.24*	1020	.29*
WBR	0	0	450	.26	480	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.87**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	120	.07
NBT	3	5100	190	.06*	970	.24*
NBR	0	0	230	.14	270	
SBL	2	3400	760	.22*	520	.15*
SBT	2	3400	700	.21	400	.12
SBR	1	1700	280	.16	170	.10
EBL	1	1700	100	.06*	230	.14*
EBT	3	5100	710	.15	800	.16
EBR	0	0	30		30	
WBL	1	1700	110	.06	130	.08
WBT	3	5100	820	.24*	1020	.29*
WBR	0	0	450	.26	480	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.87**

2. Yorba at Irvine

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		187		263	
NBT	1.5	5100	63	.06*	238	.10*
NBR	0		34		32	
SBL	1	1700	102	.06	48	.03
SBT	1	1700	211	.12*	81	.05*
SBR	1	1700	278	.16	102	.06
EBL	1	1700	39	.02*	109	.06*
EBT	3	5100	602	.14	1037	.23
EBR	0	0	125		149	
WBL	1	1700	21	.01	6	.00
WBT	3	5100	1557	.31*	1545	.31*
WBR	0	0	18		56	
Right Turn Adjustment			SBR	.02*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.58** **.57**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		197	.06*	263	
NBT	1.5	5100	53	.05	228	.10*
NBR	0		34		32	
SBL	1	1700	92	.05	38	.02
SBT	1	1700	201	.12*	71	.04*
SBR	1	1700	268	.16	102	.06
EBL	1	1700	49	.03*	109	.06*
EBT	3	5100	642	.15	1087	.24
EBR	0	0	125		149	
WBL	1	1700	21	.01	6	.00
WBT	3	5100	1637	.32*	1625	.33*
WBR	0	0	18		46	
Right Turn Adjustment			SBR	.02*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.60** **.58**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		197	.06	263	
NBT	1.5	5100	63	.06*	248	.11*
NBR	0		34		32	
SBL	1	1700	102	.06	38	.02
SBT	1	1700	211	.12*	81	.05*
SBR	1	1700	288	.17	112	.07
EBL	1	1700	49	.03*	119	.07*
EBT	3	5100	642	.15	1087	.24
EBR	0	0	125		149	
WBL	1	1700	21	.01	6	.00
WBT	3	5100	1647	.33*	1635	.33*
WBR	0	0	18		46	
Right Turn Adjustment			SBR	.03*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.62** **.61**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		190		260	
NBT	1.5	5100	100	.06*	330	.12*
NBR	0		40		40	
SBL	1	1700	170	.10	90	.05
SBT	1	1700	280	.16*	120	.07*
SBR	1	1700	390	.23	130	.08
EBL	1	1700	50	.03*	150	.09*
EBT	3	5100	680	.16	1190	.26
EBR	0	0	130		150	
WBL	1	1700	20	.01	10	.01
WBT	3	5100	1790	.36*	1800	.37*
WBR	0	0	30		100	
Right Turn Adjustment			SBR	.05*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.71** **.70**

2. Yorba at Irvine

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		200		260	
NBT	1.5	5100	90	.06*	320	.12*
NBR	0		40		40	
SBL	1	1700	160	.09	80	.05
SBT	1	1700	270	.16*	110	.06*
SBR	1	1700	380	.22	130	.08
EBL	1	1700	60	.04*	150	.09*
EBT	3	5100	720	.17	1240	.27
EBR	0	0	130		150	
WBL	1	1700	20	.01	10	.01
WBT	3	5100	1870	.37*	1880	.39*
WBR	0	0	30		90	
Right Turn Adjustment			SBR	.03*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.71** **.71**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		200		260	
NBT	1.5	5100	100	.07*	340	.13*
NBR	0		40		40	
SBL	1	1700	170	.10	80	.05
SBT	1	1700	280	.16*	120	.07*
SBR	1	1700	400	.24	140	.08
EBL	1	1700	60	.04*	160	.09*
EBT	3	5100	720	.17	1240	.27
EBR	0	0	130		150	
WBL	1	1700	20	.01	10	.01
WBT	3	5100	1880	.37*	1890	.39*
WBR	0	0	30		90	
Right Turn Adjustment			SBR	.05*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.74** **.73**

3. B at Irvine

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	22	.01*	41	.02*
NBT	1	1700	102	.07	25	.04
NBR	0	0	14		40	
SBL	1	1700	16	.01	8	.00
SBT	1	1700	116	.12*	24	.03*
SBR	0	0	89		31	
EBL	1	1700	80	.05*	34	.02*
EBT	3	5100	624	.13	1055	.22
EBR	0	0	31		42	
WBL	1	1700	83	.05	42	.02
WBT	3	5100	1592	.32*	1555	.31*
WBR	0	0	29		5	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.43**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	22	.01*	41	.02*
NBT	1	1700	112	.07	35	.04
NBR	0	0	14		40	
SBL	1	1700	26	.02	18	.01
SBT	1	1700	106	.13*	24	.03*
SBR	0	0	109		31	
EBL	1	1700	80	.05*	34	.02*
EBT	3	5100	654	.13	1095	.22
EBR	0	0	31		42	
WBL	1	1700	113	.07	52	.03
WBT	3	5100	1652	.33*	1635	.32*
WBR	0	0	29		5	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.44**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	22	.01*	41	.02*
NBT	1	1700	112	.07	35	.04
NBR	0	0	14		40	
SBL	1	1700	26	.02	18	.01
SBT	1	1700	106	.13*	24	.03*
SBR	0	0	109		31	
EBL	1	1700	80	.05*	34	.02*
EBT	3	5100	664	.14	1105	.22
EBR	0	0	31		42	
WBL	1	1700	123	.07	52	.03
WBT	3	5100	1662	.33*	1645	.32*
WBR	0	0	29		5	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.44**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01*	40	.02
NBT	1	1700	110	.08	30	.05*
NBR	0	0	30		60	
SBL	1	1700	40	.02	20	.01*
SBT	1	1700	130	.13*	20	.03
SBR	0	0	90		30	
EBL	1	1700	80	.05*	40	.02*
EBT	3	5100	750	.15	1260	.25
EBR	0	0	30		40	
WBL	1	1700	120	.07	70	.04
WBT	3	5100	1930	.39*	1930	.38*
WBR	0	0	70		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.51**

3. B at Irvine

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01*	40	.02
NBT	1	1700	120	.09	40	.06*
NBR	0	0	30		60	
SBL	1	1700	50	.03	30	.02*
SBT	1	1700	120	.14*	20	.03
SBR	0	0	110		30	
EBL	1	1700	80	.05*	40	.02*
EBT	3	5100	780	.16	1300	.26
EBR	0	0	30		40	
WBL	1	1700	150	.09	80	.05
WBT	3	5100	1990	.40*	2010	.40*
WBR	0	0	70		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.55**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	20	.01*	40	.02
NBT	1	1700	120	.09	40	.06*
NBR	0	0	30		60	
SBL	1	1700	50	.03	30	.02*
SBT	1	1700	120	.14*	20	.03
SBR	0	0	110		30	
EBL	1	1700	80	.05*	40	.02*
EBT	3	5100	790	.16	1310	.26
EBR	0	0	30		40	
WBL	1	1700	160	.09	80	.05
WBT	3	5100	2000	.41*	2020	.40*
WBR	0	0	70		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.66**		**.55**

4. Prospect at Irvine

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	77	.05*	98	.06
NBT	2	3400	245	.09	388	.14*
NBR	0	0	47		75	
SBL	1	1700	243	.14	190	.11*
SBT	2	3400	452	.18*	214	.08
SBR	0	0	175		69	
EBL	1	1700	89	.05*	112	.07*
EBT	3	5100	509	.11	886	.19
EBR	0	0	50		98	
WBL	1	1700	67	.04	59	.03
WBT	3	5100	1434	.31*	1350	.33*
WBR	0	0	126		339	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.70**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	107	.06*	128	.08
NBT	2	3400	285	.10	458	.16*
NBR	0	0	57		85	
SBL	1	1700	213	.13	180	.11*
SBT	2	3400	532	.21*	254	.10
SBR	0	0	175		69	
EBL	1	1700	89	.05*	122	.07*
EBT	3	5100	529	.12	916	.20
EBR	0	0	60		118	
WBL	1	1700	77	.05	59	.03
WBT	3	5100	1484	.31*	1390	.33*
WBR	0	0	106		299	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.72**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	107	.06*	128	.08
NBT	2	3400	285	.10	458	.16*
NBR	0	0	57		85	
SBL	1	1700	213	.13	180	.11*
SBT	2	3400	532	.21*	254	.10
SBR	0	0	175		69	
EBL	1	1700	89	.05*	122	.07*
EBT	3	5100	539	.12	926	.20
EBR	0	0	60		118	
WBL	1	1700	77	.05	59	.03
WBT	3	5100	1504	.32*	1410	.34*
WBR	0	0	106		299	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.73**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05	160	.09
NBT	2	3400	320	.11*	410	.15*
NBR	0	0	60		100	
SBL	1	1700	340	.20*	260	.15*
SBT	2	3400	590	.24	280	.11
SBR	0	0	230		90	
EBL	1	1700	120	.07*	140	.08*
EBT	3	5100	640	.14	1120	.24
EBR	0	0	60		120	
WBL	1	1700	90	.05	80	.05
WBT	3	5100	1820	.39*	1710	.43*
WBR	0	0	180		480	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.86**

4. Prospect at Irvine

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07*	190	.11
NBT	2	3400	360	.13	480	.17*
NBR	0	0	70		110	
SBL	1	1700	310	.18	250	.15*
SBT	2	3400	670	.26*	320	.12
SBR	0	0	230		90	
EBL	1	1700	120	.07*	150	.09*
EBT	3	5100	660	.14	1150	.25
EBR	0	0	70		140	
WBL	1	1700	100	.06	80	.05
WBT	3	5100	1870	.40*	1750	.43*
WBR	0	0	160		440	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.89**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	120	.07*	190	.11
NBT	2	3400	360	.13	480	.17*
NBR	0	0	70		110	
SBL	1	1700	310	.18	250	.15*
SBT	2	3400	670	.26*	320	.12
SBR	0	0	230		90	
EBL	1	1700	120	.07*	150	.09*
EBT	3	5100	670	.15	1160	.25
EBR	0	0	70		140	
WBL	1	1700	100	.06	80	.05
WBT	3	5100	1890	.40*	1770	.43*
WBR	0	0	160		440	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.85**		**.89**

5. Newport at Irvine

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	112	.07*	189	.11*
NBT	3	5100	424	.08	852	.17
NBR	1	1700	184	.11	363	.21
SBL	1	1700	153	.09	111	.07
SBT	3	5100	1187	.29*	505	.14*
SBR	0	0	294		207	
EBL	2	3400	108	.03*	234	.07*
EBT	3	5100	882	.18	1007	.21
EBR	0	0	41		75	
WBL	2	3400	297	.09	226	.07
WBT	3	5100	1369	.27*	1649	.32*
WBR	1	1700	14	.01	46	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.69**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	92	.05*	179	.11*
NBT	3	5100	414	.08	832	.16
NBR	1	1700	184	.11	353	.21
SBL	1	1700	143	.08	101	.06
SBT	3	5100	1137	.29*	465	.14*
SBR	0	0	344		247	.15
EBL	2	3400	118	.03*	244	.07*
EBT	3	5100	892	.18	1037	.22
EBR	0	0	41		75	
WBL	2	3400	297	.09	226	.07
WBT	3	5100	1379	.27*	1669	.33*
WBR	1	1700	14	.01	36	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.70**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	92	.05*	179	.11*
NBT	3	5100	414	.08	842	.17
NBR	1	1700	184	.11	353	.21
SBL	1	1700	153	.09	111	.07
SBT	3	5100	1147	.30*	465	.14*
SBR	0	0	364		257	.15
EBL	2	3400	128	.04*	264	.08*
EBT	3	5100	892	.18	1037	.22
EBR	0	0	41		75	
WBL	2	3400	297	.09	226	.07
WBT	3	5100	1389	.27*	1679	.33*
WBR	1	1700	14	.01	36	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.71**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	130	.08*	230	.14*
NBT	3	5100	460	.09	910	.18
NBR	1	1700	180	.11	370	.22
SBL	1	1700	200	.12	140	.08
SBT	3	5100	1380	.36*	540	.16*
SBR	0	0	440		300	.18
EBL	2	3400	160	.05*	350	.10*
EBT	3	5100	1230	.25	1420	.30
EBR	0	0	50		90	
WBL	2	3400	300	.09	230	.07
WBT	3	5100	1900	.37*	2280	.45*
WBR	1	1700	20	.01	60	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.91**		**.90**

5. Newport at Irvine

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	110	.06*	220	.13*
NBT	3	5100	450	.09	890	.17
NBR	1	1700	180	.11	360	.21
SBL	1	1700	190	.11	130	.08
SBT	3	5100	1330	.36*	500	.15*
SBR	0	0	490		340	.20
EBL	2	3400	170	.05*	360	.11*
EBT	3	5100	1240	.25	1450	.30
EBR	0	0	50		90	
WBL	2	3400	300	.09	230	.07
WBT	3	5100	1910	.37*	2300	.45*
WBR	1	1700	20	.01	50	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.89**		**.89**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	110	.06*	220	.13*
NBT	3	5100	450	.09	900	.18
NBR	1	1700	180	.11	360	.21
SBL	1	1700	200	.12	140	.08
SBT	3	5100	1340	.36*	500	.15*
SBR	0	0	510		350	.21
EBL	2	3400	180	.05*	380	.11*
EBT	3	5100	1240	.25	1450	.30
EBR	0	0	50		90	
WBL	2	3400	300	.09	230	.07
WBT	3	5100	1920	.38*	2310	.45*
WBR	1	1700	20	.01	50	.03
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.90**		**.89**

6. Tustin at 1st

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		1	
NBT	1	1700	0	.00*	0	.00*
NBR	1	1700	0	.00	1	.00
SBL	1.5		371		266	
SBT	0.5	3400	0	.11*	1	.08*
SBR	2	3400	493	.15	297	.09
EBL	2	3400	211	.06*	581	.17*
EBT	2	3400	336	.10	509	.15
EBR	0	0	0		0	
WBL	1	1700	0	.00	3	.00
WBT	2	3400	574	.17*	496	.15*
WBR	1	1700	232	.14	440	.26
Right Turn Adjustment					WBR	.03*
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing
Note: Assumes Right-Turn Overlap for SBR WBR NBR

TOTAL CAPACITY UTILIZATION .39 .48

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		1	
NBT	1	1700	0	.00*	0	.00*
NBR	1	1700	0	.00	1	.00
SBL	1.5		231		146	
SBT	0.5	3400	0	.07*	1	.04*
SBR	2	3400	493	.15	297	.09
EBL	2	3400	211	.06*	581	.17*
EBT	2	3400	306	.09	469	.14
EBR	0	0	0		0	
WBL	1	1700	0	.00	3	.00
WBT	2	3400	514	.15*	446	.13*
WBR	1	1700	92	.05	240	.14
Right Turn Adjustment			SBR	.02*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing
Note: Assumes Right-Turn Overlap for SBR WBR NBR

TOTAL CAPACITY UTILIZATION .35 .39

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		1	
NBT	1	1700	0	.00*	0	.00*
NBR	1	1700	0	.00	1	.00
SBL	1.5		231		146	
SBT	0.5	3400	0	.07*	1	.04*
SBR	2	3400	493	.15	297	.09
EBL	2	3400	211	.06*	581	.17*
EBT	2	3400	316	.09	489	.14
EBR	0	0	0		0	
WBL	1	1700	0	.00	3	.00
WBT	2	3400	544	.16*	466	.14*
WBR	1	1700	92	.05	250	.15
Right Turn Adjustment			SBR	.02*		
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing
Note: Assumes Right-Turn Overlap for SBR WBR NBR

TOTAL CAPACITY UTILIZATION .36 .40

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	0	.00*	0	.00*
NBR	1	1700	0	.00	0	.00
SBL	1.5		520		390	
SBT	0.5	3400	0	.15*	0	.11*
SBR	2	3400	500	.15	250	.07
EBL	2	3400	220	.06*	640	.19*
EBT	2	3400	340	.10	510	.15
EBR	0	0	0		0	
WBL	1	1700	0	.00	10	.01
WBT	2	3400	600	.18*	500	.15*
WBR	1	1700	450	.26	690	.41
Right Turn Adjustment					WBR	.15*
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing
Note: Assumes Right-Turn Overlap for SBR WBR NBR

TOTAL CAPACITY UTILIZATION .44 .65

6. Tustin at 1st

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	0	.00*	0	.00*
NBR	1	1700	0	.00	0	.00
SBL	1.5		380		270	
SBT	0.5	3400	0	.11*	0	.08*
SBR	2	3400	500	.15	250	.07
EBL	2	3400	220	.06*	640	.19*
EBT	2	3400	310	.09	470	.14
EBR	0	0	0		0	
WBL	1	1700	0	.00	10	.01
WBT	2	3400	540	.16*	450	.13*
WBR	1	1700	310	.18	490	.29
Right Turn Adjustment					WBR	.08*
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing
Note: Assumes Right-Turn Overlap for SBR WBR NBR

TOTAL CAPACITY UTILIZATION .38 .53

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	0	.00*	0	.00*
NBR	1	1700	0	.00	0	.00
SBL	1.5		380		270	
SBT	0.5	3400	0	.11*	0	.08*
SBR	2	3400	500	.15	250	.07
EBL	2	3400	220	.06*	640	.19*
EBT	2	3400	320	.09	490	.14
EBR	0	0	0		0	
WBL	1	1700	0	.00	10	.01
WBT	2	3400	570	.17*	470	.14*
WBR	1	1700	310	.18	500	.29
Right Turn Adjustment					WBR	.07*
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing
Note: Assumes Right-Turn Overlap for SBR WBR NBR

TOTAL CAPACITY UTILIZATION .39 .53

7. Yorba/Pacific at 1st

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	37	.02	73	.04
NBT	1	1700	104	.06*	180	.11*
NBR	1	1700	61	.04	38	.02
SBL	1	1700	79	.05*	65	.04*
SBT	1	1700	107	.06	92	.05
SBR	1	1700	138	.08	48	.03
EBL	1	1700	81	.05	132	.08*
EBT	2	3400	705	.21*	625	.18
EBR	d	1700	29	.02	42	.02
WBL	1	1700	49	.03*	39	.02
WBT	2	3400	620	.18	781	.23*
WBR	d	1700	93	.05	209	.12
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.51**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	17	.01	43	.03
NBT	1	1700	84	.05*	160	.09*
NBR	1	1700	51	.03	28	.02
SBL	1	1700	109	.06*	75	.04*
SBT	1	1700	97	.06	82	.05
SBR	1	1700	108	.06	38	.02
EBL	1	1700	61	.04	112	.07*
EBT	1	1700	555	.33*	495	.29
EBR	d	1700	9	.01	22	.01
WBL	1	1700	39	.02*	29	.02
WBT	1	1700	470	.28	571	.34*
WBR	d	1700	123	.07	239	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.59**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	17	.01	43	.03
NBT	1	1700	84	.05*	160	.09*
NBR	1	1700	51	.03	28	.02
SBL	1	1700	109	.06*	75	.04*
SBT	1	1700	97	.06	82	.05
SBR	1	1700	108	.06	38	.02
EBL	1	1700	61	.04	112	.07*
EBT	1	1700	575	.34*	515	.30
EBR	d	1700	9	.01	22	.01
WBL	1	1700	39	.02*	29	.02
WBT	1	1700	490	.29	601	.35*
WBR	d	1700	123	.07	239	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.60**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	80	.05
NBT	1	1700	140	.08*	240	.14*
NBR	1	1700	80	.05	70	.04
SBL	1	1700	110	.06*	90	.05*
SBT	1	1700	120	.07	100	.06
SBR	1	1700	180	.11	80	.05
EBL	1	1700	90	.05	140	.08*
EBT	2	3400	760	.22*	720	.21
EBR	d	1700	50	.03	50	.03
WBL	1	1700	70	.04*	50	.03
WBT	2	3400	720	.21	980	.29*
WBR	d	1700	150	.09	320	.19
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.61**

7. Yorba/Pacific at 1st

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	50	.03
NBT	1	1700	120	.07*	220	.13*
NBR	1	1700	70	.04	60	.04
SBL	1	1700	140	.08*	100	.06*
SBT	1	1700	110	.06	90	.05
SBR	1	1700	150	.09	70	.04
EBL	1	1700	70	.04	120	.07*
EBT	1	1700	610	.36*	590	.35
EBR	d	1700	30	.02	30	.02
WBL	1	1700	60	.04*	40	.02
WBT	1	1700	570	.34	770	.45*
WBR	d	1700	180	.11	350	.21
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.76**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	50	.03
NBT	1	1700	120	.07*	220	.13*
NBR	1	1700	70	.04	60	.04
SBL	1	1700	140	.08*	100	.06*
SBT	1	1700	110	.06	90	.05
SBR	1	1700	150	.09	70	.04
EBL	1	1700	70	.04	120	.07*
EBT	1	1700	630	.37*	610	.36
EBR	d	1700	30	.02	30	.02
WBL	1	1700	60	.04*	40	.02
WBT	1	1700	590	.35	800	.47*
WBR	d	1700	180	.11	350	.21
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.78**

8. B at 1st

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	8		43	
NBT	1	1700	93	.08*	33	.08*
NBR	0	0	37		60	
SBL	0.5		21	{.01}*	22	{.01}*
SBT	0.5	1700	110	.08	57	.05
SBR	1	1700	84	.05	57	.03
EBL	1	1700	36	.02	19	.01*
EBT	2	3400	747	.22*	757	.22
EBR	1	1700	34	.02	32	.02
WBL	1	1700	23	.01*	39	.02
WBT	2	3400	615	.19	1008	.30*
WBR	0	0	14		28	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.45**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	8		33	
NBT	1	1700	73	.07*	23	.06*
NBR	0	0	37		50	
SBL	0.5		21	{.01}*	12	{.01}*
SBT	0.5	1700	90	.07	47	.03
SBR	1	1700	64	.04	47	.03
EBL	1	1700	36	.02	19	.01*
EBT	1	1700	627	.37*	637	.37
EBR	d	1700	24	.01	22	.01
WBL	1	1700	13	.01*	29	.02
WBT	1	1700	515	.30	838	.49*
WBR	d	1700	4	.00	28	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.62**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	8		33	
NBT	1	1700	73	.07*	23	.06*
NBR	0	0	37		50	
SBL	0.5		21	{.01}*	12	{.01}*
SBT	0.5	1700	90	.07	47	.03
SBR	1	1700	64	.04	47	.03
EBL	1	1700	36	.02	19	.01*
EBT	1	1700	647	.38*	657	.39
EBR	d	1700	24	.01	22	.01
WBL	1	1700	13	.01*	29	.02
WBT	1	1700	535	.31	868	.51*
WBR	d	1700	4	.00	28	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.52**		**.64**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	50	
NBT	1	1700	110	.09	40	.09*
NBR	0	0	40		70	
SBL	0.5		20		30	{.02}*
SBT	0.5	1700	130	.09*	70	.06
SBR	1	1700	100	.06	70	.04
EBL	1	1700	40	.02	20	.01*
EBT	2	3400	870	.26*	880	.26
EBR	1	1700	40	.02	40	.02
WBL	1	1700	30	.02*	50	.03
WBT	2	3400	720	.22	1180	.36*
WBR	0	0	20		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.53**

8. B at 1st

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	40	
NBT	1	1700	90	.08	30	.08*
NBR	0	0	40		60	
SBL	0.5		20		20	{.01}*
SBT	0.5	1700	110	.08*	60	.05
SBR	1	1700	80	.05	60	.04
EBL	1	1700	40	.02	20	.01*
EBT	1	1700	750	.44*	760	.45
EBR	d	1700	30	.02	30	.02
WBL	1	1700	20	.01*	40	.02
WBT	1	1700	620	.36	1010	.59*
WBR	d	1700	10	.01	30	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.59**		**.74**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	40	
NBT	1	1700	90	.08	30	.08*
NBR	0	0	40		60	
SBL	0.5		20		20	{.01}*
SBT	0.5	1700	110	.08*	60	.05
SBR	1	1700	80	.05	60	.04
EBL	1	1700	40	.02	20	.01*
EBT	1	1700	770	.45*	780	.46
EBR	d	1700	30	.02	30	.02
WBL	1	1700	20	.01*	40	.02
WBT	1	1700	640	.38	1040	.61*
WBR	d	1700	10	.01	30	.02
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.76**

9. C at 1st (Unsignalized)

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	28	
NBT	1	1700	0	.01	1	.04*
NBR	0	0	15		37	
SBL	0	0	6		4	
SBT	1	1700	0	.01*	2	.01
SBR	0	0	5		9	
EBL	1	1700	3	.00	0	.00
EBT	2	3400	793	.25*	798	.24
EBR	0	0	51		20	
WBL	1	1700	39	.02*	26	.02
WBT	2	3400	665	.20	1068	.32*
WBR	0	0	6		11	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.34**		**.41**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	28	
NBT	1	1700	0	.01	1	.04*
NBR	0	0	15		37	
SBL	0	0	6		4	
SBT	1	1700	0	.01*	2	.01
SBR	0	0	5		9	
EBL	1	1700	3	.00	0	.00
EBT	1	1700	663	.39*	668	.39
EBR	d	1700	41	.02	2	.00
WBL	1	1700	39	.02*	26	.02
WBT	1	1700	555	.33	888	.52*
WBR	d	1700	6	.00	11	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.61**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	28	
NBT	1	1700	0	.01	1	.04*
NBR	0	0	15		37	
SBL	0	0	6		4	
SBT	1	1700	0	.01*	2	.01
SBR	0	0	5		9	
EBL	1	1700	3	.00	0	.00
EBT	1	1700	683	.40*	688	.40
EBR	d	1700	41	.02	2	.00
WBL	1	1700	39	.02*	26	.02
WBT	1	1700	575	.34	918	.54*
WBR	d	1700	6	.00	11	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.63**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10		30	
NBT	1	1700	0	.02*	0	.04*
NBR	0	0	20		40	
SBL	0	0	10	{.01}*	0	
SBT	1	1700	0	.01	0	.01
SBR	0	0	10		10	
EBL	1	1700	0	.00	0	.00
EBT	2	3400	920	.29*	930	.28
EBR	0	0	60		20	
WBL	1	1700	40	.02*	30	.02
WBT	2	3400	780	.23	1250	.37*
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.46**

9. C at 1st (Unsignalized)

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10		30	
NBT	1	1700	0	.02*	0	.04*
NBR	0	0	20		40	
SBL	0	0	10	{.01}*	0	
SBT	1	1700	0	.01	0	.01
SBR	0	0	10		10	
EBL	1	1700	0	.00	0	.00
EBT	1	1700	790	.46*	800	.47
EBR	d	1700	50	.03	20	.01
WBL	1	1700	40	.02*	30	.02
WBT	1	1700	670	.39	1070	.63*
WBR	d	1700	10	.01	10	.01
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .72

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10		30	
NBT	1	1700	0	.02*	0	.04*
NBR	0	0	20		40	
SBL	0	0	10	{.01}*	0	
SBT	1	1700	0	.01	0	.01
SBR	0	0	10		10	
EBL	1	1700	0	.00	0	.00
EBT	1	1700	810	.48*	820	.48
EBR	d	1700	50	.03	20	.01
WBL	1	1700	40	.02*	30	.02
WBT	1	1700	690	.41	1100	.65*
WBR	d	1700	10	.01	10	.01
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .58 .74

10. El Camino Real at 1st

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	81	.05*	227	.13*
NBT	0	0	1		1	
NBR	1	1700	51	.03	84	.05
SBL	0	0	3		3	
SBT	1	1700	0	.01*	2	.01*
SBR	0	0	10		13	
EBL	1	1700	11	.01	22	.01*
EBT	2	3400	633	.19*	716	.21
EBR	1	1700	149	.09	150	.09
WBL	1	1700	114	.07*	76	.04
WBT	2	3400	628	.18	863	.25*
WBR	d	1700	12	.01	7	.00
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.37**		**.45**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	71	.04*	177	.10*
NBT	0	0	1		1	
NBR	1	1700	41	.02	44	.03
SBL	0	0	3		3	
SBT	1	1700	0	.01*	2	.01*
SBR	0	0	10		13	
EBL	1	1700	11	.01	22	.01*
EBT	1	1700	523	.31*	616	.36
EBR	d	1700	129	.08	130	.08
WBL	1	1700	74	.04*	46	.03
WBT	1	1700	538	.32	723	.43*
WBR	d	1700	12	.01	7	.00
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.60**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	81	.05*	197	.12*
NBT	0	0	1		1	
NBR	1	1700	41	.02	54	.03
SBL	0	0	3		3	
SBT	1	1700	0	.01*	2	.01*
SBR	0	0	10		13	
EBL	1	1700	11	.01	22	.01*
EBT	1	1700	533	.31*	626	.37
EBR	d	1700	149	.09	140	.08
WBL	1	1700	74	.04*	56	.03
WBT	1	1700	558	.33	743	.44*
WBR	d	1700	12	.01	7	.00
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.63**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06*	370	.22*
NBT	0	0	0		0	
NBR	1	1700	20	.01	90	.05
SBL	0	0	10		10	
SBT	1	1700	0	.01*	0	.01*
SBR	0	0	10		10	
EBL	1	1700	10	.01	20	.01*
EBT	2	3400	650	.19*	720	.21
EBR	1	1700	240	.14	180	.11
WBL	1	1700	90	.05*	80	.05
WBT	2	3400	660	.19	880	.26*
WBR	d	1700	10	.01	10	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.36**		**.55**

10. El Camino Real at 1st

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	320	.19*
NBT	0	0	0		0	
NBR	1	1700	10	.01	50	.03
SBL	0	0	10		10	
SBT	1	1700	0	.01*	0	.01*
SBR	0	0	10		10	
EBL	1	1700	10	.01*	20	.01*
EBT	1	1700	540	.32	620	.36
EBR	d	1700	220	.13	160	.09
WBL	1	1700	50	.03	50	.03
WBT	1	1700	570	.34*	740	.44*
WBR	d	1700	10	.01	10	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.46**		**.70**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06*	340	.20*
NBT	0	0	0		0	
NBR	1	1700	10	.01	60	.04
SBL	0	0	10		10	
SBT	1	1700	0	.01*	0	.01*
SBR	0	0	10		10	
EBL	1	1700	10	.01*	20	.01*
EBT	1	1700	550	.32	630	.37
EBR	d	1700	240	.14	170	.10
WBL	1	1700	50	.03	60	.04
WBT	1	1700	590	.35*	760	.45*
WBR	d	1700	10	.01	10	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.72**

11. Prospect at 1st

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	35	.02	100	.06
NBT	1	1700	121	.09*	165	.14*
NBR	0	0	29		77	
SBL	1.5		171		167	
SBT	0.5	3400	156	.10*	98	.08*
SBR	1	1700	213	.13	124	.07
EBL	1	1700	111	.07*	127	.07*
EBT	2	3400	444	.13	609	.18
EBR	d	1700	40	.02	36	.02
WBL	1	1700	35	.02	27	.02
WBT	2	3400	475	.14*	692	.20*
WBR	d	1700	124	.07	241	.14
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION .45 .54

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	15	.01	60	.04
NBT	1	1700	171	.11*	195	.14*
NBR	0	0	10		37	
SBL	1	1700	171	.10	177	.10*
SBT	1	1700	196	.12*	108	.06
SBR	1	1700	253	.15	174	.10
EBL	1	1700	91	.05*	87	.05*
EBT	1	1700	354	.21	529	.31
EBR	d	1700	30	.02	16	.01
WBL	1	1700	10	.01	10	.01
WBT	1	1700	415	.24*	572	.34*
WBR	d	1700	184	.11	331	.19
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION .57 .68

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	15	.01	60	.04
NBT	1	1700	171	.11*	195	.14*
NBR	0	0	10		37	
SBL	1	1700	171	.10	177	.10*
SBT	1	1700	196	.12*	108	.06
SBR	1	1700	263	.15	174	.10
EBL	1	1700	91	.05*	87	.05*
EBT	1	1700	374	.22	559	.33
EBR	d	1700	30	.02	16	.01
WBL	1	1700	0	.00	10	.01
WBT	1	1700	435	.26*	602	.35*
WBR	d	1700	184	.11	331	.19
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION .59 .69

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	30	.02	80	.05
NBT	1	1700	140	.13*	150	.22*
NBR	0	0	80		220	
SBL	1.5		320		290	
SBT	0.5	3400	120	.13*	90	.11*
SBR	1	1700	200	.12	120	.07
EBL	1	1700	120	.07*	90	.05*
EBT	2	3400	520	.15	660	.19
EBR	d	1700	30	.02	30	.02
WBL	1	1700	90	.05	120	.07
WBT	2	3400	490	.14*	810	.24*
WBR	d	1700	210	.12	410	.24
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION .52 .67

11. Prospect at 1st

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	40	.02
NBT	1	1700	190	.12*	180	.21*
NBR	0	0	20		180	
SBL	1	1700	320	.19*	300	.18*
SBT	1	1700	160	.09	100	.06
SBR	1	1700	240	.14	170	.10
EBL	1	1700	100	.06*	50	.03*
EBT	1	1700	430	.25	580	.34
EBR	d	1700	20	.01	10	.01
WBL	1	1700	40	.02	90	.05
WBT	1	1700	430	.25*	690	.41*
WBR	d	1700	270	.16	500	.29
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.67** **.88**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01	40	.02
NBT	1	1700	190	.12*	180	.21*
NBR	0	0	20		180	
SBL	1	1700	320	.19*	300	.18*
SBT	1	1700	160	.09	100	.06
SBR	1	1700	250	.15	170	.10
EBL	1	1700	100	.06*	50	.03*
EBT	1	1700	450	.26	610	.36
EBR	d	1700	20	.01	10	.01
WBL	1	1700	40	.02	90	.05
WBT	1	1700	450	.26*	720	.42*
WBR	d	1700	270	.16	500	.29
Clearance Interval				.05*		.05*

Note: Assumes N/S Split Phasing

TOTAL CAPACITY UTILIZATION **.68** **.89**

12. Newport at 1st

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	187	.06*	392	.12
NBT	2	3400	568	.17	890	.28*
NBR	0	0	15		53	
SBL	1	1700	27	.02	71	.04*
SBT	3	5100	1574	.34*	759	.18
SBR	0	0	165		158	
EBL	1.5		145		360	
EBT	1.5	5100	152	.06*	194	.11*
EBR	1	1700	160	.09	196	.12
WBL	1	1700	46	.03	85	.05
WBT	2	3400	106	.04*	236	.10*
WBR	0	0	30		109	
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .55 .58

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	287	.08*	512	.15
NBT	2	3400	588	.18	930	.29*
NBR	0	0	15		53	
SBL	1	1700	27	.02	81	.05*
SBT	3	5100	1694	.34*	849	.17
SBR	0	0	25		18	
EBL	1.5		85		270	
EBT	1.5	5100	142	.04*	184	.09*
EBR	1	1700	220	.13	236	.14
WBL	1	1700	56	.03	105	.06
WBT	2	3400	96	.04*	216	.10*
WBR	0	0	30		119	
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .58 .58

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	287	.08*	512	.15
NBT	2	3400	588	.18	940	.29*
NBR	0	0	15		53	
SBL	1	1700	27	.02	81	.05*
SBT	3	5100	1704	.34*	859	.17
SBR	0	0	25		18	
EBL	1.5		85		280	
EBT	1.5	5100	152	.05*	194	.09*
EBR	1	1700	220	.13	236	.14
WBL	1	1700	56	.03	105	.06
WBT	2	3400	96	.04*	226	.10*
WBR	0	0	30		119	
Right Turn Adjustment			EBR	.02*		
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .58 .58

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	220	.06*	520	.15*
NBT	2	3400	570	.17	930	.29
NBR	0	0	20		60	
SBL	1	1700	40	.02	70	.04
SBT	3	5100	1620	.38*	760	.21*
SBR	0	0	320		310	
EBL	1.5		220		490	.14
EBT	1.5	5100	200	.08*	230	.14*
EBR	1	1700	280	.16	350	.21
WBL	1	1700	50	.03	80	.05
WBT	2	3400	120	.04*	320	.12*
WBR	0	0	30		80	
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .64 .67

12. Newport at 1st

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	320	.09*	640	.19*
NBT	2	3400	590	.18	970	.30
NBR	0	0	20		60	
SBL	1	1700	40	.02	80	.05
SBT	3	5100	1740	.38*	850	.20*
SBR	0	0	180		170	
EBL	1.5		160		400	
EBT	1.5	5100	190	.07*	220	.12*
EBR	1	1700	340	.20	390	.23
WBL	1	1700	60	.04	100	.06
WBT	2	3400	110	.04*	300	.11*
WBR	0	0	30		90	
Right Turn Adjustment			EBR	.06*		
Clearance Interval				.05*		.05*

Note: Assumes E/W Split Phasing

TOTAL CAPACITY UTILIZATION **.69** **.67**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	320	.09*	640	.19*
NBT	2	3400	590	.18	980	.31
NBR	0	0	20		60	
SBL	1	1700	40	.02	80	.05
SBT	3	5100	1750	.38*	860	.20*
SBR	0	0	180		170	
EBL	1.5		160		410	
EBT	1.5	5100	200	.07*	230	.13*
EBR	1	1700	340	.20	390	.23
WBL	1	1700	60	.04	100	.06
WBT	2	3400	110	.04*	310	.12*
WBR	0	0	30		90	
Right Turn Adjustment			EBR	.06*		
Clearance Interval				.05*		.05*

Note: Assumes E/W Split Phasing

TOTAL CAPACITY UTILIZATION **.69** **.69**

13. C at 2nd (Unsignalized)

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	4		4	
NBT	1	1700	22	.02	71	.05*
NBR	0	0	2		10	
SBL	0	0	20		9	{.01}*
SBT	1	1700	44	.05*	28	.03
SBR	0	0	24		7	
EBL	0	0	8		5	
EBT	1	1700	1	.01	1	.00
EBR	0	0	0		1	
WBL	0	0	5		10	
WBT	1	1700	2	.01*	2	.01*
WBR	0	0	3		8	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .11 .12

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	16	{.01}*	16	
NBT	1	1700	25	.04	59	.06*
NBR	0	0	20		32	
SBL	0	0	18		19	{.01}*
SBT	1	1700	34	.04*	18	.03
SBR	0	0	24		7	
EBL	0	0	8		5	
EBT	1	1700	1	.01*	1	.00
EBR	0	0	0		1	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .11 .12

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	16	{.01}*	16	
NBT	1	1700	25	.04	69	.07*
NBR	0	0	20		32	
SBL	0	0	18		19	{.01}*
SBT	1	1700	44	.05*	18	.03
SBR	0	0	24		7	
EBL	0	0	8		5	
EBT	1	1700	1	.01*	1	.00
EBR	0	0	0		1	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .12 .13

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		10	
NBT	1	1700	30	.02	90	.07*
NBR	0	0	0		20	
SBL	0	0	20		10	{.01}*
SBT	1	1700	60	.06*	40	.04
SBR	0	0	20		10	
EBL	0	0	10	{.01}*	10	{.01}*
EBT	1	1700	0	.01	0	.01
EBR	0	0	0		0	
WBL	0	0	10		10	
WBT	1	1700	10	.02*	0	.01*
WBR	0	0	10		10	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .14 .15

13. C at 2nd (Unsignalized)

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20	{.01}*	20	
NBT	1	1700	40	.05	80	.09*
NBR	0	0	30		50	
SBL	0	0	20		20	{.01}*
SBT	1	1700	50	.05*	30	.04
SBR	0	0	20		10	
EBL	0	0	10	{.01}*	10	{.01}*
EBT	1	1700	0	.01	0	.01
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.12**		**.16**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20	{.01}*	20	
NBT	1	1700	40	.05	90	.09*
NBR	0	0	30		50	
SBL	0	0	20		20	{.01}*
SBT	1	1700	60	.06*	30	.04
SBR	0	0	20		10	
EBL	0	0	10	{.01}*	10	{.01}*
EBT	1	1700	0	.01	0	.01
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.13**		**.16**

14. Prospect at 2nd (Unsignalized)

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	7		4	
NBT	1	1700	188	.11	282	.17*
NBR	0	0	0		0	
SBL	0	0	1		1	
SBT	1	1700	175	.12*	122	.09
SBR	0	0	21		24	
EBL	0	0	4		12	{.01}*
EBT	1	1700	0	.00	0	.01
EBR	0	0	2		2	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.17**		**.23**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	168	.10	242	.14*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	166	.10*	126	.07
SBR	0	0	0		0	
EBL	0	0	15	{.01}*	21	
EBT	1	1700	0	.01	0	.03*
EBR	0	0	7		25	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.22**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	178	.10	252	.15*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	176	.10*	126	.07
SBR	0	0	0		0	
EBL	0	0	15	{.01}*	21	
EBT	1	1700	0	.01	0	.03*
EBR	0	0	7		25	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.16**		**.23**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	10	
NBT	1	1700	230	.14	350	.21*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	220	.14*	150	.10
SBR	0	0	20		20	
EBL	0	0	10	{.01}*	20	
EBT	1	1700	0	.01	0	.02*
EBR	0	0	10		10	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.21**		**.28**

14. Prospect at 2nd (Unsignalized)

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	210	.12	310	.18*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	210	.12*	150	.09
SBR	0	0	0		0	
EBL	0	0	30		30	
EBT	1	1700	0	.04*	0	.04*
EBR	0	0	30		40	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.21**		**.27**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	220	.13	320	.19*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	220	.13*	150	.09
SBR	0	0	0		0	
EBL	0	0	30		30	
EBT	1	1700	0	.04*	0	.04*
EBR	0	0	30		40	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.22**		**.28**

15. C at 3rd (Unsignalized)

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	1		0	
NBT	1	1700	36	.03	62	.05*
NBR	0	0	18		22	
SBL	0	0	8		20	{.01}*
SBT	1	1700	35	.03*	29	.03
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	5		156	
WBT	1	1700	0	.00*	0	.11*
WBR	0	0	1		23	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.08**		**.22**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	54	.03*	94	.06*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	35	.02	39	.02
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		136	
WBT	1	1700	0	.00*	0	.09*
WBR	0	0	6		13	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.08**		**.20**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	54	.03	104	.06*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	45	.03*	39	.02
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		156	
WBT	1	1700	0	.00*	0	.10*
WBR	0	0	6		13	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.08**		**.21**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10		0	
NBT	1	1700	50	.05*	90	.07*
NBR	0	0	30		30	
SBL	0	0	10	{.01}*	20	{.01}*
SBT	1	1700	50	.04	40	.04
SBR	0	0	10		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	10		220	
WBT	1	1700	0	.01*	0	.14*
WBR	0	0	10		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.12**		**.27**

15. C at 3rd (Unsignalized)

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	80	.05*	130	.08*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	50	.03	50	.03
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	10		200	
WBT	1	1700	0	.02*	0	.12*
WBR	0	0	30		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.12**		**.25**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	1	1700	80	.05*	140	.08*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	60	.04	50	.03
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	10		220	
WBT	1	1700	0	.02*	0	.14*
WBR	0	0	30		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.12**		**.27**

16. Prospect at 3rd (Unsignalized)

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	4		16	
NBT	1	1700	160	.10*	241	.16*
NBR	0	0	9		8	
SBL	0	0	22	{.01}*	8	
SBT	1	1700	134	.11	88	.07
SBR	0	0	27		28	
EBL	0	0	21	{.01}*	19	{.01}*
EBT	1	1700	12	.02	17	.02
EBR	0	0	3		6	
WBL	0	0	5		15	
WBT	1	1700	11	.02*	11	.03*
WBR	0	0	18		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.19**		**.25**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	11	{.01}*	20	
NBT	1	1700	140	.09	201	.13*
NBR	0	0	9		8	
SBL	0	0	14		25	{.01}*
SBT	1	1700	114	.10*	78	.09
SBR	0	0	48		42	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	10		15	
WBT	1	1700	11	.02*	11	.03*
WBR	0	0	18		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.18**		**.22**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	11	{.01}*	20	
NBT	1	1700	160	.11	221	.15*
NBR	0	0	9		8	
SBL	0	0	14		25	{.01}*
SBT	1	1700	124	.11*	88	.09
SBR	0	0	48		42	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	10		15	
WBT	1	1700	11	.02*	11	.03*
WBR	0	0	18		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.19**		**.24**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	20	
NBT	1	1700	200	.13	300	.19*
NBR	0	0	10		10	
SBL	0	0	30		10	{.01}*
SBT	1	1700	170	.14*	110	.09
SBR	0	0	30		40	
EBL	0	0	30		20	{.01}*
EBT	1	1700	20	.04*	20	.03
EBR	0	0	10		10	
WBL	0	0	10	{.01}*	20	
WBT	1	1700	10	.02	10	.03*
WBR	0	0	20		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.25**		**.29**

16. Prospect at 3rd (Unsignalized)

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20	{.01}*	30	
NBT	1	1700	180	.12	260	.18*
NBR	0	0	10		10	
SBL	0	0	30		30	{.02}*
SBT	1	1700	150	.14*	100	.11
SBR	0	0	50		50	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		20	
WBT	1	1700	10	.02*	10	.03*
WBR	0	0	20		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.22**		**.28**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	20		30	
NBT	1	1700	200	.14*	280	.19*
NBR	0	0	10		10	
SBL	0	0	30	{.02}*	30	{.02}*
SBT	1	1700	160	.14	110	.11
SBR	0	0	50		50	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0	0	0		20	
WBT	1	1700	10	.02*	10	.03*
WBR	0	0	20		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.23**		**.29**

17. El Camino Real at Main

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	55	{.03}*	121	
NBT	1	1700	121	.10	243	.21*
NBR	1	1700	36	.02	57	.03
SBL	0	0	22		53	{.03}*
SBT	1	1700	221	.14*	190	.14
SBR	1	1700	12	.01	18	.01
EBL	1	1700	14	.01	21	.01*
EBT	1	1700	461	.33*	377	.26
EBR	0	0	101		73	
WBL	1	1700	39	.02*	65	.04
WBT	1	1700	277	.17	486	.31*
WBR	0	0	15		43	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.61**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	75	{.04}*	181	{.11}*
NBT	1	1700	91	.10	173	.21
NBR	1	1700	36	.02	47	.03
SBL	0	0	12		23	
SBT	1	1700	151	.10*	160	.11*
SBR	1	1700	32	.02	18	.01
EBL	1	1700	14	.01	21	.01
EBT	1	1700	431	.35*	377	.28*
EBR	0	0	161		103	
WBL	1	1700	29	.02*	45	.03*
WBT	1	1700	257	.15	456	.28
WBR	0	0	5		23	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.58**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	85	{.05}*	201	
NBT	1	1700	101	.11	193	.23*
NBR	1	1700	36	.02	47	.03
SBL	0	0	12		23	{.01}*
SBT	1	1700	171	.11*	180	.12
SBR	1	1700	42	.02	18	.01
EBL	1	1700	14	.01	21	.01
EBT	1	1700	461	.38*	397	.30*
EBR	0	0	181		113	
WBL	1	1700	29	.02*	45	.03*
WBT	1	1700	277	.17	476	.29
WBR	0	0	5		23	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.62**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	110	{.06}*	140	
NBT	1	1700	120	.14	330	.28*
NBR	1	1700	30	.02	70	.04
SBL	0	0	30		70	{.04}*
SBT	1	1700	280	.18*	200	.16
SBR	1	1700	10	.01	20	.01
EBL	1	1700	20	.01	30	.02*
EBT	1	1700	730	.51*	550	.37
EBR	0	0	140		80	
WBL	1	1700	40	.02*	80	.05
WBT	1	1700	560	.34	730	.46*
WBR	0	0	20		50	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.85**

17. El Camino Real at Main

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	130	{.08}*	200	
NBT	1	1700	90	.13	260	.27*
NBR	1	1700	30	.02	60	.04
SBL	0	0	20		40	{.02}*
SBT	1	1700	210	.14*	170	.12
SBR	1	1700	30	.02	20	.01
EBL	1	1700	20	.01	30	.02*
EBT	1	1700	700	.53*	550	.39
EBR	0	0	200		110	
WBL	1	1700	30	.02*	60	.04
WBT	1	1700	540	.32	700	.43*
WBR	0	0	10		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**.79**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	140	{.08}*	220	
NBT	1	1700	100	.14	280	.29*
NBR	1	1700	30	.02	60	.04
SBL	0	0	20		40	{.02}*
SBT	1	1700	230	.15*	190	.14
SBR	1	1700	40	.02	20	.01
EBL	1	1700	20	.01	30	.02*
EBT	1	1700	730	.56*	570	.41
EBR	0	0	220		120	
WBL	1	1700	30	.02*	60	.04
WBT	1	1700	560	.34	720	.44*
WBR	0	0	10		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.86**		**.82**

18. Prospect at Main (Unsignalized)

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	3		1	
NBT	1	1700	1	.01	4	.01
NBR	0	0	5		19	
SBL	0	0	92		74	
SBT	1	1700	2	.08*	3	.06*
SBR	0	0	49		33	
EBL	1	1700	97	.06*	103	.06*
EBT	1	1700	406	.25	396	.23
EBR	0	0	13		3	
WBL	0	0	12		3	
WBT	1	1700	309	.23*	502	.39*
WBR	0	0	74		157	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.42**		**.56**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	3		1	
NBT	1	1700	1	.01	4	.01
NBR	0	0	5		19	
SBL	0	0	72		54	
SBT	1	1700	2	.07*	3	.05*
SBR	0	0	49		33	
EBL	1	1700	87	.05*	83	.05*
EBT	1	1700	366	.22	356	.21
EBR	0	0	13		3	
WBL	0	0	12		3	
WBT	1	1700	279	.21*	452	.34*
WBR	0	0	64		127	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.38**		**.49**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	3		1	
NBT	1	1700	1	.01	4	.01
NBR	0	0	5		19	
SBL	0	0	72		54	
SBT	1	1700	2	.07*	3	.05*
SBR	0	0	49		33	
EBL	1	1700	87	.05*	83	.05*
EBT	1	1700	386	.23	376	.22
EBR	0	0	13		3	
WBL	0	0	12		3	
WBT	1	1700	299	.22*	472	.35*
WBR	0	0	64		127	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.50**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	10	{.01}*
NBT	1	1700	0	.01	0	.02
NBR	0	0	10		20	
SBL	0	0	120		100	
SBT	1	1700	10	.11*	10	.08*
SBR	0	0	60		30	
EBL	1	1700	120	.07*	120	.07*
EBT	1	1700	640	.39	630	.38
EBR	0	0	20		10	
WBL	0	0	20		10	
WBT	1	1700	550	.39*	790	.60*
WBR	0	0	90		220	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.81**

18. Prospect at Main (Unsignalized)

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	10	{.01}*
NBT	1	1700	0	.01	0	.02
NBR	0	0	10		20	
SBL	0	0	100		80	
SBT	1	1700	10	.10*	10	.07*
SBR	0	0	60		30	
EBL	1	1700	110	.06*	100	.06*
EBT	1	1700	600	.36	590	.35
EBR	0	0	20		10	
WBL	0	0	20		10	
WBT	1	1700	520	.36*	740	.55*
WBR	0	0	80		190	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.58**		**.74**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	10	{.01}*	10	{.01}*
NBT	1	1700	0	.01	0	.02
NBR	0	0	10		20	
SBL	0	0	100		80	
SBT	1	1700	10	.10*	10	.07*
SBR	0	0	60		30	
EBL	1	1700	110	.06*	100	.06*
EBT	1	1700	620	.38	610	.36
EBR	0	0	20		10	
WBL	0	0	20		10	
WBT	1	1700	540	.38*	760	.56*
WBR	0	0	80		190	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.75**

19. Newport at Main

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	139	.08*	190	.11*
NBT	3	5100	507	.13	928	.20
NBR	0	0	133		100	
SBL	1	1700	54	.03	77	.05
SBT	3	5100	1454	.30*	813	.18*
SBR	0	0	93		125	
EBL	1	1700	66	.04	128	.08*
EBT	2	3400	295	.09*	232	.07
EBR	1	1700	151	.09	135	.08
WBL	1	1700	138	.08*	151	.09
WBT	2	3400	277	.08	430	.13*
WBR	1	1700	5	.00	9	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.60**		**.55**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	149	.09*	200	.12*
NBT	3	5100	557	.14	1028	.22
NBR	0	0	133		90	
SBL	1	1700	4	.00	57	.03
SBT	3	5100	1644	.35*	913	.22*
SBR	0	0	153		185	
EBL	1	1700	96	.06	178	.10*
EBT	2	3400	195	.06*	112	.03
EBR	1	1700	161	.09	155	.09
WBL	1	1700	108	.06*	121	.07
WBT	2	3400	147	.04	260	.08*
WBR	1	1700	5	.00	9	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.57**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	149	.09*	200	.12*
NBT	3	5100	557	.14	1028	.22
NBR	0	0	133		90	
SBL	1	1700	4	.00	57	.03
SBT	3	5100	1654	.35*	913	.22*
SBR	0	0	153		185	
EBL	1	1700	96	.06	178	.10*
EBT	2	3400	195	.06*	112	.03
EBR	1	1700	161	.09	155	.09
WBL	1	1700	108	.06*	121	.07
WBT	2	3400	147	.04	260	.08*
WBR	1	1700	5	.00	9	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.57**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	190	.11*
NBT	3	5100	480	.13	990	.23
NBR	0	0	190		180	
SBL	1	1700	140	.08	130	.08
SBT	3	5100	1530	.32*	880	.20*
SBR	0	0	120		130	
EBL	1	1700	80	.05	170	.10*
EBT	2	3400	470	.14*	490	.14
EBR	1	1700	150	.09	140	.08
WBL	1	1700	290	.17*	260	.15
WBT	2	3400	500	.15	800	.24*
WBR	1	1700	10	.01	20	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.77**		**.70**

19. Newport at Main

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	200	.12*
NBT	3	5100	530	.14	1090	.25
NBR	0	0	190		170	
SBL	1	1700	90	.05	110	.06
SBT	3	5100	1720	.37*	980	.23*
SBR	0	0	180		190	
EBL	1	1700	110	.06	220	.13*
EBT	2	3400	370	.11*	370	.11
EBR	1	1700	160	.09	160	.09
WBL	1	1700	260	.15*	230	.14
WBT	2	3400	370	.11	630	.19*
WBR	1	1700	10	.01	20	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.78**		**.72**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	170	.10*	200	.12*
NBT	3	5100	530	.14	1090	.25
NBR	0	0	190		170	
SBL	1	1700	90	.05	110	.06
SBT	3	5100	1730	.37*	980	.23*
SBR	0	0	180		190	
EBL	1	1700	110	.06	220	.13*
EBT	2	3400	370	.11*	370	.11
EBR	1	1700	160	.09	160	.09
WBL	1	1700	260	.15*	230	.14
WBT	2	3400	370	.11	630	.19*
WBR	1	1700	10	.01	20	.01
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.78**		**.72**

20. El Camino Real at 6th

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	39	{.02}*	132	
NBT	1	1700	194	.14	375	.30*
NBR	1	1700	3	.00	18	.01
SBL	0	0	21		10	{.01}*
SBT	1	1700	344	.22*	303	.19
SBR	0	0	1		16	
EBL	0	0	13		30	
EBT	1	1700	70	.13*	43	.11*
EBR	0	0	138		114	
WBL	0	0	14	{.01}*	15	{.01}*
WBT	1	1700	40	.04	44	.06
WBR	0	0	12		42	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.48**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	49	{.03}*	162	
NBT	1	1700	204	.15	385	.32*
NBR	1	1700	3	.00	18	.01
SBL	0	0	21		10	{.01}*
SBT	1	1700	334	.21*	303	.19
SBR	0	0	1		10	
EBL	0	0	3		10	
EBT	1	1700	70	.14*	43	.11*
EBR	0	0	158		134	
WBL	0	0	24	{.01}*	15	{.01}*
WBT	1	1700	40	.04	44	.06
WBR	0	0	12		42	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.44**		**.50**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	49	{.03}*	172	
NBT	1	1700	224	.16	415	.35*
NBR	1	1700	3	.00	18	.01
SBL	0	0	21		10	{.01}*
SBT	1	1700	354	.22*	323	.20
SBR	0	0	1		10	
EBL	0	0	3		10	
EBT	1	1700	70	.14*	43	.12*
EBR	0	0	168		144	
WBL	0	0	24	{.01}*	15	{.01}*
WBT	1	1700	40	.04	44	.06
WBR	0	0	12		42	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.54**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	40	{.02}*	130	
NBT	1	1700	260	.18	490	.36*
NBR	1	1700	10	.01	20	.01
SBL	0	0	30		20	{.01}*
SBT	1	1700	390	.25*	300	.22
SBR	0	0	10		50	
EBL	0	0	30		50	
EBT	1	1700	70	.14*	40	.12*
EBR	0	0	140		120	
WBL	0	0	20	{.01}*	20	{.01}*
WBT	1	1700	40	.05	40	.06
WBR	0	0	20		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.47**		**.55**

20. El Camino Real at 6th

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	50	{.03}*	160	
NBT	1	1700	270	.19	500	.39*
NBR	1	1700	10	.01	20	.01
SBL	0	0	30		20	{.01}*
SBT	1	1700	380	.25*	300	.21
SBR	0	0	10		30	
EBL	0	0	20		30	
EBT	1	1700	70	.15*	40	.12*
EBR	0	0	160		140	
WBL	0	0	30	{.02}*	20	{.01}*
WBT	1	1700	40	.05	40	.06
WBR	0	0	20		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.50**		**.58**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	50	{.03}*	170	
NBT	1	1700	290	.20	530	.41*
NBR	1	1700	10	.01	20	.01
SBL	0	0	30		20	{.01}*
SBT	1	1700	400	.26*	320	.22
SBR	0	0	10		30	
EBL	0	0	20		30	
EBT	1	1700	70	.15*	40	.13*
EBR	0	0	170		150	
WBL	0	0	30	{.02}*	20	{.01}*
WBT	1	1700	40	.05	40	.06
WBR	0	0	20		40	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.61**

21. Newport at 6th

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	48	.03*	68	.04
NBT	3	5100	735	.15	1120	.23*
NBR	0	0	29		29	
SBL	1	1700	33	.02	27	.02*
SBT	3	5100	1564	.31*	981	.20
SBR	0	0	26		63	
EBL	1	1700	36	.02	48	.03
EBT	1	1700	48	.06*	17	.05*
EBR	0	0	48		69	
WBL	0	0	71	{.04}*	29	{.02}*
WBT	1	1700	16	.07	13	.03
WBR	0	0	27		17	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.37**

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	58	.03*	88	.05*
NBT	3	5100	775	.16	1190	.24
NBR	0	0	29		39	
SBL	1	1700	33	.02	27	.02
SBT	3	5100	1704	.34*	1071	.22*
SBR	0	0	26		53	
EBL	1	1700	26	.02	38	.02
EBT	1	1700	48	.06*	17	.06*
EBR	0	0	58		89	
WBL	0	0	91	{.05}*	39	{.02}*
WBT	1	1700	16	.07	13	.03
WBR	0	0	17		7	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.40**

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	58	.03*	88	.05*
NBT	3	5100	775	.16	1190	.24
NBR	0	0	29		39	
SBL	1	1700	33	.02	27	.02
SBT	3	5100	1704	.34*	1071	.22*
SBR	0	0	26		53	
EBL	1	1700	26	.02	38	.02
EBT	1	1700	48	.06*	17	.06*
EBR	0	0	58		89	
WBL	0	0	91	{.05}*	39	{.02}*
WBT	1	1700	16	.07	13	.03
WBR	0	0	17		7	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.40**

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03*	70	.04
NBT	3	5100	740	.15	1120	.23*
NBR	0	0	30		30	
SBL	1	1700	50	.03	40	.02*
SBT	3	5100	1660	.33*	980	.21
SBR	0	0	40		90	
EBL	1	1700	60	.04*	80	.05*
EBT	1	1700	50	.06	20	.05
EBR	0	0	50		70	
WBL	0	0	70		30	
WBT	1	1700	20	.08*	10	.04*
WBR	0	0	50		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.39**

21. Newport at 6th

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04*	90	.05*
NBT	3	5100	780	.16	1190	.24
NBR	0	0	30		40	
SBL	1	1700	50	.03	40	.02
SBT	3	5100	1800	.36*	1070	.23*
SBR	0	0	40		80	
EBL	1	1700	50	.03*	70	.04*
EBT	1	1700	50	.06	20	.06
EBR	0	0	60		90	
WBL	0	0	90		40	
WBT	1	1700	20	.09*	10	.04*
WBR	0	0	40		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.41**

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04*	90	.05*
NBT	3	5100	780	.16	1190	.24
NBR	0	0	30		40	
SBL	1	1700	50	.03	40	.02
SBT	3	5100	1800	.36*	1070	.23*
SBR	0	0	40		80	
EBL	1	1700	50	.03*	70	.04*
EBT	1	1700	50	.06	20	.06
EBR	0	0	60		90	
WBL	0	0	90		40	
WBT	1	1700	20	.09*	10	.04*
WBR	0	0	40		20	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.41**

22. Newport at El Camino Real

Existing Count (2016)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	103	.06*	248	.15*
NBT	3	5100	753	.20	942	.22
NBR	0	0	252		175	
SBL	1	1700	53	.03	132	.08
SBT	3	5100	1636	.32*	1002	.20*
SBR	0	0	9		27	
EBL	1	1700	12	.01	37	.02
EBT	1	1700	91	.05*	156	.09*
EBR	1	1700	327	.19	238	.14
WBL	1	1700	279	.16*	192	.11*
WBT	2	3400	256	.10	194	.09
WBR	0	0	93		95	
Right Turn Adjustment			EBR	.08*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .72 .60

Existing Plus Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	103	.06*	258	.15*
NBT	3	5100	813	.21	1002	.23
NBR	0	0	262		175	
SBL	1	1700	63	.04	152	.09
SBT	3	5100	1756	.35*	1082	.22*
SBR	0	0	9		37	
EBL	1	1700	12	.01	47	.03
EBT	1	1700	111	.07*	176	.10*
EBR	1	1700	347	.20	248	.15
WBL	1	1700	269	.16*	192	.11*
WBT	2	3400	296	.12	224	.10
WBR	0	0	103		115	
Right Turn Adjustment			EBR	.07*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .76 .63

Existing Plus Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	103	.06*	268	.16*
NBT	3	5100	813	.21	1002	.23
NBR	0	0	272		185	
SBL	1	1700	63	.04	152	.09
SBT	3	5100	1756	.35*	1082	.22*
SBR	0	0	9		37	
EBL	1	1700	12	.01	47	.03
EBT	1	1700	111	.07*	176	.10*
EBR	1	1700	357	.21	258	.15
WBL	1	1700	279	.16*	202	.12*
WBT	2	3400	306	.12	224	.10
WBR	0	0	103		115	
Right Turn Adjustment			EBR	.08*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .77 .65

2035 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	310	.18*
NBT	3	5100	760	.22	940	.24
NBR	0	0	370		280	
SBL	1	1700	50	.03	130	.08
SBT	3	5100	1640	.32*	1000	.20*
SBR	0	0	10		30	
EBL	1	1700	10	.01	40	.02
EBT	1	1700	90	.05*	180	.11*
EBR	1	1700	410	.24	300	.18
WBL	1	1700	440	.26*	300	.18*
WBT	2	3400	280	.11	220	.09
WBR	0	0	90		100	
Right Turn Adjustment			EBR	.10*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .87 .72

22. Newport at El Camino Real

2035 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	320	.19*
NBT	3	5100	820	.24	1000	.25
NBR	0	0	380		280	
SBL	1	1700	60	.04	150	.09
SBT	3	5100	1760	.35*	1080	.22*
SBR	0	0	10		40	
EBL	1	1700	10	.01	50	.03
EBT	1	1700	110	.06*	200	.12*
EBR	1	1700	430	.25	310	.18
WBL	1	1700	430	.25*	300	.18*
WBT	2	3400	320	.12	250	.11
WBR	0	0	100		120	
Right Turn Adjustment			EBR	.10*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .90 .76

2035 With-Project (125%)

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	330	.19*
NBT	3	5100	820	.24	1000	.25
NBR	0	0	390		290	
SBL	1	1700	60	.04	150	.09
SBT	3	5100	1760	.35*	1080	.22*
SBR	0	0	10		40	
EBL	1	1700	10	.01	50	.03
EBT	1	1700	110	.06*	200	.12*
EBR	1	1700	440	.26	320	.19
WBL	1	1700	440	.26*	310	.18*
WBT	2	3400	330	.13	250	.11
WBR	0	0	100		120	
Right Turn Adjustment			EBR	.11*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for EBR

TOTAL CAPACITY UTILIZATION .92 .76

2035 With-Project (125%) w/Mitigation

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	160	.09*	330	.19*
NBT	3	5100	820	.24	1000	.25
NBR	0	0	390		290	
SBL	1	1700	60	.04	150	.09
SBT	3	5100	1760	.35*	1080	.22*
SBR	0	0	10		40	
EBL	1	1700	10	.01	50	.03
EBT	0.5	3400	110	{.13}*	200	{.12}*
EBR	1.5		440		320	{.05}
WBL	1	1700	440	.26*	310	.18*
WBT	2	3400	330	.13	250	.11
WBR	0	0	100		120	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .88 .76

Appendix C HCM WORKSHEETS

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	232	1095	1540	776
Future Volume (Veh/h)	0	0	232	1095	1540	776
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.83	0.83	0.88	0.88
Hourly flow rate (vph)	0	0	280	1319	1750	882
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.76	0.65	0.65			
vC, conflicting volume	3191	1024	2632			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	857	0	1630			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	0			
cM capacity (veh/h)	0	706	257			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	280	440	440	440	700	700	1232
Volume Left	280	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	882
cSH	257	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.09	0.26	0.26	0.26	0.41	0.41	0.72
Queue Length 95th (ft)	295	0	0	0	0	0	0
Control Delay (s)	124.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F						
Approach Delay (s)	21.9				0.0		
Approach LOS							

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	344	1310	987	497
Future Volume (Veh/h)	0	0	344	1310	987	497
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	370	1409	1061	534
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.89	0.81	0.81			
vC, conflicting volume	2538	621	1595			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	872	0	919			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	38			
cM capacity (veh/h)	99	880	599			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	370	470	470	470	424	424	746
Volume Left	370	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	534
cSH	599	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.62	0.28	0.28	0.28	0.25	0.25	0.44
Queue Length 95th (ft)	106	0	0	0	0	0	0
Control Delay (s)	20.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	4.2				0.0		
Approach LOS							

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	232	1125	1600	836
Future Volume (Veh/h)	0	0	232	1125	1600	836
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.83	0.83	0.88	0.88
Hourly flow rate (vph)	0	0	280	1355	1818	950
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.75	0.63	0.63			
vC, conflicting volume	3305	1081	2768			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	819	0	1757			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	0			
cM capacity (veh/h)	0	685	222			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	280	452	452	452	727	727	1314
Volume Left	280	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	950
cSH	222	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.26	0.27	0.27	0.27	0.43	0.43	0.77
Queue Length 95th (ft)	362	0	0	0	0	0	0
Control Delay (s)	191.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F						
Approach Delay (s)	32.9				0.0		
Approach LOS							

Intersection Summary			
Average Delay	12.2		
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	354	1360	1037	537
Future Volume (Veh/h)	0	0	354	1360	1037	537
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	381	1462	1115	577
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.87	0.77	0.77			
vC, conflicting volume	2653	660	1692			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	765	0	848			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	37			
cM capacity (veh/h)	110	834	604			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	381	487	487	487	446	446	800
Volume Left	381	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	577
cSH	604	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.63	0.29	0.29	0.29	0.26	0.26	0.47
Queue Length 95th (ft)	111	0	0	0	0	0	0
Control Delay (s)	20.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	4.3				0.0		
Approach LOS							

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	232	1135	1620	836
Future Volume (Veh/h)	0	0	232	1135	1620	836
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.83	0.83	0.88	0.88
Hourly flow rate (vph)	0	0	280	1367	1841	950
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.75	0.63	0.63			
vC, conflicting volume	3332	1089	2791			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	794	0	1790			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	0			
cM capacity (veh/h)	0	684	216			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	280	456	456	456	736	736	1318
Volume Left	280	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	950
cSH	216	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.30	0.27	0.27	0.27	0.43	0.43	0.78
Queue Length 95th (ft)	376	0	0	0	0	0	0
Control Delay (s)	208.4	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F						
Approach Delay (s)	35.4				0.0		
Approach LOS							

Intersection Summary			
Average Delay	13.1		
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	354	1380	1047	537
Future Volume (Veh/h)	0	0	354	1380	1047	537
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	381	1484	1126	577
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.87	0.77	0.77			
vC, conflicting volume	2671	664	1703			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	773	0	859			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	36			
cM capacity (veh/h)	106	833	598			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	381	495	495	495	450	450	802
Volume Left	381	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	577
cSH	598	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.64	0.29	0.29	0.29	0.26	0.26	0.47
Queue Length 95th (ft)	113	0	0	0	0	0	0
Control Delay (s)	21.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	4.3				0.0		
Approach LOS							

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	232	1125	1600	836
Future Volume (veh/h)	0	0	232	1125	1600	836
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			280	1355	1818	950
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.83	0.83	0.88	0.88
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			330	4704	2262	1041
Arrive On Green			0.19	0.93	0.66	0.66
Sat Flow, veh/h			1774	5253	3575	1569
Grp Volume(v), veh/h			280	1355	1808	960
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1586
Q Serve(g_s), s			9.2	1.6	23.0	31.0
Cycle Q Clear(g_c), s			9.2	1.6	23.0	31.0
Prop In Lane			1.00			0.99
Lane Grp Cap(c), veh/h			330	4704	2251	1053
V/C Ratio(X)			0.85	0.29	0.80	0.91
Avail Cap(c_a), veh/h			370	4704	2251	1053
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			23.6	0.2	7.3	8.6
Incr Delay (d2), s/veh			15.4	0.2	3.2	13.3
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			5.8	0.7	11.5	17.0
LnGrp Delay(d),s/veh			39.0	0.4	10.4	21.9
LnGrp LOS			D	A	B	C
Approach Vol, veh/h				1635	2768	
Approach Delay, s/veh				7.0	14.4	
Approach LOS				A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		60.0			15.7	44.3		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		55.5			12.5	38.5		
Max Q Clear Time (g_c+I1), s		3.6			11.2	33.0		
Green Ext Time (p_c), s		49.8			0.1	5.5		

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	354	1360	1037	537
Future Volume (veh/h)	0	0	354	1360	1037	537
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			381	1462	1115	577
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.93	0.93	0.93	0.93
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			444	4704	2033	950
Arrive On Green			0.25	0.93	0.60	0.60
Sat Flow, veh/h			1774	5253	3558	1583
Grp Volume(v), veh/h			381	1462	1115	577
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1583
Q Serve(g_s), s			12.3	1.8	11.8	13.8
Cycle Q Clear(g_c), s			12.3	1.8	11.8	13.8
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			444	4704	2033	950
V/C Ratio(X)			0.86	0.31	0.55	0.61
Avail Cap(c_a), veh/h			636	4704	2033	950
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			21.5	0.2	7.2	7.6
Incr Delay (d2), s/veh			8.1	0.2	1.1	2.9
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			7.0	0.8	5.7	6.7
LnGrp Delay(d),s/veh			29.6	0.4	8.2	10.4
LnGrp LOS			C	A	A	B
Approach Vol, veh/h				1843	1692	
Approach Delay, s/veh				6.4	9.0	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		60.0			19.5	40.5		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		55.5			21.5	29.5		
Max Q Clear Time (g_c+I1), s		3.8			14.3	15.8		
Green Ext Time (p_c), s		42.5			0.7	12.9		

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	232	1135	1620	836
Future Volume (veh/h)	0	0	232	1135	1620	836
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			280	1367	1841	950
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.83	0.83	0.88	0.88
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			330	4704	2274	1031
Arrive On Green			0.19	0.93	0.66	0.66
Sat Flow, veh/h			1774	5253	3593	1553
Grp Volume(v), veh/h			280	1367	1819	972
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1589
Q Serve(g_s), s			9.2	1.7	23.4	31.8
Cycle Q Clear(g_c), s			9.2	1.7	23.4	31.8
Prop In Lane			1.00			0.98
Lane Grp Cap(c), veh/h			330	4704	2251	1055
V/C Ratio(X)			0.85	0.29	0.81	0.92
Avail Cap(c_a), veh/h			370	4704	2251	1055
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			23.6	0.2	7.3	8.7
Incr Delay (d2), s/veh			15.4	0.2	3.3	14.2
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			5.8	0.7	11.6	17.7
LnGrp Delay(d),s/veh			39.0	0.4	10.6	23.0
LnGrp LOS			D	A	B	C
Approach Vol, veh/h				1647	2791	
Approach Delay, s/veh				6.9	14.9	
Approach LOS				A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		60.0			15.7	44.3		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		55.5			12.5	38.5		
Max Q Clear Time (g_c+I1), s		3.7			11.2	33.8		
Green Ext Time (p_c), s		49.9			0.1	4.7		

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	354	1380	1047	537
Future Volume (veh/h)	0	0	354	1380	1047	537
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			381	1484	1126	577
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.93	0.93	0.93	0.93
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			444	4704	2033	950
Arrive On Green			0.25	0.93	0.60	0.60
Sat Flow, veh/h			1774	5253	3558	1583
Grp Volume(v), veh/h			381	1484	1126	577
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1583
Q Serve(g_s), s			12.3	1.9	11.9	13.8
Cycle Q Clear(g_c), s			12.3	1.9	11.9	13.8
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			444	4704	2033	950
V/C Ratio(X)			0.86	0.32	0.55	0.61
Avail Cap(c_a), veh/h			636	4704	2033	950
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			21.5	0.2	7.2	7.6
Incr Delay (d2), s/veh			8.1	0.2	1.1	2.9
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			7.0	0.8	5.8	6.7
LnGrp Delay(d),s/veh			29.6	0.4	8.3	10.4
LnGrp LOS			C	A	A	B
Approach Vol, veh/h				1865	1703	
Approach Delay, s/veh				6.4	9.0	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		60.0			19.5	40.5		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		55.5			21.5	29.5		
Max Q Clear Time (g_c+I1), s		3.9			14.3	15.8		
Green Ext Time (p_c), s		42.8			0.7	12.9		

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	270	1240	1770	780
Future Volume (Veh/h)	0	0	270	1240	1770	780
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	293	1348	1924	848
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.74	0.63	0.63			
vC, conflicting volume	3383	1065	2772			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	966	0	1766			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	0			
cM capacity (veh/h)	0	685	221			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	293	449	449	449	770	770	1233
Volume Left	293	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	848
cSH	221	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.33	0.26	0.26	0.26	0.45	0.45	0.73
Queue Length 95th (ft)	398	0	0	0	0	0	0
Control Delay (s)	218.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F						
Approach Delay (s)	38.9				0.0		
Approach LOS							

Intersection Summary			
Average Delay	14.5		
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	380	1480	1130	500
Future Volume (Veh/h)	0	0	380	1480	1130	500
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	413	1609	1228	543
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.86	0.78	0.78			
vC, conflicting volume	2862	681	1771			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	849	0	987			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	24			
cM capacity (veh/h)	61	842	541			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	413	536	536	536	491	491	789
Volume Left	413	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	543
cSH	541	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.76	0.32	0.32	0.32	0.29	0.29	0.46
Queue Length 95th (ft)	170	0	0	0	0	0	0
Control Delay (s)	30.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	D						
Approach Delay (s)	6.1				0.0		
Approach LOS							

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	270	1270	1830	840
Future Volume (Veh/h)	0	0	270	1270	1830	840
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	293	1380	1989	913
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.73	0.61	0.61			
vC, conflicting volume	3492	1120	2902			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	999	0	1902			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	0			
cM capacity (veh/h)	0	667	190			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	293	460	460	460	796	796	1311
Volume Left	293	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	913
cSH	190	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.54	0.27	0.27	0.27	0.47	0.47	0.77
Queue Length 95th (ft)	468	0	0	0	0	0	0
Control Delay (s)	312.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F						
Approach Delay (s)	54.8				0.0		
Approach LOS							

Intersection Summary			
Average Delay	20.0		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	390	1530	1180	540
Future Volume (Veh/h)	0	0	390	1530	1180	540
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	424	1663	1283	587
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.86	0.76	0.76			
vC, conflicting volume	2979	721	1870			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	832	0	1028			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	17			
cM capacity (veh/h)	44	821	509			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	424	554	554	554	513	513	844
Volume Left	424	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	587
cSH	509	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.83	0.33	0.33	0.33	0.30	0.30	0.50
Queue Length 95th (ft)	210	0	0	0	0	0	0
Control Delay (s)	38.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	E						
Approach Delay (s)	7.8				0.0		
Approach LOS							

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	270	1280	1850	840
Future Volume (Veh/h)	0	0	270	1280	1850	840
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	293	1391	2011	913
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.73	0.62	0.62			
vC, conflicting volume	3517	1127	2924			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	993	0	1941			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	0			
cM capacity (veh/h)	0	668	184			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	293	464	464	464	804	804	1315
Volume Left	293	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	913
cSH	184	1700	1700	1700	1700	1700	1700
Volume to Capacity	1.59	0.27	0.27	0.27	0.47	0.47	0.77
Queue Length 95th (ft)	483	0	0	0	0	0	0
Control Delay (s)	337.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F						
Approach Delay (s)	58.6				0.0		
Approach LOS							

Intersection Summary			
Average Delay	21.4		
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	390	1550	1190	540
Future Volume (Veh/h)	0	0	390	1550	1190	540
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	424	1685	1293	587
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				376	279	
pX, platoon unblocked	0.85	0.76	0.76			
vC, conflicting volume	2996	724	1880			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	814	0	1039			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	16			
cM capacity (veh/h)	43	821	503			

Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	424	562	562	562	517	517	846
Volume Left	424	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	587
cSH	503	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.84	0.33	0.33	0.33	0.30	0.30	0.50
Queue Length 95th (ft)	215	0	0	0	0	0	0
Control Delay (s)	39.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	E						
Approach Delay (s)	8.0				0.0		
Approach LOS							

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	270	1270	1830	840
Future Volume (veh/h)	0	0	270	1270	1830	840
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			293	1380	1989	913
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			335	4758	2436	977
Arrive On Green			0.19	0.94	0.68	0.68
Sat Flow, veh/h			1774	5253	3736	1432
Grp Volume(v), veh/h			293	1380	1875	1027
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1610
Q Serve(g_s), s			11.2	1.7	27.5	39.1
Cycle Q Clear(g_c), s			11.2	1.7	27.5	39.1
Prop In Lane			1.00			0.89
Lane Grp Cap(c), veh/h			335	4758	2314	1099
V/C Ratio(X)			0.87	0.29	0.81	0.93
Avail Cap(c_a), veh/h			342	4758	2314	1099
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			27.6	0.2	7.9	9.7
Incr Delay (d2), s/veh			21.1	0.2	3.2	15.3
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			7.4	0.7	13.5	21.5
LnGrp Delay(d),s/veh			48.7	0.4	11.1	25.0
LnGrp LOS			D	A	B	C
Approach Vol, veh/h				1673	2902	
Approach Delay, s/veh				8.8	16.0	
Approach LOS				A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		70.0			17.7	52.3		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		65.5			13.5	47.5		
Max Q Clear Time (g_c+I1), s		3.7			13.2	41.1		
Green Ext Time (p_c), s		59.6			0.0	6.4		

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	390	1530	1180	540
Future Volume (veh/h)	0	0	390	1530	1180	540
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			424	1663	1283	587
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			485	4704	1976	894
Arrive On Green			0.27	0.93	0.58	0.58
Sat Flow, veh/h			1774	5253	3596	1551
Grp Volume(v), veh/h			424	1663	1268	602
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1589
Q Serve(g_s), s			13.7	2.2	15.2	15.5
Cycle Q Clear(g_c), s			13.7	2.2	15.2	15.5
Prop In Lane			1.00			0.98
Lane Grp Cap(c), veh/h			485	4704	1954	916
V/C Ratio(X)			0.87	0.35	0.65	0.66
Avail Cap(c_a), veh/h			636	4704	1954	916
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			20.8	0.3	8.6	8.7
Incr Delay (d2), s/veh			10.4	0.2	1.7	3.7
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			8.0	1.0	7.5	7.6
LnGrp Delay(d),s/veh			31.2	0.5	10.3	12.3
LnGrp LOS			C	A	B	B
Approach Vol, veh/h				2087	1870	
Approach Delay, s/veh				6.7	10.9	
Approach LOS				A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		60.0			20.9	39.1		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		55.5			21.5	29.5		
Max Q Clear Time (g_c+I1), s		4.2			15.7	17.5		
Green Ext Time (p_c), s		45.7			0.7	11.6		

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	270	1280	1850	840
Future Volume (veh/h)	0	0	270	1280	1850	840
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			293	1391	2011	913
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			335	4758	2446	969
Arrive On Green			0.19	0.94	0.68	0.68
Sat Flow, veh/h			1774	5253	3750	1420
Grp Volume(v), veh/h			293	1391	1887	1037
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1612
Q Serve(g_s), s			11.2	1.7	27.9	40.0
Cycle Q Clear(g_c), s			11.2	1.7	27.9	40.0
Prop In Lane			1.00			0.88
Lane Grp Cap(c), veh/h			335	4758	2314	1101
V/C Ratio(X)			0.87	0.29	0.82	0.94
Avail Cap(c_a), veh/h			342	4758	2314	1101
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			27.6	0.2	8.0	9.9
Incr Delay (d2), s/veh			21.1	0.2	3.3	16.4
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			7.4	0.7	13.9	22.3
LnGrp Delay(d),s/veh			48.7	0.4	11.3	26.2
LnGrp LOS			D	A	B	C
Approach Vol, veh/h				1684	2924	
Approach Delay, s/veh				8.8	16.6	
Approach LOS				A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		70.0			17.7	52.3		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		65.5			13.5	47.5		
Max Q Clear Time (g_c+I1), s		3.7			13.2	42.0		
Green Ext Time (p_c), s		59.7			0.0	5.4		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	390	1550	1190	540
Future Volume (veh/h)	0	0	390	1550	1190	540
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1863	1863	1900
Adj Flow Rate, veh/h			424	1685	1293	587
Adj No. of Lanes			1	3	3	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			490	4628	1871	839
Arrive On Green			0.28	0.91	0.54	0.54
Sat Flow, veh/h			1774	5253	3606	1542
Grp Volume(v), veh/h			424	1685	1275	605
Grp Sat Flow(s),veh/h/ln			1774	1695	1695	1591
Q Serve(g_s), s			11.4	2.2	13.7	14.0
Cycle Q Clear(g_c), s			11.4	2.2	13.7	14.0
Prop In Lane			1.00			0.97
Lane Grp Cap(c), veh/h			490	4628	1844	865
V/C Ratio(X)			0.87	0.36	0.69	0.70
Avail Cap(c_a), veh/h			585	4628	1844	865
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			17.2	0.3	8.3	8.4
Incr Delay (d2), s/veh			11.4	0.2	2.2	4.7
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			7.1	1.0	6.7	7.2
LnGrp Delay(d),s/veh			28.6	0.5	10.5	13.1
LnGrp LOS			C	A	B	B
Approach Vol, veh/h				2109	1880	
Approach Delay, s/veh				6.2	11.3	
Approach LOS				A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		50.0			18.3	31.7		
Change Period (Y+Rc), s		4.5			4.5	4.5		
Max Green Setting (Gmax), s		45.5			16.5	24.5		
Max Q Clear Time (g_c+I1), s		4.2			13.4	16.0		
Green Ext Time (p_c), s		37.7			0.5	8.3		

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	67	239	90	0	131	0	1009	101	193	1336	0
Future Volume (veh/h)	207	67	239	90	0	131	0	1009	101	193	1336	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	156	187	272	122	0	177	0	1328	133	222	1536	0
Adj No. of Lanes	1	1	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.74	0.74	0.74	0.76	0.76	0.76	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	373	392	333	0	0	0	0	1974	198	266	3272	0
Arrive On Green	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.42	0.42	0.15	0.64	0.00
Sat Flow, veh/h	1774	1863	1583		0		0	4867	471	1774	5253	0
Grp Volume(v), veh/h	156	187	272		0.0		0	958	503	222	1536	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583				0	1695	1780	1774	1695	0
Q Serve(g_s), s	5.2	6.0	11.2				0.0	15.6	15.6	8.3	10.6	0.0
Cycle Q Clear(g_c), s	5.2	6.0	11.2				0.0	15.6	15.6	8.3	10.6	0.0
Prop In Lane	1.00		1.00				0.00		0.26	1.00		0.00
Lane Grp Cap(c), veh/h	373	392	333				0	1424	748	266	3272	0
V/C Ratio(X)	0.42	0.48	0.82				0.00	0.67	0.67	0.83	0.47	0.00
Avail Cap(c_a), veh/h	467	490	417				0	1424	748	311	3272	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.4	23.7	25.7				0.0	16.0	16.0	28.2	6.2	0.0
Incr Delay (d2), s/veh	0.7	0.9	9.8				0.0	2.6	4.8	15.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.2	5.8				0.0	7.7	8.5	5.2	5.0	0.0
LnGrp Delay(d),s/veh	24.1	24.6	35.5				0.0	18.6	20.8	43.7	6.7	0.0
LnGrp LOS	C	C	D					B	C	D	A	
Approach Vol, veh/h		615						1461			1758	
Approach Delay, s/veh		29.3						19.4			11.4	
Approach LOS		C						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.3	33.7		19.4		49.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	12.0	27.0		18.0		44.0		
Max Q Clear Time (g_c+I1), s	10.3	17.6		13.2		12.6		
Green Ext Time (p_c), s	0.1	8.8		1.2		26.8		

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	65	372	62	0	191	0	1132	83	151	858	0
Future Volume (veh/h)	369	65	372	62	0	191	0	1132	83	151	858	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	437	0	392	77	0	236	0	1230	90	166	943	0
Adj No. of Lanes	2	0	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.81	0.81	0.81	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	992	0	442	0	0	0	0	1727	126	209	2831	0
Arrive On Green	0.28	0.00	0.28	0.00	0.00	0.00	0.00	0.36	0.36	0.12	0.56	0.00
Sat Flow, veh/h	3548	0	1583		0		0	5004	354	1774	5253	0
Grp Volume(v), veh/h	437	0	392		0.0		0	862	458	166	943	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1695	1800	1774	1695	0
Q Serve(g_s), s	6.2	0.0	14.5				0.0	13.4	13.4	5.6	6.2	0.0
Cycle Q Clear(g_c), s	6.2	0.0	14.5				0.0	13.4	13.4	5.6	6.2	0.0
Prop In Lane	1.00		1.00				0.00		0.20	1.00		0.00
Lane Grp Cap(c), veh/h	992	0	442				0	1210	643	209	2831	0
V/C Ratio(X)	0.44	0.00	0.89				0.00	0.71	0.71	0.79	0.33	0.00
Avail Cap(c_a), veh/h	1046	0	467				0	1210	643	291	2831	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.1	0.0	21.1				0.0	16.9	16.9	26.2	7.4	0.0
Incr Delay (d2), s/veh	0.3	0.0	17.6				0.0	3.6	6.6	9.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	8.5				0.0	6.8	7.8	3.3	3.0	0.0
LnGrp Delay(d),s/veh	18.4	0.0	38.7				0.0	20.5	23.5	36.0	7.7	0.0
LnGrp LOS	B		D					C	C	D	A	
Approach Vol, veh/h		829						1320			1109	
Approach Delay, s/veh		28.0						21.6			11.9	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	12.2	26.8		22.1		39.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	10.0	19.0		18.0		34.0		
Max Q Clear Time (g_c+I1), s	7.6	15.4		16.5		8.2		
Green Ext Time (p_c), s	0.1	3.3		0.6		18.4		

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	67	239	90	0	141	0	1029	91	203	1366	0
Future Volume (veh/h)	217	67	239	90	0	141	0	1029	91	203	1366	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	162	196	272	122	0	191	0	1354	120	233	1570	0
Adj No. of Lanes	1	1	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.74	0.74	0.74	0.76	0.76	0.76	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	374	393	334	0	0	0	0	1964	174	279	3270	0
Arrive On Green	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.41	0.41	0.16	0.64	0.00
Sat Flow, veh/h	1774	1863	1583		0		0	4925	422	1774	5253	0
Grp Volume(v), veh/h	162	196	272		0.0		0	965	509	233	1570	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583				0	1695	1788	1774	1695	0
Q Serve(g_s), s	5.4	6.4	11.2				0.0	16.0	16.0	8.7	10.9	0.0
Cycle Q Clear(g_c), s	5.4	6.4	11.2				0.0	16.0	16.0	8.7	10.9	0.0
Prop In Lane	1.00		1.00				0.00		0.24	1.00		0.00
Lane Grp Cap(c), veh/h	374	393	334				0	1400	738	279	3270	0
V/C Ratio(X)	0.43	0.50	0.81				0.00	0.69	0.69	0.84	0.48	0.00
Avail Cap(c_a), veh/h	467	490	417				0	1400	738	337	3270	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.4	23.8	25.7				0.0	16.5	16.5	28.0	6.3	0.0
Incr Delay (d2), s/veh	0.8	1.0	9.7				0.0	2.8	5.2	14.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.4	5.7				0.0	7.9	8.8	5.4	5.1	0.0
LnGrp Delay(d),s/veh	24.2	24.8	35.4				0.0	19.3	21.7	42.3	6.8	0.0
LnGrp LOS	C	C	D					B	C	D	A	
Approach Vol, veh/h		630						1474			1803	
Approach Delay, s/veh		29.2						20.1			11.4	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.7	33.3		19.4		49.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	13.0	26.0		18.0		44.0		
Max Q Clear Time (g_c+I1), s	10.7	18.0		13.2		12.9		
Green Ext Time (p_c), s	0.2	7.6		1.2		26.8		

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	379	65	362	62	0	191	0	1162	73	161	878	0
Future Volume (veh/h)	379	65	362	62	0	191	0	1162	73	161	878	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	448	0	381	77	0	236	0	1263	79	177	965	0
Adj No. of Lanes	2	0	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.81	0.81	0.81	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	977	0	436	0	0	0	0	1726	108	222	2848	0
Arrive On Green	0.28	0.00	0.28	0.00	0.00	0.00	0.00	0.35	0.35	0.12	0.56	0.00
Sat Flow, veh/h	3548	0	1583		0		0	5061	306	1774	5253	0
Grp Volume(v), veh/h	448	0	381		0.0		0	875	467	177	965	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1695	1809	1774	1695	0
Q Serve(g_s), s	6.4	0.0	13.9				0.0	13.7	13.7	5.9	6.3	0.0
Cycle Q Clear(g_c), s	6.4	0.0	13.9				0.0	13.7	13.7	5.9	6.3	0.0
Prop In Lane	1.00		1.00				0.00		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	977	0	436				0	1196	638	222	2848	0
V/C Ratio(X)	0.46	0.00	0.87				0.00	0.73	0.73	0.80	0.34	0.00
Avail Cap(c_a), veh/h	1052	0	469				0	1196	638	292	2848	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.2	0.0	21.0				0.0	17.1	17.1	25.8	7.3	0.0
Incr Delay (d2), s/veh	0.3	0.0	15.8				0.0	4.0	7.3	11.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	7.9				0.0	7.0	8.0	3.5	2.9	0.0
LnGrp Delay(d),s/veh	18.6	0.0	36.8				0.0	21.1	24.4	36.8	7.6	0.0
LnGrp LOS	B		D					C	C	D	A	
Approach Vol, veh/h		829						1342			1142	
Approach Delay, s/veh		27.0						22.3			12.1	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	12.6	26.4		21.7		39.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	10.0	19.0		18.0		34.0		
Max Q Clear Time (g_c+I1), s	7.9	15.7		15.9		8.3		
Green Ext Time (p_c), s	0.1	3.0		0.8		18.6		

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	67	249	90	0	141	0	1049	91	203	1386	0
Future Volume (veh/h)	217	67	249	90	0	141	0	1049	91	203	1386	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	162	196	283	122	0	191	0	1380	120	233	1593	0
Adj No. of Lanes	1	1	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.88	0.88	0.88	0.74	0.74	0.74	0.76	0.76	0.76	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	383	403	342	0	0	0	0	1950	170	278	3248	0
Arrive On Green	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.41	0.41	0.16	0.64	0.00
Sat Flow, veh/h	1774	1863	1583		0		0	4933	414	1774	5253	0
Grp Volume(v), veh/h	162	196	283		0.0		0	982	518	233	1593	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583				0	1695	1790	1774	1695	0
Q Serve(g_s), s	5.4	6.4	11.8				0.0	16.6	16.6	8.8	11.4	0.0
Cycle Q Clear(g_c), s	5.4	6.4	11.8				0.0	16.6	16.6	8.8	11.4	0.0
Prop In Lane	1.00		1.00				0.00		0.23	1.00		0.00
Lane Grp Cap(c), veh/h	383	403	342				0	1387	732	278	3248	0
V/C Ratio(X)	0.42	0.49	0.83				0.00	0.71	0.71	0.84	0.49	0.00
Avail Cap(c_a), veh/h	464	487	414				0	1387	732	335	3248	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.3	23.7	25.8				0.0	16.9	16.9	28.2	6.5	0.0
Incr Delay (d2), s/veh	0.7	0.9	11.1				0.0	3.1	5.7	14.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.4	6.2				0.0	8.2	9.2	5.4	5.3	0.0
LnGrp Delay(d),s/veh	24.0	24.6	36.9				0.0	20.0	22.6	42.7	7.1	0.0
LnGrp LOS	C	C	D					B	C	D	A	
Approach Vol, veh/h		641						1500			1826	
Approach Delay, s/veh		29.9						20.9			11.6	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.8	33.2		19.9		49.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	13.0	26.0		18.0		44.0		
Max Q Clear Time (g_c+I1), s	10.8	18.6		13.8		13.4		
Green Ext Time (p_c), s	0.1	7.1		1.1		26.7		

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	379	65	372	62	0	191	0	1182	73	161	888	0
Future Volume (veh/h)	379	65	372	62	0	191	0	1182	73	161	888	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	448	0	392	77	0	236	0	1285	79	177	976	0
Adj No. of Lanes	2	0	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.81	0.81	0.81	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	992	0	443	0	0	0	0	1715	105	221	2831	0
Arrive On Green	0.28	0.00	0.28	0.00	0.00	0.00	0.00	0.35	0.35	0.12	0.56	0.00
Sat Flow, veh/h	3548	0	1583		0		0	5066	301	1774	5253	0
Grp Volume(v), veh/h	448	0	392		0.0		0	889	475	177	976	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1695	1810	1774	1695	0
Q Serve(g_s), s	6.4	0.0	14.5				0.0	14.1	14.1	5.9	6.4	0.0
Cycle Q Clear(g_c), s	6.4	0.0	14.5				0.0	14.1	14.1	5.9	6.4	0.0
Prop In Lane	1.00		1.00				0.00		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	992	0	443				0	1187	634	221	2831	0
V/C Ratio(X)	0.45	0.00	0.89				0.00	0.75	0.75	0.80	0.34	0.00
Avail Cap(c_a), veh/h	1046	0	467				0	1187	634	290	2831	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.1	0.0	21.1				0.0	17.5	17.5	26.0	7.4	0.0
Incr Delay (d2), s/veh	0.3	0.0	17.6				0.0	4.4	7.9	11.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	8.5				0.0	7.3	8.4	3.6	3.1	0.0
LnGrp Delay(d),s/veh	18.5	0.0	38.7				0.0	21.8	25.4	37.2	7.8	0.0
LnGrp LOS	B		D					C	C	D	A	
Approach Vol, veh/h		840						1364			1153	
Approach Delay, s/veh		27.9						23.1			12.3	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	12.6	26.4		22.1		39.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	10.0	19.0		18.0		34.0		
Max Q Clear Time (g_c+I1), s	7.9	16.1		16.5		8.4		
Green Ext Time (p_c), s	0.1	2.7		0.6		18.8		

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	70	240	100	0	150	0	1190	120	220	1580	0
Future Volume (veh/h)	210	70	240	100	0	150	0	1190	120	220	1580	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	152	182	261	109	0	163	0	1293	130	239	1717	0
Adj No. of Lanes	1	1	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	363	381	324	0	0	0	0	1944	195	285	3296	0
Arrive On Green	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.41	0.41	0.16	0.65	0.00
Sat Flow, veh/h	1774	1863	1583		0		0	4865	472	1774	5253	0
Grp Volume(v), veh/h	152	182	261		0.0		0	933	490	239	1717	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583				0	1695	1779	1774	1695	0
Q Serve(g_s), s	5.1	5.8	10.7				0.0	15.1	15.1	8.9	12.2	0.0
Cycle Q Clear(g_c), s	5.1	5.8	10.7				0.0	15.1	15.1	8.9	12.2	0.0
Prop In Lane	1.00		1.00				0.00		0.27	1.00		0.00
Lane Grp Cap(c), veh/h	363	381	324				0	1403	736	285	3296	0
V/C Ratio(X)	0.42	0.48	0.81				0.00	0.67	0.67	0.84	0.52	0.00
Avail Cap(c_a), veh/h	470	494	420				0	1403	736	340	3296	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.5	23.8	25.7				0.0	16.1	16.1	27.6	6.3	0.0
Incr Delay (d2), s/veh	0.8	0.9	8.5				0.0	2.5	4.7	14.7	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.1	5.4				0.0	7.5	8.3	5.5	5.7	0.0
LnGrp Delay(d),s/veh	24.3	24.7	34.2				0.0	18.6	20.8	42.3	6.9	0.0
LnGrp LOS	C	C	C					B	C	D	A	
Approach Vol, veh/h		595						1423			1956	
Approach Delay, s/veh		28.8						19.4			11.3	
Approach LOS		C						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.9	33.1		18.9		49.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	13.0	26.0		18.0		44.0		
Max Q Clear Time (g_c+I1), s	10.9	17.1		12.7		14.2		
Green Ext Time (p_c), s	0.1	8.5		1.2		26.3		

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	70	370	70	0	220	0	1350	100	170	1040	0
Future Volume (veh/h)	370	70	370	70	0	220	0	1350	100	170	1040	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	456	0	402	76	0	239	0	1467	109	185	1130	0
Adj No. of Lanes	2	0	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	952	0	425	0	0	0	0	2046	152	222	3101	0
Arrive On Green	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.42	0.42	0.13	0.61	0.00
Sat Flow, veh/h	3548	0	1583		0		0	4998	359	1774	5253	0
Grp Volume(v), veh/h	456	0	402		0.0		0	1029	547	185	1130	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1695	1799	1774	1695	0
Q Serve(g_s), s	8.8	0.0	20.4				0.0	20.6	20.6	8.4	9.1	0.0
Cycle Q Clear(g_c), s	8.8	0.0	20.4				0.0	20.6	20.6	8.4	9.1	0.0
Prop In Lane	1.00		1.00				0.00		0.20	1.00		0.00
Lane Grp Cap(c), veh/h	952	0	425				0	1436	762	222	3101	0
V/C Ratio(X)	0.48	0.00	0.95				0.00	0.72	0.72	0.83	0.36	0.00
Avail Cap(c_a), veh/h	952	0	425				0	1436	762	260	3101	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.2	0.0	29.4				0.0	19.6	19.6	35.0	8.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	30.3				0.0	3.1	5.7	17.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	12.5				0.0	10.2	11.4	5.2	4.3	0.0
LnGrp Delay(d),s/veh	25.6	0.0	59.8				0.0	22.7	25.3	52.8	8.4	0.0
LnGrp LOS	C		E					C	C	D	A	
Approach Vol, veh/h		858						1576			1315	
Approach Delay, s/veh		41.6						23.6			14.6	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.3	39.7		27.0		55.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	12.0	33.0		22.0		50.0		
Max Q Clear Time (g_c+I1), s	10.4	22.6		22.4		11.1		
Green Ext Time (p_c), s	0.1	9.4		0.0		29.3		

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	70	240	100	0	160	0	1210	110	230	1610	0
Future Volume (veh/h)	220	70	240	100	0	160	0	1210	110	230	1610	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	158	190	261	109	0	174	0	1315	120	250	1750	0
Adj No. of Lanes	1	1	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	364	382	325	0	0	0	0	1933	176	296	3294	0
Arrive On Green	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.41	0.41	0.17	0.65	0.00
Sat Flow, veh/h	1774	1863	1583		0		0	4911	433	1774	5253	0
Grp Volume(v), veh/h	158	190	261		0.0		0	940	495	250	1750	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583				0	1695	1786	1774	1695	0
Q Serve(g_s), s	5.3	6.1	10.7				0.0	15.4	15.4	9.3	12.6	0.0
Cycle Q Clear(g_c), s	5.3	6.1	10.7				0.0	15.4	15.4	9.3	12.6	0.0
Prop In Lane	1.00		1.00				0.00		0.24	1.00		0.00
Lane Grp Cap(c), veh/h	364	382	325				0	1382	728	296	3294	0
V/C Ratio(X)	0.43	0.50	0.80				0.00	0.68	0.68	0.85	0.53	0.00
Avail Cap(c_a), veh/h	470	494	420				0	1382	728	339	3294	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.6	23.9	25.7				0.0	16.5	16.5	27.5	6.4	0.0
Incr Delay (d2), s/veh	0.8	1.0	8.4				0.0	2.7	5.1	15.9	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.3	5.4				0.0	7.7	8.6	5.8	6.0	0.0
LnGrp Delay(d),s/veh	24.4	24.9	34.1				0.0	19.2	21.6	43.4	7.0	0.0
LnGrp LOS	C	C	C					B	C	D	A	
Approach Vol, veh/h		609						1435			2000	
Approach Delay, s/veh		28.7						20.0			11.6	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.3	32.7		18.9		49.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	13.0	26.0		18.0		44.0		
Max Q Clear Time (g_c+I1), s	11.3	17.4		12.7		14.6		
Green Ext Time (p_c), s	0.1	8.2		1.3		26.2		

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	70	360	70	0	220	0	1380	90	180	1060	0
Future Volume (veh/h)	380	70	360	70	0	220	0	1380	90	180	1060	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	467	0	391	76	0	239	0	1500	98	196	1152	0
Adj No. of Lanes	2	0	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	946	0	422	0	0	0	0	2041	133	233	3108	0
Arrive On Green	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.42	0.42	0.13	0.61	0.00
Sat Flow, veh/h	3548	0	1583		0		0	5046	319	1774	5253	0
Grp Volume(v), veh/h	467	0	391		0.0		0	1042	556	196	1152	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1695	1807	1774	1695	0
Q Serve(g_s), s	9.1	0.0	19.7				0.0	21.1	21.1	8.8	9.3	0.0
Cycle Q Clear(g_c), s	9.1	0.0	19.7				0.0	21.1	21.1	8.8	9.3	0.0
Prop In Lane	1.00		1.00				0.00		0.18	1.00		0.00
Lane Grp Cap(c), veh/h	946	0	422				0	1419	756	233	3108	0
V/C Ratio(X)	0.49	0.00	0.93				0.00	0.73	0.73	0.84	0.37	0.00
Avail Cap(c_a), veh/h	954	0	426				0	1419	756	260	3108	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.3	0.0	29.2				0.0	20.0	20.0	34.7	8.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	26.1				0.0	3.4	6.3	19.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	11.6				0.0	10.5	11.8	5.6	4.4	0.0
LnGrp Delay(d),s/veh	25.7	0.0	55.3				0.0	23.4	26.3	54.2	8.3	0.0
LnGrp LOS	C		E					C	C	D	A	
Approach Vol, veh/h		858						1598			1348	
Approach Delay, s/veh		39.2						24.4			15.0	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.8	39.2		26.8		55.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	12.0	33.0		22.0		50.0		
Max Q Clear Time (g_c+I1), s	10.8	23.1		21.7		11.3		
Green Ext Time (p_c), s	0.1	9.0		0.1		29.7		

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	70	250	100	0	160	0	1230	110	230	1630	0
Future Volume (veh/h)	220	70	250	100	0	160	0	1230	110	230	1630	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	158	190	272	109	0	174	0	1337	120	250	1772	0
Adj No. of Lanes	1	1	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	374	392	333	0	0	0	0	1918	172	295	3271	0
Arrive On Green	0.21	0.21	0.21	0.00	0.00	0.00	0.00	0.40	0.40	0.17	0.64	0.00
Sat Flow, veh/h	1774	1863	1583		0		0	4919	426	1774	5253	0
Grp Volume(v), veh/h	158	190	272		0.0		0	954	503	250	1772	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583				0	1695	1787	1774	1695	0
Q Serve(g_s), s	5.3	6.1	11.2				0.0	16.0	16.0	9.4	13.1	0.0
Cycle Q Clear(g_c), s	5.3	6.1	11.2				0.0	16.0	16.0	9.4	13.1	0.0
Prop In Lane	1.00		1.00				0.00		0.24	1.00		0.00
Lane Grp Cap(c), veh/h	374	392	333				0	1369	722	295	3271	0
V/C Ratio(X)	0.42	0.48	0.82				0.00	0.70	0.70	0.85	0.54	0.00
Avail Cap(c_a), veh/h	467	490	417				0	1369	722	337	3271	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.4	23.7	25.7				0.0	16.9	16.9	27.7	6.7	0.0
Incr Delay (d2), s/veh	0.8	0.9	9.8				0.0	3.0	5.5	16.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.3	5.8				0.0	8.0	8.9	5.9	6.3	0.0
LnGrp Delay(d),s/veh	24.2	24.7	35.5				0.0	19.9	22.4	43.9	7.3	0.0
LnGrp LOS	C	C	D					B	C	D	A	
Approach Vol, veh/h		620						1457			2022	
Approach Delay, s/veh		29.3						20.8			11.9	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.4	32.6		19.4		49.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	13.0	26.0		18.0		44.0		
Max Q Clear Time (g_c+I1), s	11.4	18.0		13.2		15.1		
Green Ext Time (p_c), s	0.1	7.7		1.2		26.0		

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	70	370	70	0	220	0	1400	90	180	1070	0
Future Volume (veh/h)	380	70	370	70	0	220	0	1400	90	180	1070	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	0	1863	0	1863	1900	1863	1863	0
Adj Flow Rate, veh/h	467	0	402	76	0	239	0	1522	98	196	1163	0
Adj No. of Lanes	2	0	1	1	0	1	0	3	0	1	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	0
Cap, veh/h	952	0	425	0	0	0	0	2038	131	233	3101	0
Arrive On Green	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.42	0.42	0.13	0.61	0.00
Sat Flow, veh/h	3548	0	1583		0		0	5051	314	1774	5253	0
Grp Volume(v), veh/h	467	0	402		0.0		0	1057	563	196	1163	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583				0	1695	1807	1774	1695	0
Q Serve(g_s), s	9.1	0.0	20.4				0.0	21.6	21.6	8.8	9.5	0.0
Cycle Q Clear(g_c), s	9.1	0.0	20.4				0.0	21.6	21.6	8.8	9.5	0.0
Prop In Lane	1.00		1.00				0.00		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	952	0	425				0	1415	754	233	3101	0
V/C Ratio(X)	0.49	0.00	0.95				0.00	0.75	0.75	0.84	0.38	0.00
Avail Cap(c_a), veh/h	952	0	425				0	1415	754	260	3101	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.3	0.0	29.4				0.0	20.2	20.2	34.8	8.1	0.0
Incr Delay (d2), s/veh	0.4	0.0	30.3				0.0	3.6	6.7	19.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	12.5				0.0	10.7	12.0	5.6	4.5	0.0
LnGrp Delay(d),s/veh	25.7	0.0	59.8				0.0	23.9	26.9	54.4	8.4	0.0
LnGrp LOS	C		E					C	C	D	A	
Approach Vol, veh/h		869						1620			1359	
Approach Delay, s/veh		41.4						24.9			15.1	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.8	39.2		27.0		55.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	12.0	33.0		22.0		50.0		
Max Q Clear Time (g_c+I1), s	10.8	23.6		22.4		11.5		
Green Ext Time (p_c), s	0.1	8.6		0.0		29.9		

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Notes

APPENDIX F: WATER SUPPLY MEMO

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Inter-Com

DATE: SEPTEMBER 2017

TO: LUCY YEAGER, PLANNING CONSULTANT

FROM: ART VALENZUELA, WATER SERVICES MANAGER

SUBJECT: DOWNTOWN COMMERCIAL CORE SPECIFIC PLAN WATER SUPPLY ANALYSIS

Per your request, our staff has reviewed the City's 2015 Urban Water Management Plan and the City's master planning documents in relation to the existing and planned uses in the Downtown Commercial Core Specific Plan area. The proposed project would add 887 dwelling units and 300,000 sf of non-residential uses to this existing baseline development over a long-term basis. It is estimated that this would result in approximately 2,696 residents and 840 new employees at build out and full occupancy.

Urban Water Management Plan

The City of Tustin Water Services Department provides potable water service to the Specific Plan area. The City receives its water from two main sources; 74 percent is local well water from the Lower Santa Ana River Groundwater basin (OC Basin), which is managed by the Orange County Water District (OCWD); and 26 percent is imported water from the Municipal Water District of Orange County (MWDOC) through East Orange County Water District (EOCWD). MWDOC is Orange County's wholesale supplier and is a member agency of the Metropolitan Water District of Southern California (Metropolitan)[1].

The City has eight untreated or "clear" groundwater wells that pump directly into the distribution system and two treatment facilities that treat groundwater from five additional wells. Elevations in the City's service area are approximately 210 feet above mean sea level (msl). The water system is divided into three pressure zones. The existing storage system consists of six reservoirs with a combined storage capacity of approximately 13.83 million gallons (MG).

The Urban Water Management Plan was updated in 2015 and identifies water demand through year 2040 and the available water supply. The City water use per capita per day in 2015 was 122 gallons; in 2015, the City delivered 11,113 acre-feet (AF) of water. The City's 2015 Urban Water Management Plan estimates that water demands will grow to 12,221 AF by 2035, which will be met by an increase in groundwater pumping and a reduction in reliance

[1] As the regional wholesale supplier for much of Orange County, MWDOC works in collaboration with each of its retail agencies as well as Metropolitan, its wholesaler, to develop demand projections for imported water.

on imported supplies (UWMP 2015).

The reliability of water sources is addressed in Chapter 3, *Water Sources and Supply Reliability* of the 2015 Urban Water Management Plan. As described, the City's groundwater comes from the OC Basin, which is not adjudicated; however, each year, OCWD sets a Basin Production Percentage (BPP) that targets the amount of groundwater to be produced from the basin during the year, which is based on a percentage of the City's total water demands. As detailed in the 2015 Urban Water Management Plan, groundwater levels are managed within a safe basin operating range to protect the long-term sustainability of the OC Basin and to protect against land subsidence.

Regarding imported supply, the City currently has a minimum available imported water supply of 12,401 AFY from MWDOC; however, it only utilizes 2,914 AFY annually from imported water supplies[2]. Thus, ample imported water supplies are available to meet the City's demands.

Based on the City's water use per day in 2015 of 122 gallons per capita, the Specific Plan's estimated 2,696 residents and 840 employees would generate an additional water demand of 431,392 gallons per day or 483.2 acre-feet per year (AFY) compared to existing conditions.

As described in detail in Chapter 3, *Water Sources and Supply Reliability* of the 2015 Urban Water Management Plan, the City's water demand and supply is estimated to grow from 11,113 AFY to 12,221 AFY by 2035, which is an increase of 1,108 AFY for normal year. At buildout and full occupancy of the proposed Specific Plan, the project would generate a demand of 483.2 AFY, which would be within the anticipated increase in demand and supply of water assumed in the Urban Water Management Plan for 2035.

Buildout of the proposed Specific Plan would be served from existing entitlements and new or expanded water entitlements would not be needed due to diversified supply and conservation measures. The City is capable of meeting all customers' demands within its service area through the purchase of imported water, pumping local groundwater supplies, and implementation of conservation measures (UWMP 2015). Furthermore, the City's water supply is reliable, and is addressed in the UWMP Chapter 3, *Water Sources and Supply Reliability;* its water shortage plan is addressed in Chapter 5, *Water Shortage Contingency Plan.*

As demonstrated by the City's 2015 Urban Water Management Plan, the proposed water demands from build out of the Specific Plan falls within the assumptions made for growth and needed water supply through 2035, and sufficient water supply exists to serve the proposed uses identified in the Downtown Commercial Core Specific Plan.

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[2] As shown in UWMP Table 5-2*, Retail: Minimum Supply Next Three Years*.

APPENDIX G: ENERGY TABLES

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Activity/Duration	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
Demolition (70 days)	Concrete/Industrial Saws	81	1	8	0.73	473	1,790
	Excavators	158	3	8	0.38	1,441	5,452
	Rubber Tired Dozers	247	2	8	0.40	1,581	5,981
Site Preparation (40 days)	Rubber Tired Dozers	247	3	8	0.40	2,371	5,127
	Tractors/Loaders/Backhoes	97	4	8	0.37	1,148	2,483
Grading (110 days)	Graders	187	1	8	0.41	613	3,647
	Excavators	158	2	8	0.38	961	5,712
	Rubber Tired Dozers	247	1	8	0.40	790	4,700
	Scrapers	367	2	8	0.48	2,819	16,759
	Tractors/Loaders/Backhoes	97	2	8	0.37	574	3,414
Building Construction (1110 days)	Cranes	231	1	8	0.29	536	32,155
	Forklifts	89	3	8	0.20	427	25,632
	Generator Sets	84	1	8	0.74	497	29,837
	Tractors/Loaders/Backhoes	97	3	8	0.37	861	51,682
	Welders	46	1	8	0.45	166	9,936
Architectural Coating (75 days)	Air Compressors	78	1	8	0.48	300	1,214
Paving (75 days)	Pavers	130	2	8	0.42	874	3,542
	Paving Equipment	132	2	8	0.36	760	3,082
	Rollers	80	2	8	0.38	486	1,972
CONSTRUCTION FUEL DEMAND (gallons diesel fuel)							***214,117***

Construction Worker Trips (Light Duty Autos)

Construction Activity	Worker Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition (70 days)	15	14.7	15,435	26.77	577
Site Preparation (40 days)	18	14.7	10,584	26.77	395
Grading (110 days)	20	14.7	32,340	26.77	1,208
Building Construction (1110 days)	781	14.7	12,743,577	26.77	476,039
Architectural Coating (75 days)	156	14.7	171,990	26.77	6,425
Paving (75 days)	15	14.7	16,538	26.77	618
TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION					**485,262**

Construction Vendor Trips (Medium Duty Trucks)

Construction Activity	Vendor Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Building Construction (1110 days)	391	6.9	404,168	8.17	49,470

Construction Vendor/Hauling Trips (Heavy Duty Trucks)

Construction Activity	Vendor/ Hauling Trips/ Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Demolition (70 days)	0	0	0	5.77	0
Building Construction (1110 days)	391	6.9	404,168	5.77	70,046
PROJECT MEDIUM DUTY & HEAVY DUTY TRUCK TOTAL					**119,516**

Passenger Cars (Light Duty Autos)

Annual Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
39,037,232	26.77	1,458,246

Light Heavy Duty Trucks

Annual Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
756,373	12.94	58,452

Medium Heavy Duty Trucks

Annual Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
1,176,580	8.17	144,012

Heavy Heavy Duty Trucks

Annual Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
1,050,518	5.77	182,065

42,020,702 1,842,775

Natural Gas Demand	kBTU/year
Condo/Townhouse	18,511,700
Strip Mall 1	293,460
Strip Mall 2	603,000
Total Project Natural Gas Demand	**19,408,160**

Electricity Demand	kWh/year
Condo/Townhouse	4,706,380
Strip Mall 1	1,711,120
Strip Mall 2	3,516,000
Total Project Electricity Demand	**9,933,500**

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	California Power Mix (GWh)
Coal	538	0.30%	294	16,903	17,735
Large Hydro	11,569	5.90%	2235	2,144	15,948
Natural Gas	117,490	59.90%	49	12,211	129,750
Nuclear	18,525	9.40%	0	8,726	27,251
Oil	54	0.0%	0	0	54
Other	14	0.0%	0	0	14
Renewables	48,005	24.50%	12,321	4,455	64,781
Biomass	6,362	3.20%	1,143	42	7,546
Geothermal	11,994	6.10%	132	757	12,883
Small Hydro	2,423	1.20%	191	2	2,616
Solar	15,046	7.70%	0	2,583	17,629
Wind	12,180	6.20%	10,855	1,072	24,107
Unspecified Sources of Power	N/A	N/A	20,901	18,972	39,873
Total	**196,195**	**100.00%**	**35,800**	**63,410**	**395,405**

Source: http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html

Percent California Power Mix
6.00%
5.40%
44.00%
9.20%
0.00%
0.00%
21.90%
2.60%
4.40%
0.90%
6.00%
8.20%
13.50%
100.00%

Power Cost (per 1,000 SF of building per month of construction)	**Total Building Size** (1,000 SF)	**Construction Duration** (months)
$2.28	1,333.000	68

Cost per kWh	**Total Project Construction Electricty Usage (kWh)**
$0.08	2,583,354

Total Project Construction Power Cost
$206,668.32